National Health Strategy

A National Health Systems Strategy for Malta 2023 - 2030

Investing successfully for a Healthy Future

December 2022

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Chapter 1: Introduction: Health in Malta post-2020

Preamble

Malta has undergone rapid changes over the past decade. A thriving, service-based economy has brought several positive changes for individuals and families. Yet the far-reaching transformations in society as well as widening inequalities have heralded new challenges that need to be swiftly and effectively addressed if we are to ensure that the gains that have been registered are sustained and even more, are rolled out such that everyone benefits without leaving anyone behind. However, COVID, the climate crisis, and now the effects of the conflict in Ukraine (energy and cost-of-living crisis) have placed significant strain upon our society. This is the contextual background against which the national health strategic framework for this decade was being developed. We intend to build upon the success achieved, yet we are determined to do more and do better, whilst facing current and emerging health threats and to continue to place the health and well-being of our population at the heart of our policies.

An assessment of the Maltese health system in 2017 concluded that:

> *Overall, the Maltese health system has made remarkable progress, with improvements in avoidable mortality and low levels of unmet need. The main outstanding challenges include: adapting the health system to an increasingly diverse population; increasing capacity to cope with a growing population; redistributing resources and activity from hospitals to primary care; ensuring access to expensive new medicines whilst still making efficiency improvements; and addressing medium-term financial sustainability challenges from demographic ageing*[1].

The triad of population growth, population ageing, and population diversity pose challenges to our national health system. These demographic changes require our health services to be well positioned not only to respond, but to anticipate the changing population needs in the coming years and to adapt and transform accordingly.

Changing patterns of service utilisation are partly driven by the successful increase in life expectancy. The average life expectancy for those born in 2021 was 82.9 years, an increase of 2 years when compared to 10 years ago, making it one of the highest in the European Union (EU). Increasing demand on the health services is also the result of changing epidemiological patterns which are giving rise to an increase in chronic illness including diabetes, cancer and mental illness as well as increases in sexually transmitted infections. Advances in medicine and technology today permit treatment and interventions that were previously not possible.

The successful economic development of our country has been in part made possible by the availability of a modern health service that has remained at the forefront of care and provision thereby enabling impressive advances in life expectancy to be attained as a result of major declines in preventable and amenable mortality. In 2017, women and men in Malta experienced the highest healthy life expectancy at birth in the EU[2]. The prevention of diseases and accidents and rapid treatment of their consequences maintains social and economic productivity and reduces the number of lost working days and long-term social expenditure. However, the health behaviour risk factor profile of the Maltese population has not improved overall. Whilst smoking prevalence has fallen, Malta has the highest rate of obesity in the EU. Alcohol consumption amongst adolescents is also high. These patterns of health behaviour will result in increased dependency on health services to prevent and manage complications associated with illness, for treatment and ongoing care, and may threaten the hard-earned gains achieved to date. The impact and repercussions of the COVID19 pandemic will now also need to be evaluated and factored in.

The World Health Organization (WHO) highlights the need for health systems to pursue more inclusive policies, plan more judicious investments in health and use technological and service-delivery innovations to better meet people's needs and changing lifestyles, thereby adding value to healthcare. WHO has set out three aspirational goals for health systems (Figure 1) namely: INCLUDE, INVEST & INNOVATE[3]. These goals have inspired the target goals for Malta's Health Strategy framework 2023-2030. These goals are being articulated in the actions included in this strategy whilst constantly keeping in mind the requirement of maintaining the fine balance necessary between the need to enhance equity, implement innovation and safeguard sustainability.

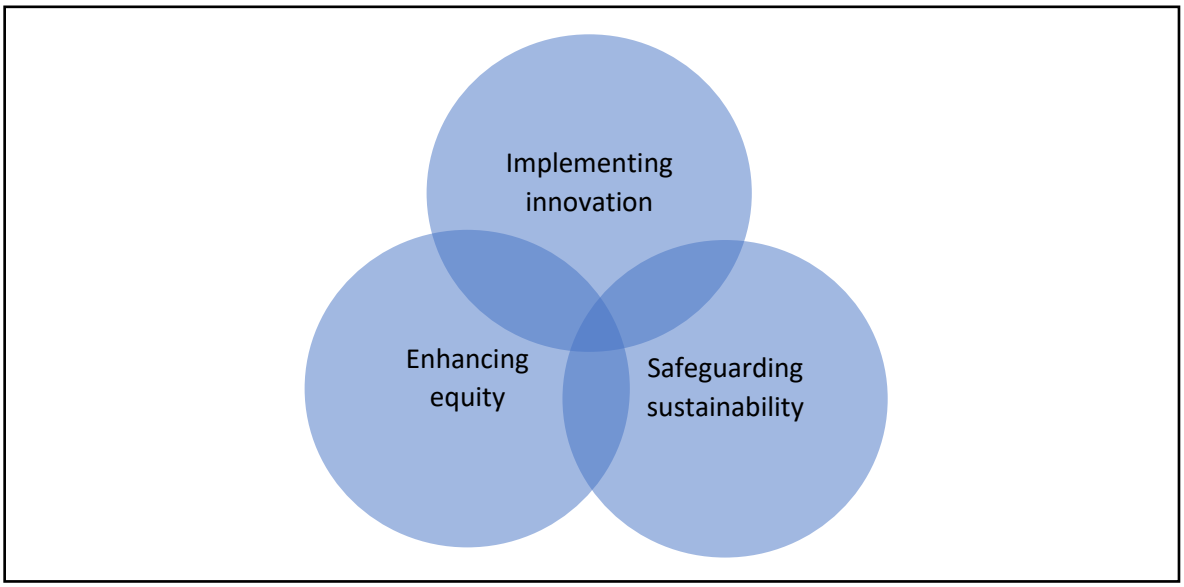


Figure 1: Three aspirational goals for health systems: INCLUDE, INVEST and INNOVATE (Source: WHO Regional Office for Europe, 2018)

While nine out of ten people in the highest income quintile report good health, this falls to only six out of ten in the lowest income quintile[4]. Persons from lower socioeconomic groups generally exhibit higher risk profiles for chronic avoidable illness. This gap is now explicitly acknowledged and highlighted and indeed has accentuated further during and following the COVID pandemic. Active surveillance and corrective action needs to be undertaken to reduce the widening health gaps between different groups in the Maltese society.

An ageing population with concomitant increasing demand for chronic care puts pressure on the financing of the healthcare system and therefore the focus on safeguarding sustainability remains very important. The financing challenge is also heightened by new therapeutic approaches becoming available, including the development of new medicines and technologies such as genomics and personalised medicine. Finding innovative means of funding these diagnostic and treatment interventions including by increasing multilateral collaboration to strengthen the purchasing power of healthcare funders, will continue to be a top priority for the Maltese Government in the foreseeable future. In addition to financial sustainability, Malta also needs to enhance capacity and agility in the assessment and introduction of new pharmaceuticals and devices to ensure that the Maltese population has access to the most cost-effective and reliable treatment options available. Sustainability needs to also be addressed by reorienting services and policies to guide, empower and support our population to prevent avoidable illness in the first place. This will require closer collaboration with other ministries and stakeholders, through for instance, the greater involvement of the Advisory Council on Healthy Lifestyles, to ensure that health and well-being become a primary consideration across all aspects of the economic and social development in Malta and is truly underpinned by the whole-of-government and whole-of-society approaches. Also, this strategy sits in the overall national planning framework of the country, including the EU Recovery and Resilience plan, Vision 2050, and the Electoral manifesto, showing political commitment towards its implementation.

Digital technologies and the digital environment offer several opportunities for identifying needs and delivering healthcare (from prevention and health promotion to curative interventions and self-management). The implementation of innovation arising from both therapeutics and technology will require the attention of the health workforce policy and systems preparation, development and management.

Finally, this strategy also wants to increase patient and stakeholder participation in the decision-making process of health-related issues and further involve Voluntary Organisations (VOs) and patient groups as active partners and important contributors to the improvement of health in Malta.

Chapter 2: Investing successfully for a Healthy Future: a Conceptual Framework for Malta's National Health Systems Strategy 2023 – 2030

2.1. Malta's vision for a Healthy Future – a Conceptual Framework

The National Health Systems Strategy 2023-2030 document 'Investing successfully for a Healthy Future' outlines the strategic direction being pursued by the Maltese Government to ensure that health features as a key priority across all other national policies, sectors, and investments. It sets out the framework that anchors the vision for the development of the health system in Malta over this decade. Malta's vision for 'Investing successfully for a Healthy Future' is drawn from its vision statement:

> *Health services that deliver the right care, in the right place at the right time to every single person every time, in a country that prioritises policies and programmes that generate health and well-being.*

Malta's vision is inspired by the recognition that all persons are unique, and every encounter with the health system is important. This National Health Systems Strategy (NHSS) framework is therefore guided and designed following the principles of the quadruple aims for a health system[5–7]. This leads us to our core mission objectives (Figure 2), these being:

- To improve population health and wellbeing
- To improve the individual patient care experience through better standards and quality of care
- To improve value in healthcare
- To improve the experience of providing care and support for the health workforce

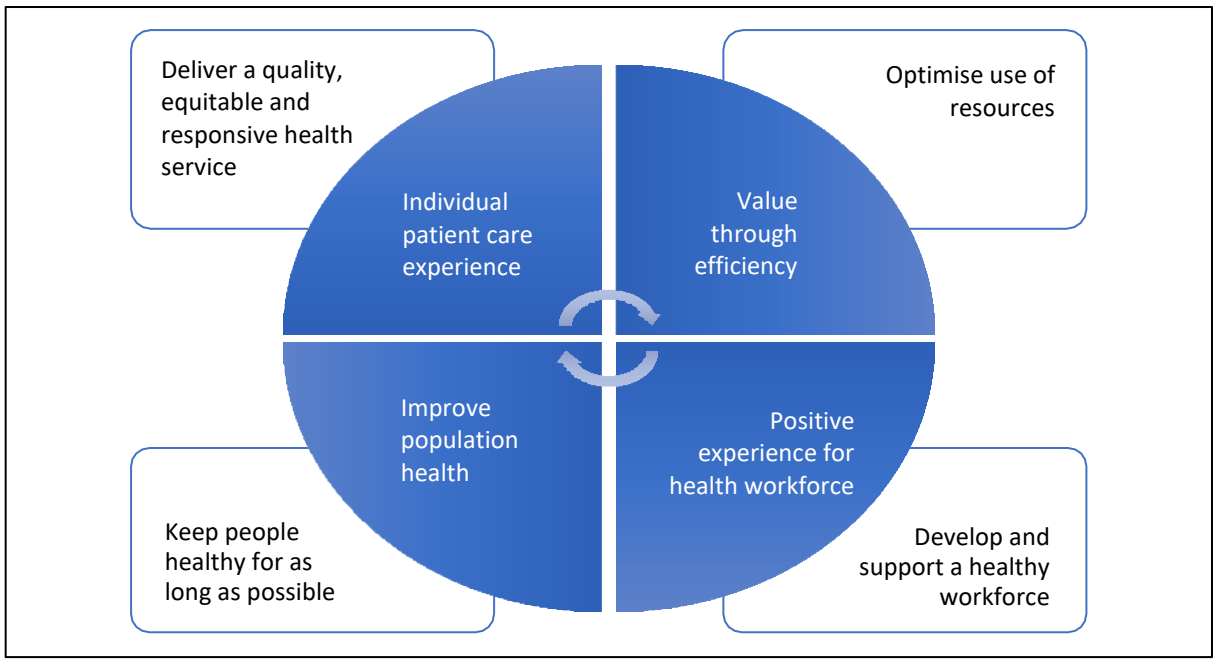


Figure 2: Core Mission Objectives

This strategy encapsulates a series of strategies that will facilitate the planning and implementation of policies, initiatives and investments by Health and other sectors to improve the health of the local population by preventing avoidable illness, detecting diseases as early as possible, reducing health inequalities and delivering quality health services. The document communicates the planned investments in health facilities and infrastructure to create an enabling environment for the promotion of health.

This document also includes a focus on the vision and plans for systems and services that play a crucial role in complementing and supporting the delivery of public healthcare services. These include strategies dealing with the health workforce, Government's response to the relentlessly changing and emerging technological environments particularly in terms of the digitalisation of the health services, and the uptake of innovation and engagement in research. Finally, given the current situation, an additional section has been included that addresses lessons learnt from the COVID-19 pandemic and the projected impact and aftermath on the health of the population in the next few years.

The NHSS also embraces a compendium of vertical national health strategies. These strategies consist of specific and distinct policy priorities for action in the next few years. They have been selected for action either based on their potential large-scale impact on the population's health or because Malta's performance is lagging behind when compared to similarly advanced health systems, or both. The Mental Health Strategy launched in July 2019 is considered as one of the strategic priorities of the health sector. Work is ongoing on several other sectoral priorities and additional areas will be identified and included from time to

time. This strategy document is considered to represent an agile, dynamic, and responsive policy instrument that serves as a catalyst for policy development. Examples of the types of sectoral priorities that have been, are being developed, or will require to be updated in the next few years are given in Figure 3 below.

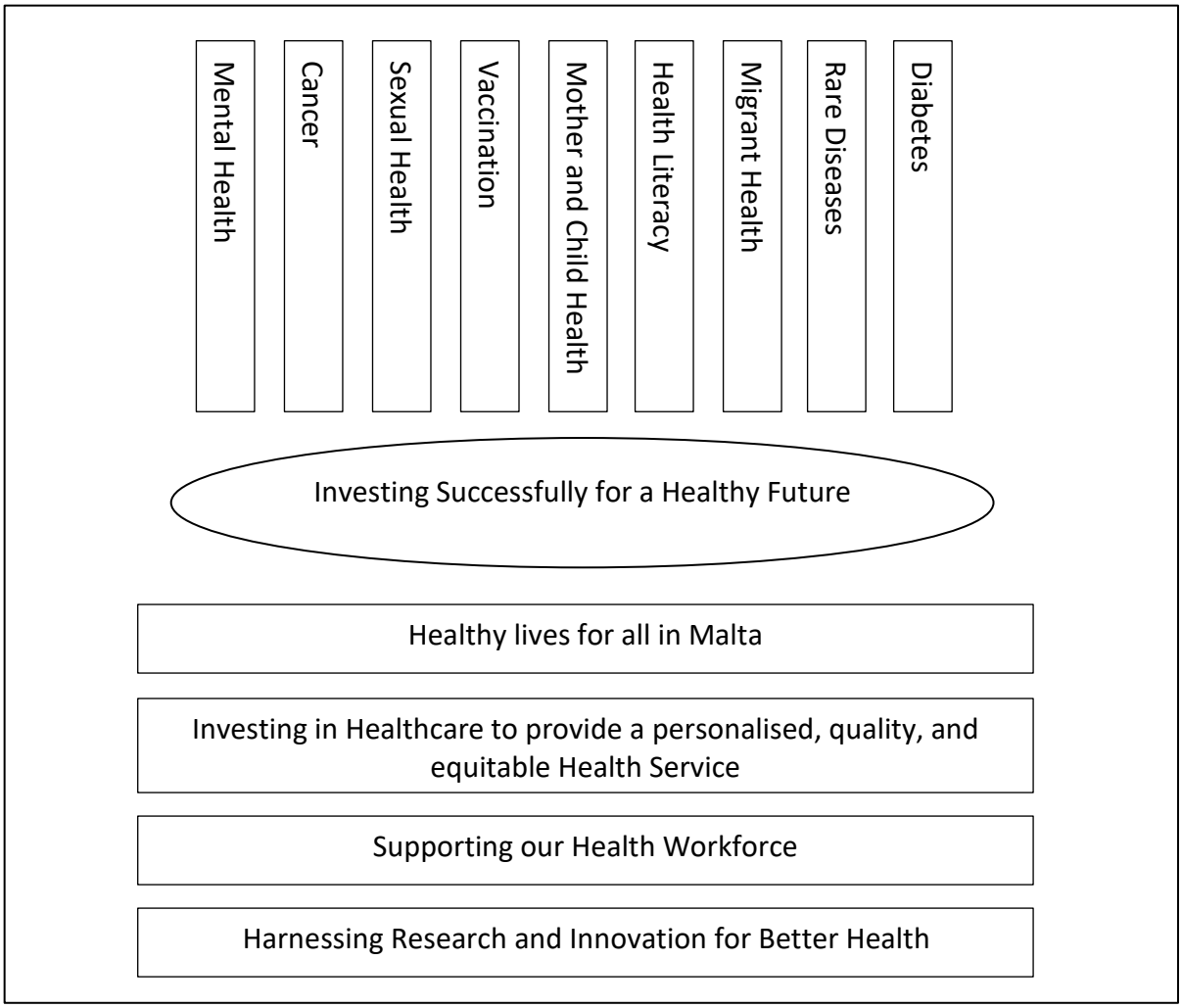


Figure 3: Conceptual Framework for the National Health Systems Strategy 2023-2030

2.2. Healthy lives for all in Malta

The burden of chronic illnesses in the Maltese population is growing. This burden is unequally distributed such that certain population groups are increasingly likely to succumb to chronic conditions more frequently and earlier on in their lives. The good news is that a large proportion of illness can be prevented or at least postponed. Whilst some modest success has been achieved in reducing certain risk factors, such as in tobacco smoking, our approach to health promotion and disease prevention as a nation needs substantial additional creative

disruption based on evidence. Just as we delivered successfully on the economic aspects, we intend to bring about a paradigm shift where preventing avoidable illness becomes a sought after and attainable objective for everyone. It is everybody's business, not only that of the health sector, to do more for the health and wellbeing of our population.

In this document, our focus will be primarily on the policies and mechanisms to support and ensure a collaborative approach across sectors. This is necessary to influence upstream health determinants occurring at a global and national level. Whilst the adoption of this strategy will benefit everyone in Malta, the largest health gains will be registered amongst those currently experiencing the highest burden of preventable disease.

2.3. Investing in Healthcare to provide a personalised, quality and equitable Health Service

Health services in Malta need to be more responsive and flexible to meet the needs of the population and the individual patient. This equates to ensuring access to timely healthcare and providing personalised care based on the latest evidence and best technological capabilities. These efforts should be coupled with greater patient empowerment, engagement, and participation, to significantly improve the quality of our health services.

Several initiatives are already ongoing to set and improve standards of care and to create appropriate governance frameworks for patient safety and quality of care and improved access to medicines and new technology. Improved integration of care services needs to become a priority through the design of care pathways across primary and secondary health settings and indeed also involve the private health sector where applicable by creating a one-stop-shop processes for services, with the inclusion of information technology such as the national Electronic Health Record (NEHR) and the Electronic Patient Record (EPR) in primary care.

Continued investment in health infrastructure and technology will see through the completion of several projects which have already started or are being planned. These include new services at secondary and tertiary level in Malta and Gozo, the construction of the Primary Care Hubs, investment in new and improved modalities in several areas such as medical imaging, cardiology and the blood bank, and a renewed emphasis on acute and community mental healthcare and rehabilitation facilities.

2.4. Supporting our Health Workforce

The health workforce is the bedrock of all health systems. Attracting, training and retraining health professionals has become a critical challenge for health systems universally. Malta has a strong tradition in education and training that provides competent entry-level health professionals. The ability to fill all available training positions at undergraduate level has been a constant challenge for certain professional groups in recent years. This has progressively increased our dependence on foreign expertise, while exposing our workforce to the deleterious effects of burnout and the prospects of being attracted by and moving to jobs with higher remunerative potential overseas or outside the health system. Health professionals required to implement eHealth and digital health projects are also scarce. The low availability of professionals with the expertise and time needed to apply for EU funds, manage EU grants, attend and contribute to EU-project meetings and report on EU projects and initiatives is also a major challenge, as is the case for all small states.

Over the years, we have invested in post-graduate and specialised training for doctors which is now being replicated to other health professions such as the nursing, dental, pharmacy and allied health professions. However, the small country specificities of combining generic service provision with expert specialisation is becoming an increasing challenge. Also, the dependency on a foreign supply of professionals to provide particularly essential nursing and caring needs has brought about new challenges such as addressing cultural diversity and meeting communication needs with patients and among staff. Preparation of the current and future health workforce for the opportunities and changes brought by technological innovation is an important consideration for health workforce policy. A competent, agile and empathic health workforce is essential to attain and maintain universal health coverage. The wellbeing of the health workers themselves is a priority. These are some of the salient issues that will be tackled in the forthcoming section on 'Supporting our Health Workforce'.

2.5. Harnessing Research and Innovation for Better Health

Health systems need to respond to the changing technological environment in which they operate and to be well positioned to obtain and expand on the benefits arising from the opportunities associated with digitalization of society and other innovation horizons.

Mainstreaming research activities into health services has been shown to improve health systems performance and attract and retain top level expertise within a health system. The potential of big data, machine learning, artificial intelligence and other emerging digital technologies are needed to transition the health sector into accessing innovation. Malta, within its wider multi-sectoral strategic content, is well positioned to progress as a front-runner in this sector. The application of these technologies is particularly important for the

development and deployment of genomics and personalised medicine. With these research and development opportunities the health services can be continuously upgraded and transformed to achieve better outcomes for our patients and population. This document will take a futuristic perspective and will be aligned with the upcoming digital health strategy for Malta as it is developed and implemented. Malta can be on the map as a leader in innovation for Health Systems worldwide.

Chapter 3: Current Situation

This section is outlining the current epidemiological status of the Maltese Islands, taken from the perspective of the performance of the health systems in Malta.

3.1. Mortality / ill-health

Malta has high life expectancies (Figure 4)[8]. However, notable health inequities still exist between adults with different education and income levels and between women and men. Similarly, the WHO-5 Well-Being Index (WHO-5; age adjusted)[9] has shown that when comparing persons in the highest educational level quintile with persons in the lowest educational level quintile, there are distinct gaps in most age groups in the mean percentage of well-being score between the different educational groups (Figure 6). This score assesses subjective psychological well-being which on average is higher in persons with higher educational attainment compared to those of lowest levels of education[8,10], with better life satisfaction, less long-standing limitations in daily activities due to health problems, and better mental health.

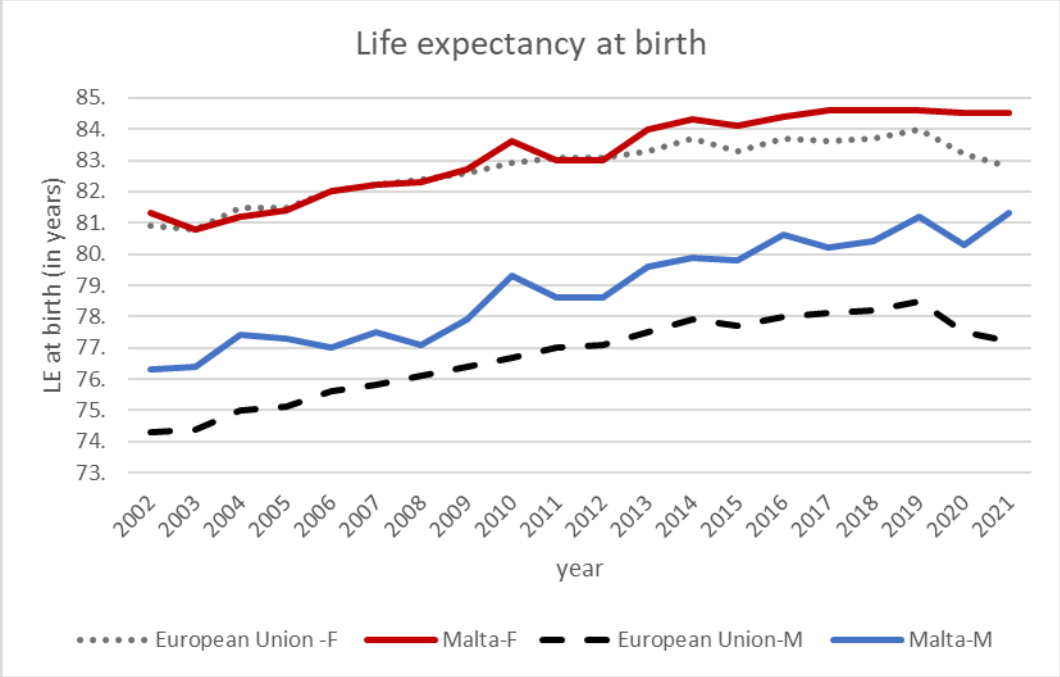


Figure 4: Trends in Life Expectancy at birth by gender (Source: EUROSTAT: https://ec.europa.eu/eurostat/data/database)

3.2. Incidence and prevalence of diseases

Malta is experiencing a rising incidence in a number of communicable (HIV and other sexually transmitted infections (STIs)) and non-communicable diseases (prostate cancer, lung cancer,colorectal cancer, breast cancer, diabetes, type 1 diabetes in children, hypertension, and elevated cholesterol). In many cases, this incidence compares negatively with analogous international indices as measured by Malta's Health Systems Performance Assessment in 2018[8,11].

Despite the high and increasing incidence, Malta has registered significant improvements in the 5-year survival rates in several cancers including malignant melanoma, breast, testicular,thyroid and prostate cancers[12]. Figure 5 shows trends in the 5-year survival for female breastcancer[11].

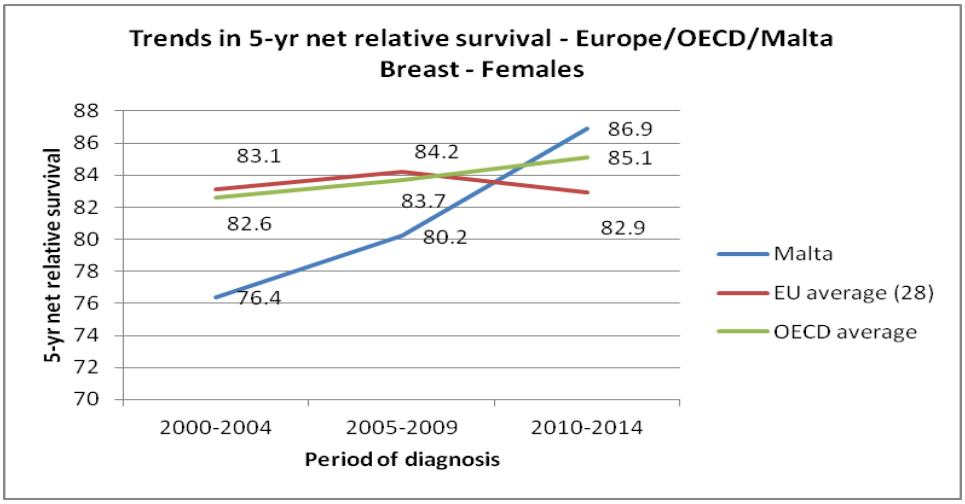


Figure 5: Trends in 5-year female breast cancer survival (Source: Farrugia et al. 2018)

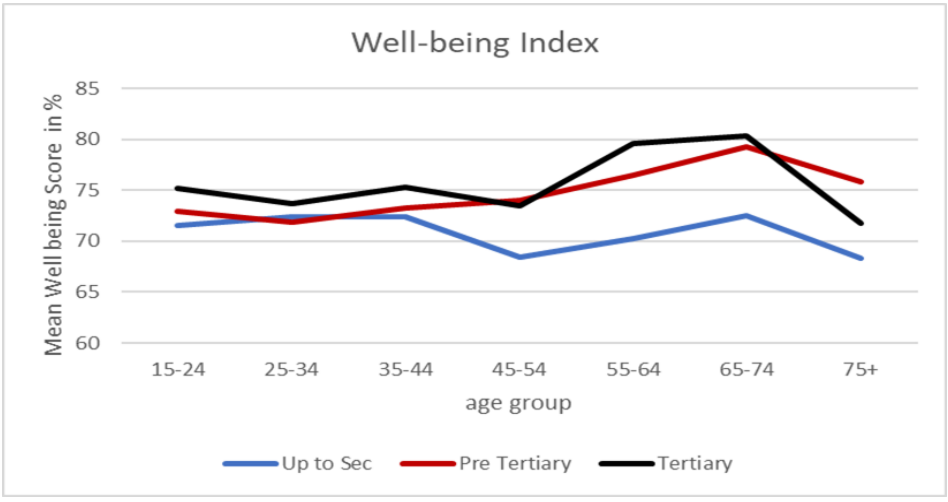
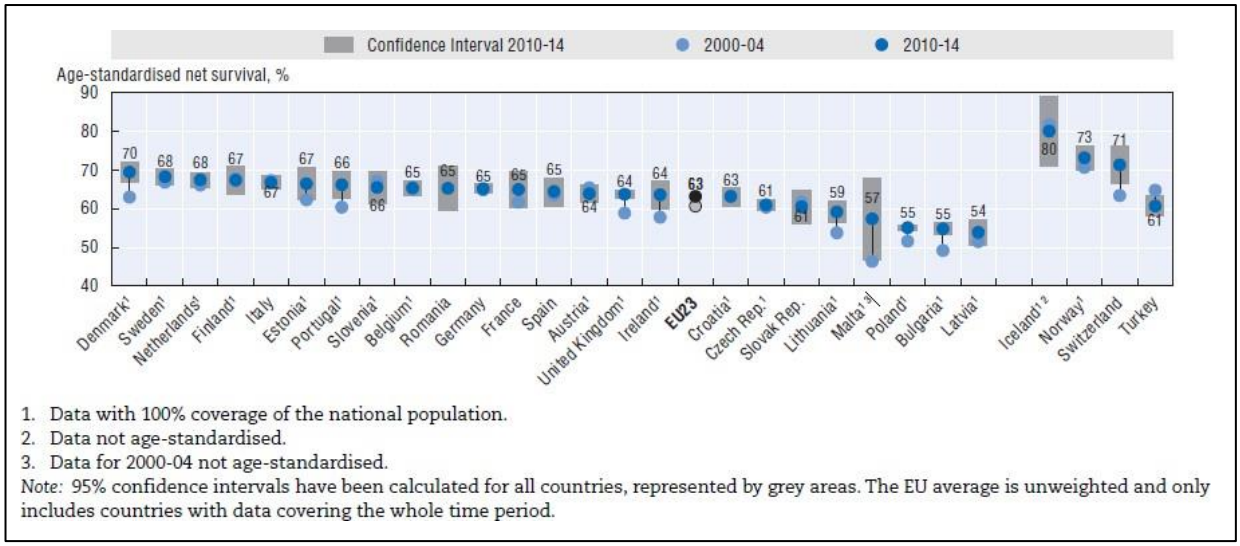


Figure 6: Mean Well Being Score by Educational level Achieved (Source: European Health Interview Survey 2019/20: Directorate for Health Information and Research)

3.3. Risk factors for communicable and non-communicable diseases

Malta has several health protection systems in place operating under the responsibility of the Ministry for Health. These include public health policy development and implementation, health promotion and disease prevention, national screening programmes, an expanding national schedule for vaccine-preventable illnesses, a system for the prevention and control of infectious diseases, and a food safety and environmental health directorate. However, in spite of these advancements, certain health outcome indicators for Malta are still found to be wanting.

More support is required to ensure the implementation and monitoring of the progress of execution of the strategies outlined in different policies. For example, Malta still has lower-than-average survival rates for colon cancer and cervical cancer. National organised screening programmes have now been in place since 2012 and 2015 respectively[8] and they are both incrementally scaling up the age cohorts invited for screening.



1. Data with 100% coverage of the national population.
2. Data not age-standardised.
3. Data for 2000-04 not age-standardised.

Note: 95% confidence intervals have been calculated for all countries, represented by grey areas. The EU average is unweighted and only includes countries with data covering the whole time period.

Figure 7: Cervical cancer 5-year net survival, 2000-04 and 2010-14 (Source: OECD & European Commission, 2018)

Certain key performance indicators for in-hospital care also require improvement. For example, Malta has a higher-than-average 30-day in-hospital mortality for stroke[13]. Malta is registering high and increasing admissions rates for asthma, which is termed an avoidable admission[11]. Diabetes is also persistently highly prevalent in Malta[8,9].

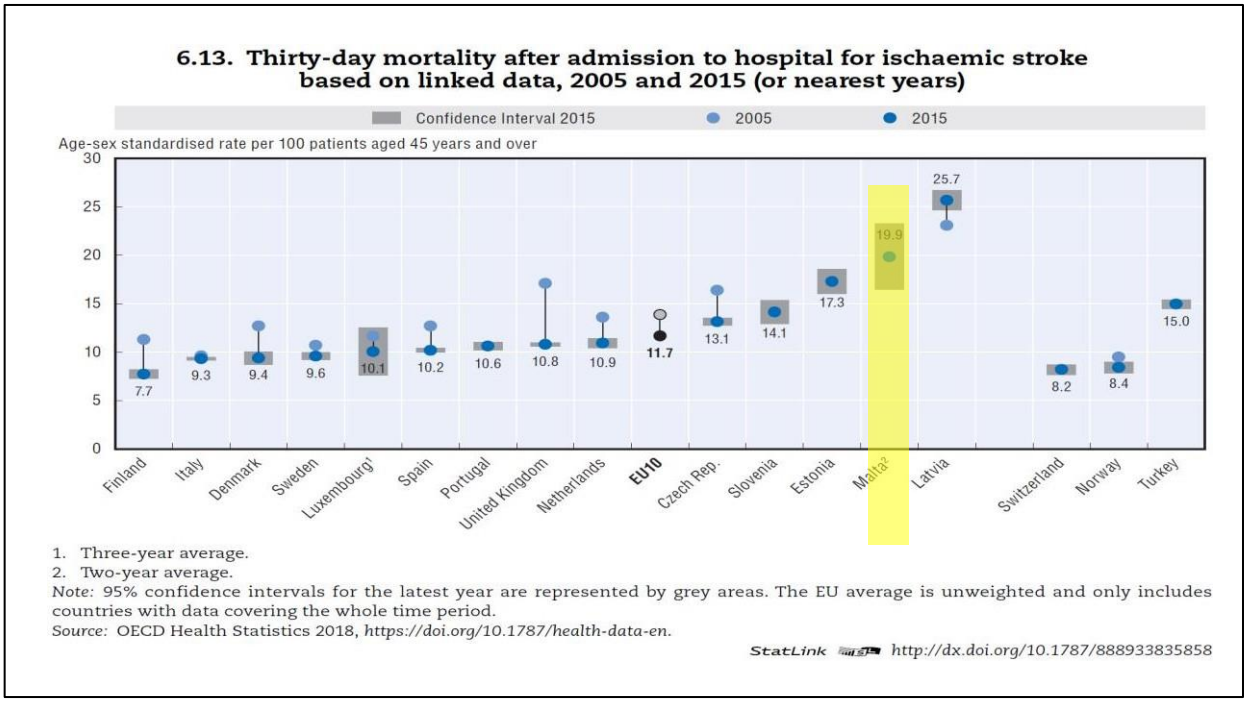


Figure 8: 30-day mortality after admission to hospital for ischaemic stroke (Source: OECD & European Commission, 2018)

There are various risk factors for ill health and disease where Malta is not performing satisfactorily. In this respect worsening health statistics are anticipated in the years to come unless substantial improvements are implemented. Key indicators include monitoring trends for a number of determinants of health such as prevalence of overweight and obesity in adults (Figures 9 and 10) and more so in children. School-aged children up to 16 years of age were found to be approximately 41% overweight or obese when compared to WHO criteria, with a greater proportion being obese (26%) than overweight (15%)[14]. There are also deteriorating rates in fruit and vegetable consumption despite efforts to promote healthy lifestyles and reduce the incidence of chronic diseases. This is probably related to the relatively high market price of these commodities which decreases accessibility especially for the lower income quintiles. Malta also has an above average smoking prevalence, which is more prevalent in lower education levels[10,13].

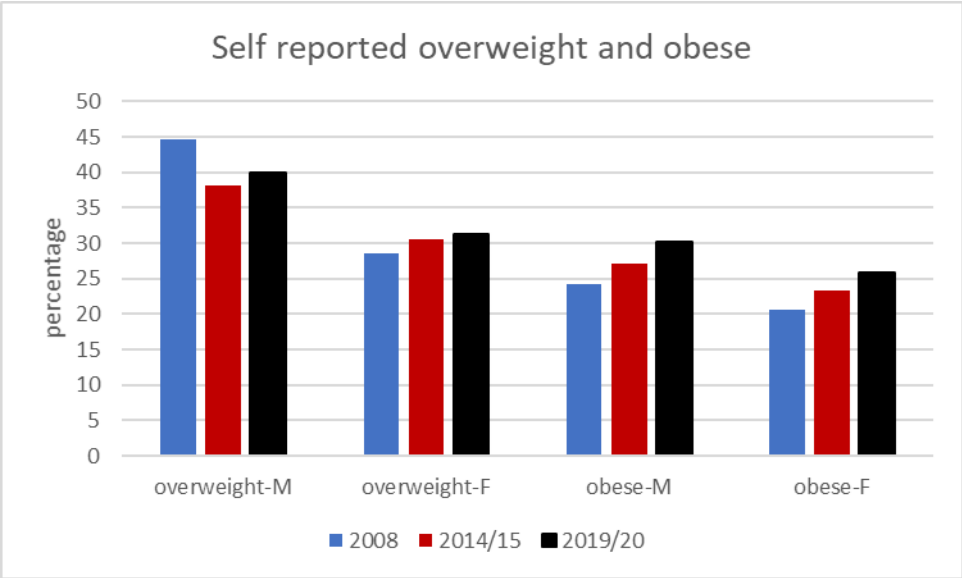


*Figure 9: Percentage of overweight and obese persons aged 15 years and over in 2008, 2014/15 and 2019/20 (*Source: *European Health Interview Surveys: 2008, 2014/15, 2019/20, Directorate for Health Information and Research)*

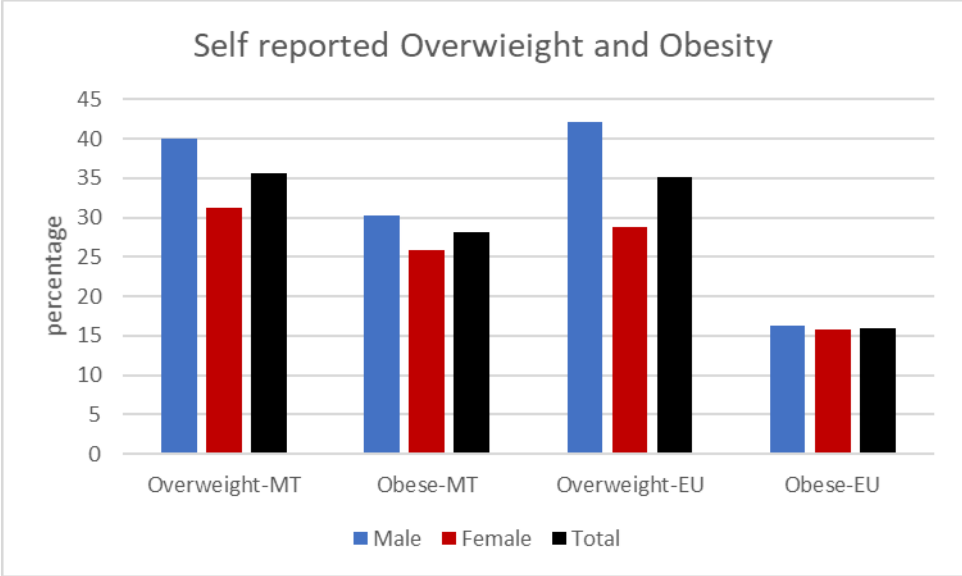


Figure 10: Comparison of percentage of persons who are overweight and obese in Malta and the EU average, EHIS 2019/20 (Source: EUROSTAT: https://ec.europa.eu/eurostat/data/database)

Other notable risk factors include poverty and housing. Malta has one of the lowest government expenditure per capita for social housing and community amenities in the WHO European region[9], giving rise to housing issues which are more pronounced in lower income quintiles[9]. Furthermore, there is a growing proportion of the population with their income

below 60% of median equivalized disposable income. In fact, there is a constant gap in poverty rates between employed people with the fewest years of education compared to those with the most years of education. The issues related to poverty and housing are further compounded by the rising property and rent prices in Malta in recent years.

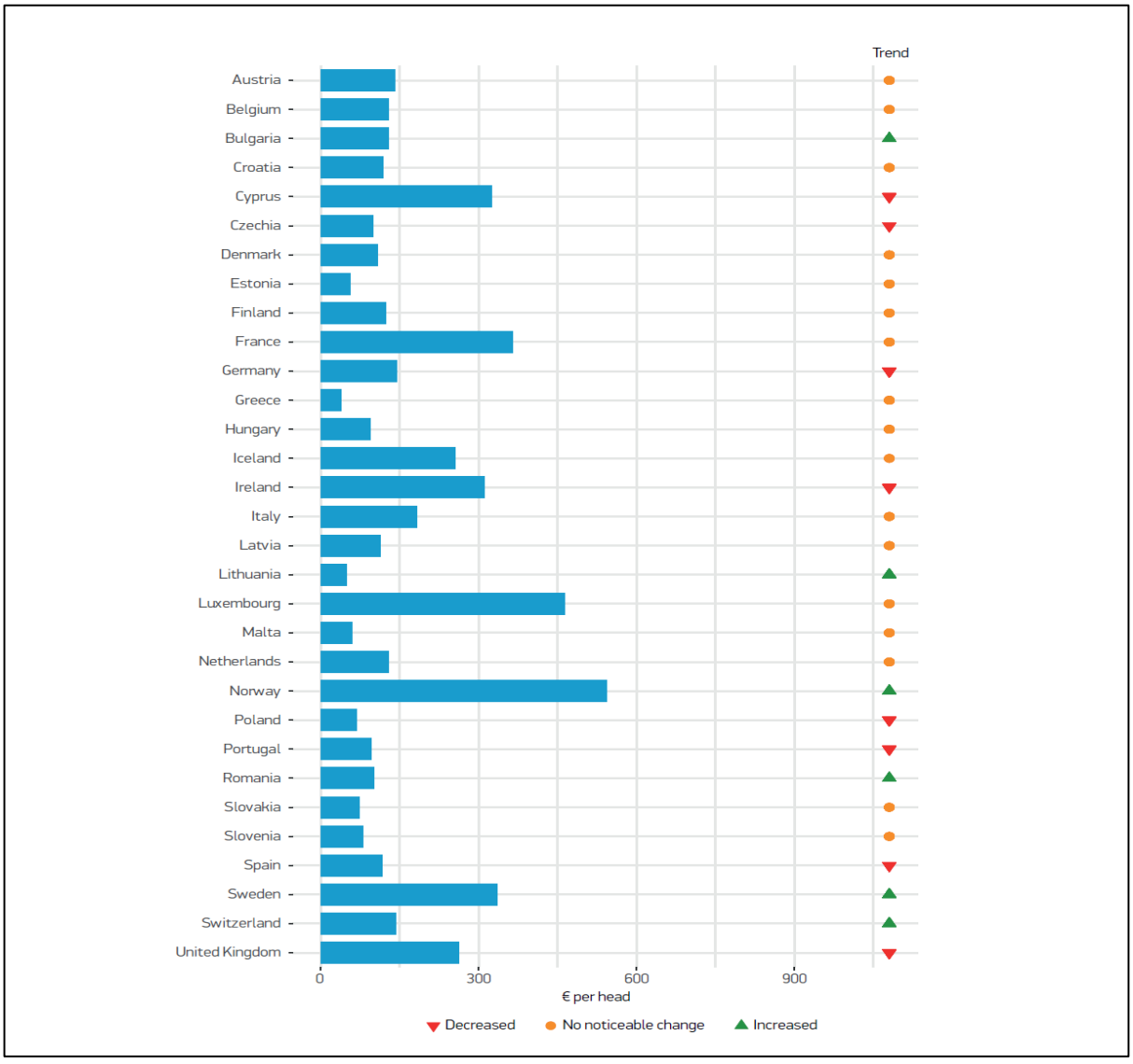


Figure 11: Government expenditure per head on housing and community amenities, 2017 (Source: WHO Regional Office for Europe, 2019)

3.4. Health services indicators

Malta has one main acute hospital. This hospital has essentially reached its capacity in terms of bed space and outpatient clinics. It has almost constant high occupancy rates[11] and persistent long waiting times for outpatients, diagnostics and procedures in numerous specialties, despite that several measures were put in place to address these challenges and that have registered notable improvements[10,15]. Notwithstanding these issues, the level of reported unmet medical health need in Malta remains low. Whilst this may merit further analysis of unmet need for healthcare or medical examinations using both self-reported data and a combination of health outcomes, this may be explained by the high share of out-of-pocket spending for consultations in the private sector[8]. The importance of continuously updating the capacity and capabilities of this hospital has been further highlighted since March 2020 with the onset of and during the COVID-19 pandemic.

3.5. Workforce

More needs to be done to invest in primary healthcare services, with available evidence showing that the ratio of general practitioners/specialists in family medicine (GPs) versus other physicians is low and declining. Nurses, pharmacists, social workers and some allied health professionals' disciplines such as occupational therapists are also in short supply[11], as are certain specialist functions such as psychologists, social workers and physiological measurement specialists.

3.6. Financing

Despite large and unremitting increases in health expenditure as a proportion of the Gross Domestic Product (GDP)[8], this is still relatively low when compared to other countries as evidenced by a number of key performance indicators in which Malta rates at a lower level than average. These include Health Expenditure per Capita (PPPS), Government Health Expenditure as a % of Total Health Expenditure, Health Expenditure as a % of GDP and Government Expenditure on Health as percentage of (GDP)[11]. Also, of concern is the lowering of the proportion of the health budget allocated to public health and the low proportion of public expenditure for pharmaceuticals in the outpatient setting as a percentage of GDP. Moreover, there are no ring-fenced tax income from for example tobacco and alcohol, which can be used for preventive healthcare services. This is in the context that roughly a third of the health budget comes from excise duties ('sin' taxes) but very little (1.3%) is devoted to health promotion and disease prevention[16].

3.7. The impact of the COVID-19 pandemic

The Covid-19 pandemic has tested the resilience of our national healthcare system and presented new challenges in the mode of delivering the necessary health services to those citizens most affected. Malta's immediate response was to identify the key Emergency Supporting Instruments (ESI) to rationally sustain and boost health investments by injecting them into the healthcare system. The main ESI measures included the central procurement and distribution of essential medical supplies to hospitals (such as respirators, ventilators, medicines and laboratory supplies and disinfectants) and emergency supply of protective gear for frontline healthcare professionals and hospital personnel, increasing capacity and training of healthcare professionals to adequately respond to the healthcare needs presented by the pandemic, and increasing the testing capacity to support the containment measures that were implemented.

The number of intensive care (ITU) beds available was increased significantly, from 20 to over 100 during the pandemic. The number of isolation and ITU beds in the sister island of Gozo was also increased. The investments in acute bed supply and attendant human resources at the critical care unit level together with the acquisition of medical equipment and the exceptional public health COVID-19 response organised and amassed during the pandemic need to be securely maintained so that they can be rapidly re-activated in response to and benefit contingency planning in future pandemics or national disasters.

Tele-consultations capabilities at both primary and secondary care levels have been put in place to facilitate contact between the medical community and the patients and their carers. IT services are also now more focused on facilitating remote delivery of healthcare services, in line with government's policy for the containment of the disease. During the pandemic, digital health has provided a unique opportunity to accelerate digitalisation capabilities to be implemented for the benefit of healthcare service delivery. Through the Ministry for Health and relevant national authorities, the Government has taken a leading role in the development and deployment of websites and mobile apps that assist in the control and management of the pandemic.

However, the impact of the pandemic response measures has resulted in restrictions on certain healthcare services leading to an increase in non-COVID-19 related morbidities, although the focus on chronic conditions such as diabetes, cancer and mental health was still maintained during the pandemic as the activities in transit strategies were streamlined to support patients by providing augmented helpline services and telemedicine facilities. Moreover, the pandemic has had an economic impact due to large loses of income from the tourism sector and subsequent falls in income both at the national and the individual levels.

3.8. The resilience of the health system

The resilience of the health systems in all countries worldwide is being tested by the exceptional circumstances brought about by the COVID-19 crisis[17]. Rightly so, the Country Specific Recommendations (CSRs) for Malta for 2020 in the field of healthcare were documented as the need that the country focuses on strengthening the resilience of the health system with particular regard to the health workforce, supplies of critical medical products and primary care. The description of the current situation and specifically the impact of the COVID-19 pandemic as well as the details of the measures included in this Health Systems Strategy aim to focus on the specific sectors that require special or renewed attention, and on the planning and implementation of strategies that will be employed to address and ensure that the resilience of our national health system is strengthened and consolidated.

3.9. Summary of key challenges

Whilst ongoing investment in the Maltese health system has led to favourable developments in terms of life expectancy and healthy life expectancy, the health system is coming under increasing pressure to maintain access, quality and responsiveness due to the mounting volumes and burden of disease being encountered. This is being driven by the relatively unsatisfactory performance on social and other determinants of health and disease, changing demographics, and the absolute increase in the population. More focused and targeted efforts in preventing illness and enhancing the care for persons with chronic conditions through better integration of the various health system components have come out as the key priorities to improve performance and health outcomes. Overcoming existing fragmentation between hospital and community, as well as between public and private services provision could help to streamline services, ensure continuity of care, improve outcomes and deliver a better patient care experience. Collaboration between all parts of the health system needs to occur so that gaps, inconsistencies, and duplication are avoided. The employment of various tools (such as remote patient monitoring) made available through the ongoing digitisation of the healthcare services will also contribute towards further consolidating these benefits. The lessons learnt during the COVID-19 pandemic must also be duly acknowledged and retained even as this pandemic is successfully overcome.

However, immediate and focused attention needs to also be given to the sectors outside health that need to be more involved to impact the upstream wider determinants of health and the emphasis on health in all policies. These sectors are wide ranging and include the education, social solidarity, environment and planning and transport sectors. Unless this is achieved, further investments at all levels of healthcare services will not keep up with the forecasted changes in demand and will not result in any sustained and long-lasting improvements in the health status of all persons living in Malta.

Chapter 4: Improving population health and well-being

4.1. Health services that promote and support healthy living

Although important advances have been registered when it comes to improvements associated with mortality, the population is still experiencing a considerable burden of disease[11]. The prevalence of risk factors such as unhealthy diets, lack of physical activity, alcohol, drugs and risky sexual behaviours have increased. Of particular concern is the fact that some of these risk behaviours are more concentrated in specific socio-economic groups and are often associated with poorer educational achievement and lower incomes. Therefore, the next phase of our prevention efforts must inevitably target the most vulnerable population groups with the aim of reducing risk and modifying the interventions according to the evaluation of these programmes.

The role of the health services in influencing behaviour change needs to be strengthened using innovative approaches rooted in behavioural sciences and new means of communication. However, we are also aware that behaviour change, and adoption of a healthy lifestyle will not be possible without generating and supporting an enabling environment, achieved through the adoption of whole-of-government and whole-of-society approaches, where public service agencies need to work across portfolio boundaries to accomplish shared goals. Indeed, ministries of health cannot accomplish this alone and need to partner with the private sector, civil society, and sectors outside of health care, such as education, social security, infrastructure, communication, and transport.

Improving health and digital literacy is one approach that will be specifically promoted to allow citizens to better engage with and manage their own health. Measures to improve health literacy will require a dual intention; reaching the general population but also having specific actions that reach out to those who are traditionally harder to reach. This needs to developed using the application of behavioural and cultural insights for better health, in line with the European regional action framework on behavioural and cultural insights[18].

Health enhancing physical activity, fitness and weight management are considered important and services promoting these activities will be reinforced. Roll-out of additional clinics in the primary care setting to offer a preventive screening service for adults between 45-50 years of age will take place. In the Maltese context this is particularly important to detect latent diabetes.

It is important that mental health becomes a natural and integral component of all health promotion efforts and initiatives. It is also necessary that imparting the message that looking after oneself will benefit one's mental health is ensured wherever possible.

The whole ethos of the health service will be geared towards the three types of prevention: preventing disease, earlier diagnosis, and avoiding complications at every opportunity that arises. The health workforce needs to be trained and supported to be able to identify and deliver on opportunities for health promotion and prevention. The incorporation of health education and sensitization messages as well as brief evidence-based interventions around modifying risky behaviours delivered to patients and their carers as they encounter the healthcare system can have long-lasting beneficial effects.

Specifically, the following actions are envisaged:

1) Publication of a strategy to promote health and digital literacy, targeting specific groups such as the elderly, schools and those within lower socio-economic groups

2) Publication of a plan to strengthen and expand immunisation policy and services

3) Publication of a strategy for fast-track actions on HIV

4) Adoption and implementation of a new sexual health strategy

5) Adoption of a National Preventive Framework for NCDs and Obesity, with an increasing focus on the health of children, adolescents and young adults

6) Initiatives by hospitals and community health services to mainstream prevention and health promotion as "everybody's business"

7) Implementation of a new 'Every Contact Counts!' programme targeting all members of the health workforce

4.2. A new paradigm for policymaking to promote health

It is widely acknowledged that despite our best efforts, the health sector is not the only Ministry that is required to keep our population as healthy as possible for as long as possible. This is a substantial undertaking that requires the input from all of government and all of society. In view of the full support and commitment made within the framework of the United Nations (UN) to work towards the full implementation of the Sustainable Development Goals (SDGs), an integrated and indivisible approach to development that respects the balance between economic prosperity, care for our environment and social well-being is needed[19].

Policies, plans, strategies and other instruments that embrace 'a health in all policies approach', including fiscal and regulatory policies, have been shown to be powerful and effective in changing patterns of consumption[20] . These policies are applicable to a wide range of sectors and include areas such as polluting vehicles and other sources of air pollution as well as harmful food and beverages. Combined with structural changes, three areas where fiscal policies can be used effectively to change behaviour and promote health are in relation to increasing physical activity, combating obesity, and deceasing vehicular air pollution.

Differences between socio-economic groups in terms of Income Security and Living Conditions are the largest contributors to inequities in self-reported health, mental health and life satisfaction within countries of the WHO European Region. Unemployment in Malta has been sustained at a low level for several years and expenditure on health and social protection has been uninterruptedly increased in all of the past national budgets. Yet public expenditure in areas such as healthcare and housing still remain relatively low when compared to other countries in the European Union. Furthermore, whilst success has been achieved in reducing the severe material deprivation rate, the income gap has been rising and persons at risk of poverty have increased in certain population groups, notably in pensioners and migrants, especially those contracted for jobs with very poor income and precarious occupational conditions.

We are therefore proposing collaborative initiatives with all interested government and societal stakeholders to see how best to inculcate the protection and promotion of health across all policies including in areas concerned with occupational health and safety.

High-quality health systems are designed to be equitable, resilient, and efficient. They are also designed with a focus on people they are purported to serve. Apart from the prerequisite for access for people to benefit from health services, health systems need to incorporate principles of people-centeredness that include approaches that empower them to exercise agency over their health and healthcare decisions. The significance on people-centeredness is accentuated in health care because of the asymmetry of power and information between provider and patient. Focusing on people works not only as a moral imperative to protect against the adverse effects of this power imbalance, but also as a corrective action that reduces the imbalance through patient empowerment and better accountability[21].

Specifically, the following changes to the policy making process are being proposed:

1) Continuing to work towards a cross cutting framework for the prevention of ill-health and promotion of wellbeing, where all public and related policies and actions take in consideration their impact upon health, preventable lifestyle risk factors, risky behaviours, unhealthy environments and occupational health and safety risks.

2) Consolidating our capacity for undertaking health-impact assessments for all public policies and strategies that are formulated.

3) Advocating for the consideration of fiscal, economic and social investment policies that promote public health and narrow the existent health gaps.

4) Placing health in all policies as a central pillar of sustainable national development, at political level and cascading downwards through the formal Ministry structures.

5) Design actions that aim at educating people about the available services and health entitlements according to national resources and use targeted quality reporting, information sources and mobile technologies to empower people to become active patients who seek and motivate the health system to provide good quality services and care.

4.3. Preventing illness through a healthy living environment

'Enabling environments' have been explicitly acknowledged as being as, if not more, important as the provision of quality healthcare to human health for the past fifty years. Clean, green, sustainable and healthy environments are important for the preservation of human health and for the preservation of biospheric life on which all life depends. A healthy environment has direct implications for the enjoyment of physical, social and mental health and wellbeing (Ostrava Declaration, 2017)[22]. Health concerns related to the environment are complex and operate at different global-regional-local levels. Examples of environmental health themes include air pollution, noise pollution, water and sanitation, waste management, chemicals, climate change, biodiversity loss, ionizing and non-ionising radiation, and light pollution. Settings of change include the urban agenda, the promotion of active and safe mobility, and environmentally sustainable health systems.

As a densely populated island, Malta has always faced challenges in relation to achieving environmental goals and objectives. These challenges have increased in the light of the significant population growth that has been experienced over the past few years. The social activism around environmental concerns also provides an impetus for policy change that can benefit health and well-being. Improving the quality of life of the Maltese population and their health and well-being is a key objective in the sustainable development for our islands in the next decade. The impact of deteriorating environmental factors such as excessive urban development, poor air quality and air pollution, noise, light and sea pollution on the health of citizens needs to be studied in greater detail. Malta's international obligations, such as the National Emission Ceilings Directive, the Ambient Air Quality Directive, Environmental Noise Directive, the European Climate Law/2030 Climate Target Plan, Environmental Liability Directive and the Industrial Emissions Directive are an important consideration when planning for solutions and changes, where a whole-of-government and a whole-of-society approach is required, especially in areas where the effects of environmental factors on human health are known. Furthermore, understanding the main drivers for environmental pollution (water, soil, air, chemicals, noise) is important as there isn't adequate local

knowledge yet on this subject and further studies are needed.

Although the health sector is limited in its powers to *implement* on many areas of environmental health concern, it recognizes that it has a critical role in raising awareness, educating and advocating for change to promote human health through the institution of health enabling and protective changes in the environment. To this end, the Ministry for Health and relevant health actors commit to working at governmental and non-governmental levels to steer positive health change in the physical and social environment such that people in Malta not only benefit from a valued and quality health service but also from clean air, quiet neighbourhoods, and safety from harmful environmental risk factors. Health will continue to advocate for the expansion of spaces that promote active mobility, walking, cycling, the safe use of micro-mobility, and collective mobility, as settings that enable children to run around safely and to increase the uptake of unstructured physical activity, as a means to address the health burden of obesity and chronic diseases, enhance active ageing, and to derive the benefits from cleaner and quieter mobility. At a global level, state and non-state health actors will take responsibility and advocate for urgent climate action and actions to protect biodiversity, both of which are today recognized as cross-cutting themes of serious human health concern.

Importantly, the Ministry for Health, as one of the most important health actors in the Maltese health system, recognizes that the most ambitious advances in healthcare will, by themselves, not deliver on the attainment of the best possible health and wellbeing for all if these are not equally complemented by actions that promote enabling, safe, sustainable, open and green environments for human health.

A series of measures to improve quality of life will include:

1) Air and noise pollution: whilst advocated for improved environmental initiatives such as a greater use of electric vehicles, the creation of more traffic free zones and incentives to use more public transport, the Ministry for Health shall continue to press for the adherence of WHO's and the EU's latest air quality guidelines and noise pollution guidelines, the National Emission Ceilings Directive, Ambient Air Quality Directive, and the Environmental Noise Directive, and the Industrial Emissions Directive.

2) Healthy Homes: assist in measures to prevent and control overcrowding, more investment in social housing benefits to ensure that people live in health (mental and physical) preserving and enhancing homes, and more schemes that assist buildings' capability for effective temperature control.

3) Urban design for health: participate in action though appropriate town planning to partly mitigate factors such as air, light and noise pollution which increase the burden of disease. Contribute to actions that increase social interaction to strengthen the

sense of community and protect those that are at greatest risk of illness, injury and isolation and improve safety such as traffic calming measures, pavements for safe walking and bicycle lanes.

4) The greening of urban areas by preserving and planting trees to provide shade and reduce urban temperatures.

5) Acknowledging and Implementing the European Climate Law/2030 Climate Target Plan and the Energy Efficiency Directive.

6) Carry out more in-depth studies on origins and promulgation of environmental risks and the main sources of emissions and pollution.

7) Relocation of the Public Health Laboratories to a new facility that will allow for their expansion and that will provide premises that are better fit-for-purpose for this important health protection entity.

4.4. Reversing the widening health gap

Making inroads to decrease the burden of disease and alter risk factor profiles requires complex solutions with a deep understanding of the broader social determinants of health. The WHO European review of social determinants of health and the health divide in 2012 set out a formidable agenda for the reduction of health inequalities[23]. Yet in several countries, including Malta, health inequalities are on the increase.

A number of specific areas where Malta can do more to close its health equity gap have been highlighted in the publication 'Healthy Prosperous Lives for All' a health equity status report published by WHO in September 2019[9]. Moreover, COVID-19 has continued to expose these gaps even further, with certain strata of society being harder hit[24]. According to available evidence to date, priority population groups for key action include vulnerable children, immigrants, 'working poor' and pensioners. In Malta, the gap in adults aged 65 years or over reporting poor or fair health per 100 people, in the lowest income quintile compared to the highest income quintile is more than 30% and is rising particularly for women. When it comes to mental health, over 40% of men in the lowest income quintile report mental ill health compared to less than 20% of men in the highest income quintile.

Tackling health inequalities is a priority for this Government. Malta has already utilised EU funding to study the patterns of health inequalities and better understand the social factors that drive ill health[25]. The analysis of this study was concluded in 2019 and provides an evidence base for strategic responses to tackling health inequalities and reducing the burden of disease especially in those worst affected. This includes the setting up of the Social Determinants of Health platform within the Ministry for Health.

4.4.1. An equitable Start to Life

The early years are critical in the shaping of the future health of our population. Enhanced action to identify and sustain those children considered at risk of falling behind is needed, as advocated by WHO (European Region) in its framework for early childhood development for the action plan development[26]:

Following the success of the discharge liaison midwifery scheme, the time is ripe to consider intensified home visiting programmes to families considered to be in greater need of external psycho-social support, such as first-time parents with no relatives living in Malta and low-income families. Given the low prevalence of breastfeeding and the high prevalence of obesity, a special focus on diet and nutrition in the early months and years is considered important. Increased collaboration with childcare centres, kindergartens and schools is important to better identify and assist families at risk.

Changes in societal norms require the health system to actively reach out to strengthen community child health services to meet new and emerging needs. One of the proposed projects is to develop a new service set-up in the community providing health services for children and adolescents combining both physical and mental health. Project implementors will need to work closely with school-based health services.

A number of actions that can positively impact inequity in health in the early years will be promoted. Most of these actions will require strong inter-sectoral support from the health sector. Examples include:

1) Programmes to identify and assist children 'at risk'
2) Promotion for healthy school lunches and a family-based approach to healthy eating
3) Support for more opportunities for physical activity backed by the appropriate enabling environments
4) Renewal of programmes for early childhood nutrition and oral health that include the involvement of parents and schools
5) The provision of mental health promoting programmes to all school children. Programmes for early childhood involving schools and parents should include areas like emotional regulation skills and healthy coping mechanisms.

4.4.2. Focus on adolescent health

The WHO report 'Growing up Unequal: Gender and Socioeconomic Differences in Young People's Health and Well-being' places a spotlight on the manner in which young persons

from less educated and affluent backgrounds face increased health risks that will in turn continue to impact them throughout their lives. Poor eating patterns and higher propensity towards risk-taking behaviours are commoner in adolescents from families with lower socio-economic and educational backgrounds[27]. Programmes to target such adolescents will require close and concerted action between health, education, social and youth sectors, engaging also with sports, cultural and leisure industry stakeholders.

A mental health focus in adolescent health is also very important, given that about 50% of all lifetime cases of mental disorder start to manifest by the age of 14 years, and around 75% before the person reaches the age of 25 years[28]. Specifically, it is important to start focus on transitional years (i.e. transition from adolescent to adult). Transition needs to be addressed multi-sectorally to ensure that a care and support package transitions synergistically between health, mental health, education, labour, social care and other relevant sectors (such as police, probation, etc.) as the adolescent with complex mental health problems transitions to an adult with mental health issues and diverse care needs.

Specifically, the following actions to tackle inequity in health in the adolescent years will be promoted and pursued together with the relevant stakeholders:

1) Work on a multi-sectoral health and social programme/action plan for adolescents, including a special focus for the needs of persons with mental health issues transitioning from paediatric to adult health services

2) Support for sports and performing arts programmes for adolescents especially when needing community support

3) Uphold investment in local leisure facilities particularly targeted at reaching adolescents from less affluent / problem backgrounds

4) Supporting youths with life skills and entrepreneurial education

5) Making available more adolescent friendly health services including those for mental and sexual and reproductive health

4.4.3. Health inequality in older people

Health inequalities are increasing in the age cohorts older than 65 years. There is a gap of more than 30% in older people reporting poor or fair health in the lowest income quintile compared to the highest income quintile. Elderly persons are particularly vulnerable to changes in their environment. They are also increasingly prone to suffer loneliness at the same time as they deal with daily issues arising from limitations associated with long-standing or new physical or mental illness.

Health services will work closely with the Ministry responsible for services for the elderly, the department for active ageing and community stakeholders to identify needs, to develop a series of proposals and actions that will support elderly people from both the health and social perspective. The emphasis will be on active ageing, keeping the elderly healthy, active in and contributing towards the community. The ultimate aim is to keep the elderly population active and residing in their homes for as long as possible. There needs to be closer integration between elderly homes and community services especially for persons who seek support and do not necessarily have medical needs.

The development of services for this age cohort also needs to maintain a sustained focus on the need to cater for the present and forecasted growth in the capacity required and services provided for the care of the elderly population and especially for dementia care.

4.4.4. Focus on the health of immigrants

The Maltese health system must become better able to adapt to managing the health needs of an increasingly ethnically and diverse population. The principle of mainstreaming the needs of migrants in all services will continue to be upheld as the health system can play an important role in educating, supporting and integrating non-Maltese residents into the local culture. Nonetheless, it is recognised that immigrants may have specific needs that require tailoring or adjustments of certain services. These will be further elaborated in a specific plan focusing on the health of immigrants which is in the process of being developed. Meanwhile, immigrant support services within the health system will be strengthened and efforts to better characterise the health needs of immigrants will be undertaken to enable clear and more effective pathways of service entitlement to be developed.

Adapting the health system to an ethnically diverse population:

1) Launching a plan to discuss and integrate the health needs of immigrants

2) Setting up an *Immigrant Support Unit* within the public health service which looks at the holistic care of migrants

3) Increasing availability and reporting of data relating to ethnicity/migrant status to highlight impact of ethnicity on health inequalities and aid better planning

4) Training of the health workforce to care for ethnically diverse and mobile populations including training related to the care of migrants with mental health and social care problems since knowledge, attitudes and behaviours pertaining to mental health is influenced by culture and belief systems.

5) Ensuring minority populations are captured in surveillance, research and surveys

4.4.5. Using health systems to address inequalities

The setting up of the social determinants of Health platform within the Ministry for Health is a first step in laying the basis for action on health inequalities. The work for this platform is guided by the results of a study that was concluded in 2019 and that elucidated prevalent patterns of health inequalities and their connections with social factors that drive ill health[29]. This knowledge will be used to further fine tune the specific actions that need to be prioritised in this area of activity.

The following measures are planned to be undertaken:

1) Training for clinical staff regarding health inequalities – identification, management and referral

2) Training of educators on the identification and management of children at risk using evidence-based tools to be developed

3) Actively focusing health services efforts on ensuring that patients at risk of 'falling behind' are actively followed up for their chronic conditions

4) Outreach to groups where there is low uptake for preventive services including acceptance of invitation for screening and immunisation programmes

5) Planning and conducting research to elicit the reasons for and investigate the impact of out-of-pocket payments on access to healthcare.

6) Planning and conducting research to specifically investigate and portray patterns of inequalities in the areas of sexual and mental health as key drivers of illness burden. There may also be diverse subcultural gender differences in these areas that need to be better understood.

7) Ongoing research on status and strategy development and implementation to tackle gaps in health inequalities.

Chapter 5: Improving the individual patient care experience

Whilst expanding capacity (facilities and workforce), keeping waiting times in check and keeping up with pharmaceutical/technological innovation remain ongoing operational objectives to improve health system performance, a more fundamental change in the way in which healthcare is designed, organised and delivered is necessary. Healthcare must become more purposefully viewed from the person and patient perspective and should primarily revolve around their needs rather than the needs of the system or the providers.

For this to be achieved, a strategic shift needs to be made by:

1) Working in coordination across healthcare and other organisations and utilising agreed and evidence-based clinical care pathways that transverse organisational interfaces

2) Push more care systems and processes away from acute hospital care and into the ambulatory and community settings as well as into homes and residences whilst removing identified barriers to access community and primary care services

3) Exploit to the fullest possible the benefits of digital technologies to transform service delivery for the comfort and convenience of patients.

4) Improve preventive and rehabilitative efforts especially with a view of achieving better longer-term outcomes

5) Improve and develop integrated palliative care services for children and adults

6) Enhance community support systems for the elderly to prevent/ delay institutionalization as much as possible

7) Empower patients to be more actively involved in health service delivery and in decision-making both at the individual and system level

8) Enhance partnerships and engagement with patient groups, professional groups, healthcare providers in the private sector (including providers of private health insurance) and other members of civil society organizations in the development of the health system.

5.1. Putting people at the heart of the service

Health needs should be identified in partnership with the people being served. Individuals can interact with the health system in several roles: as patients, family members, carers, members of communities, civil society and special interest groups. For patients to become fully-fledged partners in the healthcare process, we need substantial cultural and organisational shifts from different perspectives. Health services in Malta can be more responsive and agile to adapt to change if decisions and activities are more person centred. This level of engagement in turn motivates and encourages individuals and communities to take ownership in their own health thereby becoming a force for positive change in society.

A cultural change within the health service is needed to better accomplish the move away from a one-size-fits-all approach to a more tailored support structure for individual-centric methods. Efforts will be undertaken to implement the concept of 'One-Stop-Shop' services. This can be carried out through management and alignment of appointments to avoid repeat visits to different clinics within a short span of time.

To achieve the above objectives, the following measures are being proposed:

1) Setting up Patient Advisory Committees to ensure service users and patient representatives are involved in all stages of development and execution of new services
2) To support patient self-management and patient shared decision-making through enhanced use of digital technologies such as *myHealth* and other digital health projects
3) Strengthening patient expertise through peer-to-peer support and self-help groups and organisations
4) Mainstream one-stop-shop concept for alignment of appointments and investigations
5) More case managers/navigators for different disease groups following the positive experiences acquired with the introduction of nurse navigators for a number of cancer sites. This could also include developing the idea of specialist nurses for key chronic diseases to act as a point of contact/education and advice for patients. Another possibility is to assist family practitioners to assume a similar role that will transcend patient movement from secondary to primary and community care and back according to patient's condition and phases of their care pathways
6) Consider the development and introduction of PROMs and PREMs (patient reported outcomes and experience measures) for different clinical care pathways and in mental health services

5.2. High quality and safe healthcare services

The Maltese health system placed 27th out of 195 countries on the Healthcare Access and Quality Index published by the Institute for Health Metrics Evaluation in 2018[30]. Treatable mortality has declined due to improvement in both cardiovascular and cancer healthcare services but there is still room for improvement. For example, the 30-day mortality for stroke is still relatively high. Whilst outcomes for some cancer sites, particularly for breast cancer have improved tremendously over the last ten years, substantial improvement in performance and outcomes is still required for several other cancers.

Several efforts to improve patient safety are ongoing. Important work has been carried out by the Patient Safety and Quality Improvement Team (PaSQIT) within the acute Mater Dei Hospital. A Clinical Risk Assessment Unit has also been set up at this hospital. The primary care services are also implementing a quality management system. These initiatives are expected to minimize the incidence of adverse events, improve reporting and communications, increase system learning and staff awareness about attention to quality and improve patient and staff satisfaction and patient outcomes. Hospitals currently managed through the Public Private Partnerships (PPP) concessionaire are working through the process of achieving Joint Commission International (JCI) Accreditation. These are all steps in the right direction.

It is believed that a more explicit focus on patient safety and quality of care needs to be brought to the fore by coordinating and better documenting all measures and plans taking place across the health services. Government has prioritised this area through an EU-funded project for the development of healthcare standards and an enhanced regulatory framework for hospitals. A review of the legislative framework currently in place is required to generate proposals to introduce new regulations specific to patient safety in order to provide a stronger and more robust legal basis and support for these important and evolving functions.

5.3. Enhanced equity through improved access to services

The true spirit of the UN Sustainable Development Goals (SDGs) requires a determined and steadfast approach to 'leaving nobody behind'. The burden of illness in Malta is disproportionately more concentrated within the lower socio-economic groups. As explained in the earlier section on 'Keeping our Population Healthy', new modalities to target vulnerable groups and communities will be given priority in the coming years. Additionally, improving health literacy is an important consideration to improve access to care.

Improved access will be brought about through:

1) the enhancement of *myHealth* platform. This will allow patients a more complete insight into their conditions and illness, more complete access to and ownership of their own data and effective remote interaction with core health systems, including with the private healthcare facilities and providers

2) involving patients more as co-creators in the decisions affecting their choices for care and treatment through *inter alia* flexible, comprehensive, accessible and user-friendly digital health systems

3) increasing the utilisation of more modern upgraded clinic facilities in all communities embedded within towns and villages to facilitate easy commutes

4) a decrease in waiting times for outpatient appointments by increasing specialist clinics in the community and encounters using tele-consultation platforms

5) further efforts to set up more fast-track clinics for serious illness requiring prompt intervention and care to ensure the earliest possible diagnosis, introduction of necessary treatment and follow-up

6) expanding and strengthening primary care telecare/ helpline facilities where necessary

5.4. Community services

The performance of health services can be optimized when the services delivered are in alignment with the health needs of the populations and individuals who are the intended beneficiaries. More primary care services will continue to be rolled out and expanded. Local clinics, health centres and the intermediate service facilities named 'health hubs' will together form a suite of facilities offering tiered services within the community. Coordinating with the private and voluntary services which are active in the local community would also be a priority, in order to facilitate integration and more efficient use of available capacity for these services in the overall referral and care pathways.

The range of specialised services being provided in the primary and community care setting will continue to be developed further in keeping with the principle of providing care as close to the community as is safe and feasible. Consideration is being given to new modalities of working such that nurses, allied health professionals and other care workers can provide more services in the community and reach out into people's homes as the need may arise. Also, the provision of health promotion and disease prevention services within the community should be emphasized.

5.5. Long Term Care

Whilst long-term care (LTC) of the elderly does not fall under the aegis of the Ministry responsible for health, it would be incongruous not to refer to this important sector within this strategy. Long-term care has faced and continues to face several ongoing and novel challenges. Furthermore, COVID-19 has continued to expose the service gaps and the unique needs of the clients and their service providers. LTC has long been singled out for its impact upon the sustainability of our finances. There is also quality of care disparities between service providers leading to significant inequities within one of the most vulnerable segments of our society. Resourcing difficulties are also common, with a heavy reliance on foreign lower skilled care workers to sustain the sector. Continuity of care between LTC, primary care and hospital services is also essential to ensure that all elderly persons receive the personalized care services they require.

The care for the elderly needs to be integrated within comprehensive care plans bridging primary care, community services and hospital specialist care. This integrated approach is key to be able to manage the many co-morbidities (including issues of mental health) associated with the elderly population. Inter-sectoral cooperation is also essential since these clients often require a multidisciplinary approach to cater for their needs, spanning health and social care, housing, transport, economic and other sectors that would need to work closely together to provide a holistic outlook to this segment of our population.

The need of community elderly care has emphasized over the past few decades. Whilst various initiatives and programmes led by the directorate responsible for active ageing have been successful in driving this message home, it is acknowledged that there is scope for more development to continuously meet demand. Again, this approach requires dedicated input from community services such as helpers at the home, maintenance support, assistance in shopping and in allowing elderly to achieve and perform their daily goals and activities. The COVID-19 pandemic hastened this approach, where many community-based services sprouted to assist persons confined to their homes, especially those without familial support. These services need to be continued, enhanced and sustained over time.

To date, there are a myriad of services offered to our elderly population, including Active Ageing Centres, Home Help Services, Respite services, Meals on Wheels, Domiciliary Nursing, Carer at Home Scheme, a Dementia Activity Centre, Night Shelters and other ancillary nursing and allied health services. Whilst these are ongoing initiatives, they certainly need to be expanded and strengthened to encourage as many elderly persons to remain living in their homes and community as possible. This is the stated enduring and long-term objective which should be combined with our plan to develop capacity and better understand the sharing of responsibilities for financing, organizing and contracting/ providing these types of services.

Furthermore, there is the need to the hitherto inadequately addressed challenges posed by persons who need LTC but are not within the elderly age cohort (i.e. for people that are younger than 60 years of age). This is a long-standing problem and there will be initiatives designed and implemented to understand and provide capacity and services for this special group of persons.

5.6. Integrated services

Much is said and written about the concept of integrated care. The term itself is used to mean very different objectives according to the situation being considered. Also, fragmentation of services and care has been highlighted as a key issue. Collaboration between all parts of the health system needs to occur more seamlessly so that gaps, inconsistencies, and duplication are avoided, and silos continue to be dismantled. In this document, we use the principle of better integrated services provision to mean:

1) Including services across a broad continuum of care and patients
2) Standardizing practices across organisational boundaries
3) Designing care pathways across primary, community and hospital settings
4) Tailoring patient care to individual needs
5) One-stop-shop for the majority of services
6) Deepening integration between public, private and voluntary care services

Integration can be achieved by greater use of information technology such as the deployment of a fully integrated National Electronic Health Record (NEHR) and the Electronic Patient Record (EPR) IT System in Primary Care. These will enable a comprehensive guided care pathway for our patients through the system, enabling real-time access to patient information for clinicians and allowing patients to move around more freely within the system bringing in an element of patient choice. These systems will integrate with other existing and new Health IT systems at hospital level (e.g. Laboratory, Medical Imaging and Appointments system) and with other National eHealth Services (such as Immunisations, Medications and ePrescriptions). Furthermore, information exchange through communication mechanisms such as remote consultations by email or telephone and vertical information platforms, through for example, shared medical records augments integrative efforts throughout the health system.

Professional care givers will play a key role in the integration of services by working more across different facilities and locations. In so doing, they will help to build bridges between diverse teams based in primary care and hospitals and allow people to cross organisational boundaries. The proposed way forward will also rely more intensely on multi-disciplinary teams, joint clinic sessions (such as sessions for transitioning paediatric to adult care) and team re-design rather than cross referrals with patients being shuttled around the various areas of the health system.

As far as possible the system should encourage community-based providers – clinics, care homes, community centres – to take on services that were once assumed to be strictly the preserve of the secondary and tertiary levels. This will require the appropriate alignment of incentives to drive the volume of work away from the acute hospital setting towards the community and increasing capacity at primary care level to absorb the increased workload. Community-based practitioners will need better access to investigations and treatment in order to bring about a modal shift in the locus of care. This will require generating greater trust in community services, which will be achieved once the scope and quality of the community facilities are on par with the hospital facilities.

5.7. Integration with private and voluntary care services

The overlap and embedded interactions between public and private/voluntary healthcare provision needs to be studied and better understood. Measures to avoid waste and duplication and improve synergism between the public and private/voluntary sectors are required for several reasons including patient safety, accessibility, continuity of care and better value-for-money. For this reason, a better understanding of the future role that private and voluntary sector health care providers could play is essential. Robust plans and policies to harness the private and voluntary care sectors and enhance their contribution for better integrated care is long outstanding. This can be achieved through a more robust and modern regulatory, commissioning and financing policies and tools.

Chapter 6: Improve value in healthcare – investing in healthcare to achieve our aims for health

Over the past two decades, significant infrastructural investment has taken place with the building of a new acute hospital (Mater Dei Hospital) and the new oncology centre (Sir Anthony Mamo Oncology Centre). The rapid demographic changes that have occurred in recent years, a fresh mapping of infrastructural needs and data from the health system performance assessment of 2018, all indicate that the health sector needs further expansion, restructuring and investment in order to respond promptly and appropriately to the increased demand for services arising from a larger, older and potentially more chronically sick population. Plans and implementation need to be based on a thorough evaluation of current and forecasted patient needs and patient flows across the different healthcare providers.

New facilities and services need to take into account the fast-moving developments in the area of medical technology and digital health and the rapid changes that are occurring in the organisation and delivery of health services. The fast-evolving nature and role of hospitals and their relationship with the community is a key element underpinning the planning landscape, where hospitals should no longer be the only or most important focus and reference point for healthcare activity. Whilst continuing to provide quality treatment for all those who experience episodes of acute illness, the health services need to increase their capacity to care for persons living with chronic conditions within the community, to allow them to achieve the best possible quality of life at all stages of their condition. It is acknowledged that facilities alone will not bring about the desired change, yet without the necessary infrastructure, the process of change will remain stifled.

Overall, in the area of the health care networking, it is important to develop a framework through which the different health care levels and organisations are responsible for continuously improving the quality of their services and safe-guarding high standards of care, through a clinical governance framework, including the development and standardization of clinical pathways and guidelines and an operational plan to manage and regulate patient and staff flows across healthcare facilities. This is particularly important to manage cases across the main centres in Malta, including Mater Dei Hospital, Mental Health, Gozo and the new Primary Care Regional Hubs. Other pillars to be considered in such a framework are clinical effectiveness, risk management, organisational learning capacity, patient experience and involvement, communication and resource allocation and effectiveness.

Investments can be planned to cover for four phases that will introduce new models of service delivery:

1) Design a new care system for meeting the health needs of the population
2) Prepare the model of care project for implementation
3) Develop care pathways between care centres
4) Implementation and rollout.

A series of investments are planned in order to achieve the following:

1) To increase the overall capacity of our health services
2) To deliver innovative services and increase our capacity to participate in research
3) To modernise and upgrade existing infrastructure
4) To consolidate an operational plan between the main centres of care in Malta and Gozo
5) To develop networks and operationalize interconnectivity with other hospitals and institutions in other Member States e.g., learning from and replicating the new role of MDH as the National Coordination Hub for the European Reference Networks (ERNs)
6) To develop environmentally friendly facilities and services

6.1. Green Healthcare

The incorporation of environmental sustainability practices in healthcare facilities and delivery will be one of the priorities of the coming decade. The US Federal Environmental Executive defines a *"green or sustainable building as the practice of designing, constructing, operating, maintaining, and removing buildings in ways that conserve natural resources and reduce pollution"*[31]. This should be valid for all infrastructural projects and developments. Whilst this approach in congruent with the overall direction to safeguard the environment, it is also beneficial to staff and patients who utilize, work and are treated in 'green' facilities. Greening of services enhances the Institute of Medicine's six objectives for a healthcare system, especially those related to providing a safe and healing environment for patients, avoiding underuse and overuse of materials and consumables and adopting a patient-centred approach to guide all clinical decisions[32].

Greening of health services and facilities will also eventually render them more cost-efficient. There is an ongoing initiative to support hospitals to take up responsibility for developing roadmaps to become more environmentally sustainable. This is achieved through the adoption of several innovative approaches such as choosing where applicable and appropriate, more environmentally friendly materials and consumables for clinical procedures or cleaning and disinfection techniques, reducing packaging and using biodegradable materials, retrofitting to more energy efficient technology, installing solar panels, procuring from more sustainable sources, considering new ways to manage waste, reducing hospital water consumption, adopting improved transportation strategies for patients and staff, utilizing temperature control technologies and materials and maximizing currently available space and health infrastructure through the re-purposing of existing healthcare facilities and estates.

6.2. Enhancing capacity for treatment and care in the community

The overall objective is to continue repositioning primary care as the first point of call. Achieving this objective requires the upgrading of facilities and services offered in this sector. Several developments are being planned in primary healthcare with the dual aims of shifting services from hospital to the community and improving the quality of care provided at this level. To date, Malta has been censured for having a predominantly hospital-centric public healthcare service. Whilst the delivery of community care services by private healthcare professionals plays an important role in the provision of care in Malta, the potential and role of the public sector needs to substantially increase and develop further. Furthermore, the dichotomy between primary care and hospitals is associated with the post-war development of health systems in the 1950s and 1960s and is not suited to managing the complex needs of present- day patients. It is therefore time to end the “outmoded dichotomy” of services delivery[33].

There are a number of community services that have been long-established including domiciliary nursing and midwifery services. Other services developed in recent years include several specialist nursing outreach services from within Mater Dei Hospital and a number of and inter-disciplinary clinics. There are also several other home and treatment services that are still in their infancy. A particularly important source of unmet demand can be found in the provision of adequate palliative care services. As frailty in older persons becomes an important health need to respond to, services provided within a person’s home and community is set to increase. Enhanced Home Care Services will provide people with access to enhanced care in the comfort of their home. Services can cover a wide array of chronic, planned, palliative, and post-natal needs as well as non-clinical care delivery. Home care services will aim to empower patients to live as independently as possible by providing

educational material and support through virtual platforms. Assisted living technologies are becoming more widely available, such as devices that routinely monitor living activities and physiological parameters of persons in the comfort of their homes, whilst linking up directly to health service providers and professionals.

6.2.1. The 'Health Hub' at the heart of our community services

The development of Health Hubs within the community is a relatively new concept in the array of healthcare facilities. These provide intermediate services between general practitioner services normally offered at health centres and secondary care offered at the acute/general hospital facilities. These hubs will facilitate the development of a new primary health care operating model that bridges service provision between hospitals and health centres. The Northern and Southern Regional hubs will be the two pillars of the Primary Healthcare in the community offering 24/7 service delivery.

Through this concept, it will be possible to provide facilities that bring more of the multi-disciplinary and specialised workforce out of the hospital setting and generate team-based care initiatives. This new category of health facility will allow for the expansion and development of elective ambulatory specialist services as well as increase the scope and the range of the emergency care services offered closer to the community setting. These will complement, enhance and support the primary care medical, nursing and allied health services. Health hubs will have urgent treatment units to treat minor injuries and urgent walk-in cases and that will be co-managed with the Emergency service department. In this way, additional capacity will be created and will allow Mater Dei Hospital emergency services to focus more on emergency care that cannot be treated elsewhere.

The two new regional health hubs will step up services offered in health centres and offer space for new services which were not currently available in the community including operating theatres for minor procedures, additional medical imaging services, one stop clinics for prioritized elective surgeries based on population needs (such as laparoscopic cholecystectomy, adeno-tonsillectomy) and a general pre-operative clinic for patient preparation and pre-op investigations and developing additional specialist clinic services including dental care. Figure 12 illustrates the conceptual framework that incorporates yet distinguishes the diverse roles of the services and facilities falling under the remit of the public primary healthcare sector.

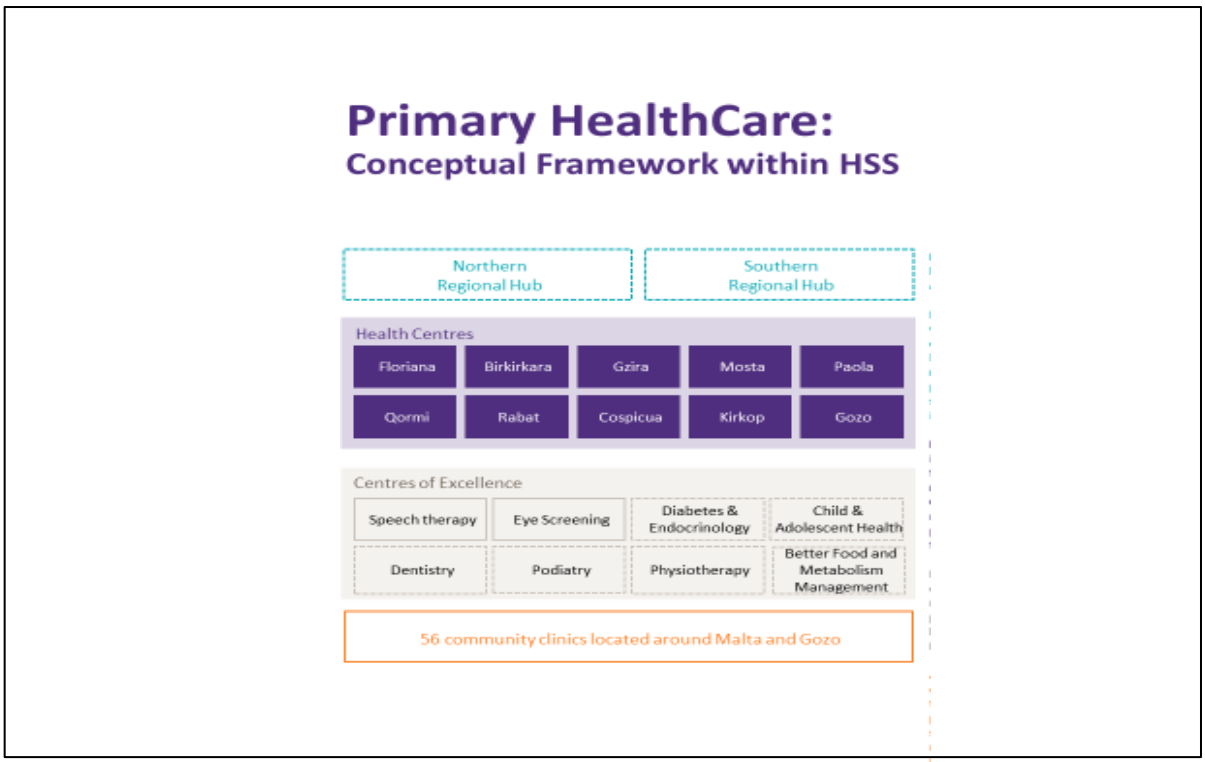


Figure 12: Conceptual framework for the diverse roles of the facilities within the public primary healthcare sector

A €10 million grant from the National Development Social Fund has been allocated for the refurbishment and upgrading of eight Health Centres (including Victoria in Gozo) and 54 Community Clinics around Malta and Gozo, together with the establishment of number of medical *Centres of Excellence*. The grant also covers the procurement of equipment and an information campaign aimed at educating the public at large. A number of Centres of Excellence in different specialities and disciplines located within Primary Care will be launched. Examples include centres for specialist care in podiatry, for diabetes and endocrinology and ophthalmic screening. Accreditation of these Hubs will also be possible in the future.

6.2.2. Support for the establishment of multidisciplinary Private GP group practices

Promoting cooperation among private family practitioners (general practitioners or GPs) in the form of GP group practices would provide added value for both GPs and patients, especially if this leads to the creation of multi-disciplinary teams in the community. Private GP group practices have been shown to yield excellent results in terms of effectiveness, cost reduction, care continuity, quality and equity, while improving the dissemination of knowledge, cooperation and accountability among the GPs involved. A working group will be

established that will look into incentives and support that could be provided to private GPs to form group practices. This would help to curb the decline in this traditional sector which provides vital support to public-provided community care.

6.2.3. Community services for children and adolescents

A new facility offering holistic and comprehensive healthcare to children and adolescents suffering from chronic conditions that do not require hospital or frequent specialist intervention is under consideration for development, in line with the WHO Pocket Book of Primary Health Care for Children and Adolescents for defining standards for the services to be provided[34]. Clinical conditions that would be reviewed include problems in physical or emotional development, behavioural issues, learning difficulties, chronic illness such as asthma, diabetes, obesity, eating disorders and other conditions that may be better managed in a primary healthcare setting. The services offered through this facility shall fill a present void which currently exists in the care of children and adolescents within the family and the community. This service shall also play a key role in preventing illness, educating adolescents on risky behaviours and providing psychological and mental wellbeing services tailored for these age cohorts.

6.3. Hospitals networked into their communities for the 21st century health

The hospital of the future should meet the most pressing challenges, namely smart integration of technology and the changing demand for healthcare services consequent to an ageing population, an increased onus on personalised care and finite financial and human resources. It will also need to cater for a more knowledgeable and assertive public and patient base.

Increasingly hospitals will move away from their traditional definition as physical buildings (bounded by walls and beds) and should instead see themselves as flexible organizations that pull together scarce resources across organisational boundaries. Health care services should embrace joint responsibility with other care providers for the overall health and well-being of the population they serve. For this to occur, a more effective focus on integrated care pathways is needed[33].

6.3.1. Taking Mater Dei hospital to the next phase

Mater Dei Hospital (MDH) opened its doors in 2007. After more than a decade in use, it is becoming increasingly evident that this hospital requires further expansion to fulfil the needs and demands driven by demographic and epidemiological transition as well as the space requirements fuelled by technological improvements and innovation.

6.3.1.1. Investment in outpatient services to meet changing epidemiological needs

A new outpatient department is being planned on campus to cater for the changing demographics, changing clinical needs and the new treatments that can be administered on an out-patients basis. Processes will also be revised to continue improving efficiency, access, patient safety, patient education, multi-disciplinary teams' involvement and stepped-up use of telemedicine modalities.

6.3.1.2. Increasing capacity for interventions and new technologies

There is an ongoing emphasis to continue increasing the hospital's capacity for tertiary care and the proportion of day care activity. The capacity for intensive level care was greatly enlarged during 2020. The hospital will also embrace new equipment, capabilities and staff particularly in the pathology and medical imaging departments (such as upgrades in the genetic and genomic services in the former and more interventional radiology in the latter). Furthermore, the hospital is gearing up for the use of predictive approaches to healthcare provision with the opportunities emerging from Big Data analysis and Artificial Intelligence.

In 2019, MDH was confirmed as the National Coordination Hub for all the 24 existing European Reference Networks. This development has affirmed the hospital's status on the European stage and will allow direct access for highly specialised expertise at the EU-level to benefit the rare disease communities in Malta and also the healthcare professionals who care for them. Another consideration is to develop a centre of excellence for research at Mater Dei Hospital to enrol into the European University Hospital Alliance, in which nine of the leading European university hospitals are collaborating to improve outcomes of patients.

6.3.1.3. Emergency services

The Admitting and Emergency Department (A&E) at MDH functions as the national major trauma centre in Malta dealing with highly complex and acute conditions. Over the past few years there has been an unprecedented growth in the volume of serious trauma cases admitted to hospital. This increased activity is mainly the result of an increasing incidence in

traffic and workplace (mainly construction industry related) injuries. A&E waiting times are often used as a barometer for overall performance of the national health social care system. The A&E at MDH will work closely with the new A&E units and functions that will be set up in the primary care health hubs, to allow for coordination, facilitation and expansion of more equitably geographically distributed care.

Rapid access to emergency care is essential to continue to improve outcomes. Whilst Malta's size is advantageous in this regard, with relatively easy access for most parts of the island, maintaining timely access for Gozitan and offshore patients is also vital. For this reason, it is important to improve the air transport system between Gozo and offshore sites to Mater Dei Hospital, including the need to locate a new helipad on or close to the campus of the hospital.

6.3.2. Acute mental health hospital

Mental health services have developed considerably during the last decades. The Mental Health Strategy (published in July 2019) provided guidance towards the improvement of service delivery and patient care. The implementation of this strategy aims at improving in-patient and community services with the latter becoming the mainstay of care. The array of services provided would be widened and strengthened through outreach and rehabilitation services. In-patient services will provide quality effective patient-centred multidisciplinary care from the proposed building of a new acute hospital that will be within the proximity of the campus of Mater Dei Hospital, thus reinforcing the principle and need for holistic integrated care. In the meantime, the present mental health hospital (Mount Carmel Hospital) will continue with the planned upgrades to modernise this facility for today's and tomorrow's needs and expectations. The design and implementation of further workplace wellness programmes in all healthcare organizations focusing on the psychological work environment and linking with the health workforce strategy, will be as important.

6.3.3. Oncology services

Cancer is a major cause of morbidity and mortality. The annual mortality rate attributable to cancer in the Maltese Islands has reached 30% of all deaths. Much has been achieved in the last few years in the management and care of cancer patients. The new specialized Sir Anthony Mamo Oncology Centre (SAMOC) with cutting edge diagnostic and treatment modalities, together with a strong investment in human resources, the introduction of seamless cancer care pathways, increasing number of active multi-disciplinary teams and a cadre of nurse navigators for different types of cancer have been game changers in the way we manage cancer patients. Further plans to continue development in this important sector were included in the current National Cancer Plan (2017-2021) and will be further developed in an upcoming Plan, including the introduction of additional services and technological

updates and upgrades (such as within the Departments for Imaging and Pathology within Mater Dei Hospital and the genetic services available in the national health service), increased focus on treatment that can be continued in the patient's home and the preparation for SAMOC to be able to fully assimilate the role of a national Comprehensive Cancer Centre.

6.3.4. Palliative Care services

A Strategy on Palliative Care is currently in an advanced stage of development. This will set out plans to develop integrated, person-centred palliative care services for both adults and children. Palliative care will be provided using a multi-disciplinary approach and will be available to all, regardless of diagnosis, as a part of universal health coverage. This will include education for healthcare professionals and access to essential medicines for pain and other symptoms.

Around 70% of all deaths in Malta take place at Mater Dei Hospital and SAMOC. This trend has increased consistently over the last two decades and can be attributed to reduced levels of informal care and insufficient services available in the community. Changes are also required to the entitlement and access to urgent medicines and equipment required for palliative and end-of-life purposes and care. A new model of government partnership with services offered by a voluntary organisation (in this case Hospice Malta) is being applied in the introduction of a new facility for palliative care services that will provide in-patient services outside the MDH/SAMOC premises.

6.3.5. Gozo

Gozo has also undergone significant change in the past decade. The changing socio-political landscape has placed the health services in Gozo at the forefront for innovation and development. The ageing population, the mobility of its population and its double insularity has placed increasing but particular challenges for the health system. These developments merit a major rethink.

A restructuring programme is ongoing with the purpose of expanding and reconfiguring services to meet the needs of the Gozitan population in the next decade. A new acute care block with 250 beds is being planned and the existing facilities are being upgraded. This will double the current bed space for acute care, incorporating a larger intensive care unit (already expanded in response to the COVID-19 pandemic), a completely new A&E Department, a revamped medical imaging department and a new acute psychiatric unit. Furthermore, around 200 beds are to be devoted to long-term care. This investment follows the financing of new technology in radiology and operating theatres.

As part of Government's ambitions to designate the Gozo General Hospital as a teaching hospital, the Queen Mary, University of London Medical School started operating 3 years ago. The introduction of the new medical school has improved the ability of the hospital in Gozo to attract and retain the services of more specialists from an increasing diversity of disciplines. A new pre-clinical medical school block was constructed in Gozo's capital and there is ongoing investment to expand the teaching and laboratory capacity of the school.

Gozo is also seen as an integral part of the health system for the Islands and has also contributed to allaying the waiting times for several types of procedures where patients in Malta travel to Gozo for elective surgical and other investigative procedures. This also includes participation in the clinical pathways for carrying out investigations as part of Malta's national screening service.

6.3.6. Rehabilitation and transitory post-acute care

Rehabilitation services are an important part of the myriad of services provided to the Maltese population. It includes pre- and post-acute care and also longer term rehabilitative care with the aim to re-integrate patients back into the community. WHO defines this aspect of care as "a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment[35]". To date, the focus was drawn towards the rehabilitation of the elderly, however plans have been in place to extend the concept of rehabilitation to include all areas, including neuro-rehabilitation, cardiac rehabilitation, paediatric rehabilitation, psycho-rehabilitation, orthopaedic and post-trauma rehabilitation as well as geriatric rehabilitation. All the physical and psychological modalities required should be integrated into a specialist rehabilitative facility based at Karin Grech Hospital. This would include the required augmented engagement of the allied health and ancillary services. A solid investment has already occurred in orthotics and prosthetics. Plans are underway to include the addition of new health and social care professionals and an expanded use of assistive technologies aimed at improving an individuals' functioning and independence.

Furthermore, refurbishment of an existing healthcare facility (Sir Paul Boffa Hospital) is ongoing to increase the available capacity for residential services of patients who require transitory post-acute care before they are in a position to be discharged back into the community or transferred to a longer-term care facility. These upgrading works will further help to release beds for acute care at Mater Dei Hospital.

6.3.7. Collaboration with local governments, voluntary organisations, private sector and patient groups

Local government, voluntary organisations and patients' groups are important stakeholders and partners of the national health system. They provide support in the delivery of community services, patient advocacy and individual patient assistance and befriending and in some cases provide specified healthcare services on a contractual basis with government. The role of patient groups in the delivery of health care must be better acknowledged. Their direct participation in policy making at all levels needs to be formalized. Voluntary organisations need to be strengthened through the sustained reinforcement of the backing that they receive from the national health systems so that they will be able to increase and consolidate their participation in both healthcare service provision as well as in the decision-making processes at a national level where their input is invaluable.

6.4. Blood Transfusion, Cell and Tissue Banking Facility

Due to developments in the field of blood, tissues and cells, the services currently available at the National Blood Transfusion Service (NBTS) are not able to adequately meet the clinical demand and new technological advances. A new building is being built to cater for all the transfusion needs of the Maltese population and for new services in Cell and Tissue banking for specific products in Malta. As a result of this investment, stem cell banking for use in stem cell transplantation, HLA typing, tissue banking (bone, cornea, amnion, skin, tendons), adoption of new techniques such as CAR-T production for oncological treatments and self-sufficiency in blood products (including plasma derived products) will be targeted. This will greatly enhance the current array of services provided and enable expansion and quality improvement in various clinical services. It will also allow for limited applied research in cell and tissue banking and use in conjunction with the University of Malta and potentially selected European foreign institutions of excellence.

6.5. Medicines and technology

6.5.1. Pharmacy of Your Choice (POYC)

The present system for the uptake of new medicines and technologies is very slow, long-winded and hampered by persistent restrictions in the funds and resources available. A much more empowered approach is needed across the board: from the point of view of proposal, evaluation, updating of the formulary and service availability and procurement processes.

This requires stronger leadership and devolvement of more effective decision-making functions to the health sector.

6.5.2. Entitlement to Free Medicines

Entitlement to free medicines for chronic conditions is currently dependent on matching referrals with a list of approved conditions and is not connected to metrics such as severity of condition, disease stage, financial burden, or any other measurable indicators. A more equitable access to free medications which is decided on in a more objective and transparent manner needs to be devised. This is another reason why the process of Schedule V entitlement needs to be reviewed, transformed and modernised on a more regular basis. Furthermore, the constantly changing brands and formulations of drugs due to procurement regulations also can also pose substantial patient safety risk and merits continuous processes to assess for and recommend potential mitigating measures.

6.5.3. Procurement, supply and distribution facility and capacity

The Central Procurement and Supplies Unit (CPSU) and the POYC will moved to a single facility that will house both of these important entities within the same building. This will improve the communication and logistics coordination of these two critical functions within the supply chain for medicinals and other goods for the whole national health system.

6.6. International collaboration and connectivity

The leadership of health systems needs to be perceptive and responsive to opportunities and threats that may arise beyond their national or regional boundaries.

Opportunities can arise from international collaboration on a multitude of activities and through dialogue and the exchange of ideas to assist in the successful evolution of their respective delivery systems and organizations. A tangible example is the enrolment of Mater Dei Hospital as the National Coordination Hub for European Reference Networks. Through this development the health system in Malta will be participating within these networks in activities such as clinical guidelines development and clinical research for various groups of rare diseases. The development and implementation of a national strategy to integrate the active participation of the national health system within these networks is required.

Threats may be the result of disruption in the supply chain for medicines and other medical goods, divergent regulatory systems including the recognition of the training programmes

and qualifications of healthcare workers and the increased mobility of healthcare workers from one country to another. These threats may become more prominent when traditional and previously frequently used methods are impacted by political changes such as with developments arising post-Brexit.

Over the next few years, the national health system in Malta will encounter a number of challenges that will need to be addressed. These include:

1) Issues of access and disruption of traditional supply chains that will require the introduction or re-direction of different supply routes for diverse supplies such as medicines, medical devices and healthcare equipment their consumables

2) Regulatory issues arising from divergencies with EU Regulations and Directives for supplies sourced or arriving from outside the EU

3) Issues arising with the recognition of training and qualifications obtained from countries outside the EU. Work will need to be conducted to seek and establish new and alternative sites for specialist training and fellowships that are not available in Malta and to augment participation in EU-based examinations and qualification systems

4) Identified needs that will require the development and conduction of programmes for the training and re-training of local clinicians arising from different approaches to care guidelines and pathways and prescription practices applied in other EU Member States

5) Identification of alternative reference centers in other EU Members States for the transfer of patients requiring highly specialized diagnostic and treatment services that are not available or feasible in Malta.

6.7. Health emergencies

The COVID crisis highlighted, ever more, the need to prepare adequately for various kinds of national and health emergencies. Whilst Malta had a pandemic and major incident plan already in place, once Covid struct, new plans had to be devised to deal with the unpredictable nature of the pandemic. WHO has advocated for the creation of a national Resource Control Centre (RCC) to deal with national emergencies and major incidents, looking at logistics, emergency transportation and pathways for urgent care, real time data collection about acute care, ICU capacity, emergency departments and operating theatres. Specialized critical care centres would link with the resource control centre to improve access of patients requiring time-sensitive interventions

In practice, the RCC will coordinate urgent care resources in the pathway, bed-management

for urgent care cases and inter-hospital transfers. It will ensure that people will have access to critical care centres (STEMI: Stroke, Major trauma) with a “retrieval service” mobile team that can support transfer of critically ill or injured patients. Regional critical care centres will be linked to a Resource Control Centre which will have the role of routing patients to them, as well as managing resources across critical care centres to cope with patient demand. This would ensure rapid management for patients in need of interventional radiology, interventional cardiology, stroke, oncology and major trauma services.

Chapter 7: Strengthening and supporting our Health Workforce

Health systems can only function well when they are resourced with the right number of health professionals that are equipped with the right skills.

The health sector is one of the largest employers in Malta. In addition to a huge diversity of professional healthcare backgrounds, the public health service engages staff trained and specializing in other professional disciplines such as engineering, finance, management and ICT specialists and various categories of support staff ranging from clerical workers to security and auxiliary staff. More than half of the full complement of workers in the public health sector provide their services in the major acute general public and teaching hospital for Malta, namely Mater Dei Hospital (MDH). Several professionals are also either engaged with the private sector or in self-employment on a full-time or a part-time basis. Furthermore, a considerable number of nurses employed in the public sector provide services in the private sector, whilst substantial cohorts of the medical practitioners and allied healthcare professionals employed by the public healthcare system also work in the private sector, most frequently on a fee-for-service basis.

The Ministry responsible for Health is embarking on the implementation of a Health Work Force Strategy (HWFS). This strategy will be implemented from 2022 to 2030 and aims at supporting and empowering the health work force. The new HWFS mirrors, expands on and facilitates the successful implementation of the horizontal theme on supporting the health workforce of the NHSS. The HWFS sets out the overarching priorities and plans for building the future health workforce for the Maltese Public Health Service. It offers a strategic pathway for building the system necessary to support, strengthen and enable our workforce to deliver sustainable, person-centred health services into the future.

The need to map health and long-term care needs, including human resource (HR) needs, is also one of the conditionalities Malta must fulfil in order to be able to access European Social Funds (ESF+) in the future. The Ministry for Health is collaborating with the World Health Organisation to develop a tool which will assist with compiling short and long-term HR Plans. In collaboration with the main stakeholders including the respective Chief Executive Officers, HR managers, educational institutions and trade unions, amongst others, this tool will serve to introduce a more robust methodology resulting in an enhanced evidence-based HR planning system.

Training for key stakeholders in the mechanisms applicable to the health workforce needs such as forecasting and planning, will be provided, keeping the small state and open economy perspective broadly in mind. It is envisaged that health workforce planning and forecasting will no longer be an annual paper exercise but rather an ongoing process. Moreover, a robust data management system will ensure that easily accessible data is available to facilitate data collection required for these ongoing functions for planning and forecasting.

The HWFS outlines benchmarks for the resources required to sustain the current services offered. This work will determine those areas in the health system where there are lacunae in both resources and skill matching. In areas where the demand is higher than the supply, the Ministry will actively engage with educational institutions both locally and abroad to sustain the required skills, knowledge and competencies to maintain a robust national health system and healthcare service provision. This is even more pertinent given that Malta is fast becoming a 'transit country' for some categories of healthcare workers moving between countries. Thus, better strategies are required to attract, integrate and retain a multi-cultural health workforce of Maltese and foreign health care workers. The COVID-19 experience highlighted the need for a service which is more targeted towards healthcare professionals who face challenges which differ from those in other categories. This includes more emphasis on the physical and psychological well-being of health care employees.

The HWFS acknowledges that it is essential to integrate research as one of the main functions of the People Management Division. This will ensure that the necessary research is carried out with the aim of having robust evidence to allow for a better ability to anticipate trends, respond to organisational and clients' needs and provide an optimum service.

The development of the HWFS Strategy will also consider setting plans and measures to address challenges presented by the following emerging issues:

- Changing trends in local demographics
- Challenges related to a multi-cultural workforce and an increased dependency on foreign healthcare workers
- Adapting to diversity - patients from different cultural backgrounds
- Loss of skills of workforce due to limited exposure to clinical cases (especially for rarer conditions)
- More females within the workforce
- Changing dynamics of the workforce
- Digitally enhanced healthcare services
- Employee mental wellbeing
- Research and innovation in HR management
- Increase effectiveness and efficiency - Support staff
- Improving integration of the education and healthcare sectors
- Supporting innovative ways of working

Providing a National Health Service is complex, and its workforce is increasingly more diverse. The HWFS has identified actions that depend on multiple stakeholders for successful implementation and outcomes. The priorities outlined in the strategy represent significant changes and implementation will need to be tactful, progressive, collaborative and most of all strategically based on sought and collected evidence to ensure the least possible disturbance to the health system.

Chapter 8: Incorporating Digital Health into Innovation, Technology and Research for Better Health

There has never been a more pressing, and exciting, time for health to embrace and harness innovation and new technologies than now. COVID-19 has spurred the need to adopt new processes, new methodologies, new outlooks, and new ways of thinking and acting. It has created the need to extend our flexibility and versatility to the maximum and in so doing, health has become one of the most enterprising and resourceful sectors. COVID-19 has amply demonstrated that health systems need to respond to the changing environment in which they operate and to be well positioned to obtain and expand on the benefits arising from the opportunities associated with new technologies and new paradigms.

8.1. Our vision – enhancing efficiency, sustainability and affordability of the health system

Following on Malta's first National Health System Strategy, where one of the Strategic Directions was improving management and efficiency of services through research and innovation, the vision of the Ministry is to harness the benefits of scientific innovation and research through the adoption of and exploration for new and emerging knowledge and technologies that can enhance population wellbeing, improve health service efficiencies and bring new economic opportunities for our communities and country, leading to better sustainability and affordability in the longer term. This will be achieved through a number of measures as will be highlighted further below.

The adopted approach for health innovation in the overall context of the National Health Strategy 2020-2030 is for an all-inclusive strategy that builds on the precept of 'integrated innovation' as an adjunct to health innovation, where health is intimately intertwined with scientific/technological innovation, social innovation and business innovation. COVID-19 has amply demonstrated how these synergies can work to develop new ways of working, new technology and innovative practices. Major dependencies have emerged or have become more pronounced between health and many other sectors, and this overlap needs to be managed well, as depicted in the illustration below.

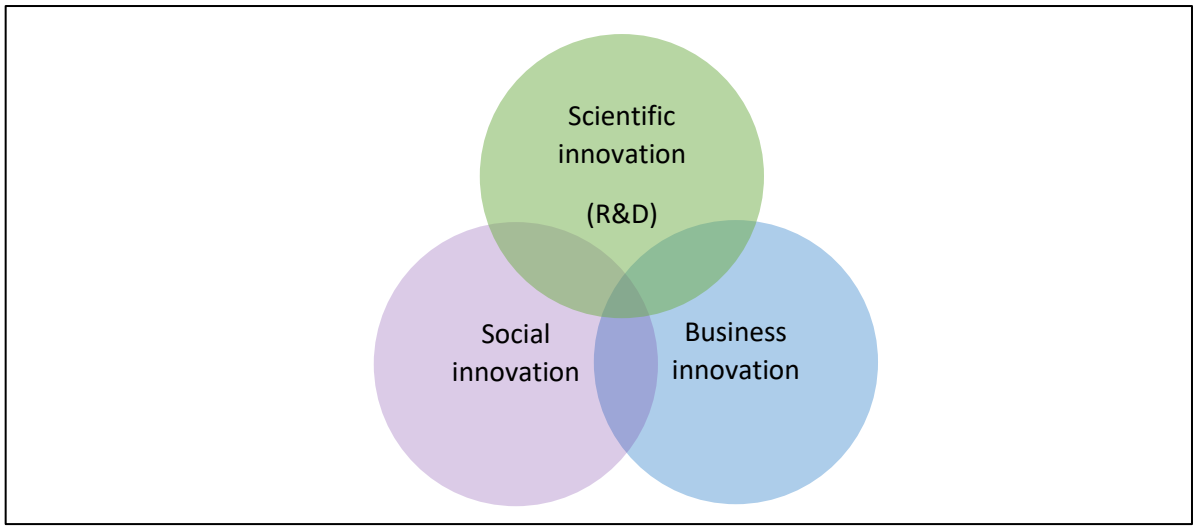


Figure 13: Models of Innovation

Furthermore, some of the principles and processes that need to be upheld in the policy development and implementation of innovation in any of the above three sectors can be identical or very similar and frequently inter-dependent. The following illustration[1] portrays important processes such as adoption, implementation, sustaining, spreading or diffusion, dissemination and scale-up and attendant factors that need to be considered in the planning for and implementation of any health innovation initiative.

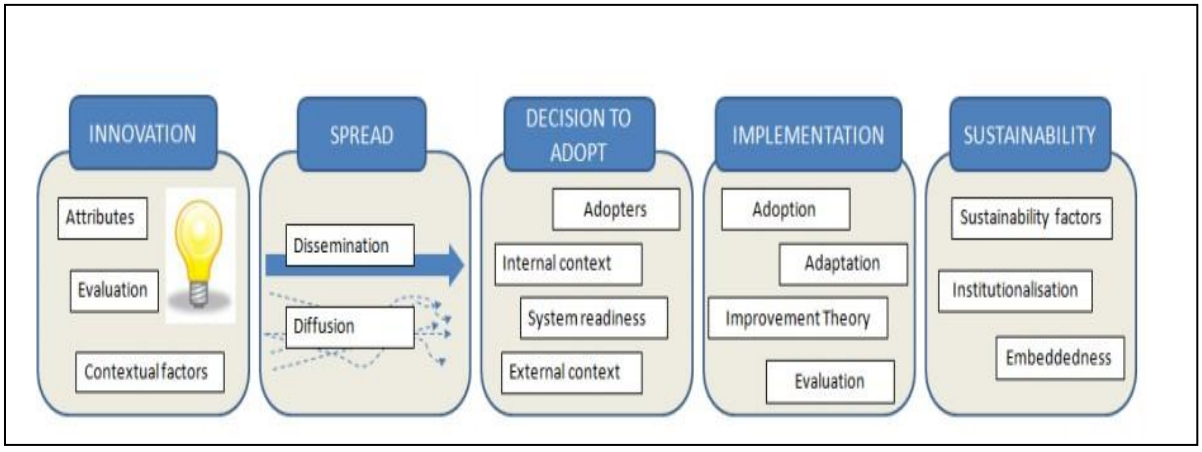


Figure 14: Steps in Innovation

Our drive for scientific and technological innovations in health are based on the WHO's priorities as set out by the WHO Health Innovation Group and that were elaborated in a number of objectives for innovation in health[36], including:

- developing and delivering new or improved health policies, systems, products and technologies, and services and delivery methods that improve people's health
- responding to unmet needs by employing new ways of thinking and working with a special focus on the needs of vulnerable populations
- adding value in the form of improved efficiency, effectiveness, quality, safety and/or affordability
- providing novel opportunities across all health field: health prevention and promotion and therapeutic, rehabilitative and/or assistive care
- attaining universal health coverage and the Sustainable Development Goals[37].

The above objectives are perfectly aligned to Malta's health strategy and so could easily be adopted as a framework in our efforts to innovate. On the other hand, business innovation is critical for finding and scaling up financially sustainable solutions and may involve initiatives that aim at addressing market failures of various kinds whilst building new and synergistic partnerships that employ open access policies. Finally, social innovation seeks 'new answers to social problems' through the identification and delivery of new services that improve the quality of life of individuals and communities and the implementation of new labour market integration processes, competencies, jobs and forms of participation with the aim of improving the position of individuals in the workforce[38].

The deployment of effective innovative technologies will provide the drive for greater efficiency, productivity and cost control, in line with the European Commission and the Economic Policy Committee which identified certain structural reforms and efficiency gains to improve the sustainability of our health system, as well as identifying more cost-effective provision and use of health services. This will include using technological advances such as health technology assessment for a more cost-effective use of medicines.

Improving financial control within organisations will be enhanced by introducing digital technologies in billing information, cost control, scheduling and delivery systems. The public procurements system will also adopt more advanced technologies to reduce the length and complexity of these processes.

8.2. Digital Health

Malta's Digital Health Strategic Roadmap will be setting the direction for the further application of digital technologies across the national healthcare ecosystem for the years up to 2030. This roadmap is an enabler for further investment in digital health as established by the National Health Strategy 2023-2030 and aligns with other policy documents such as the National Digital Strategy.

The Digital Health Strategic Roadmap shall be addressing the needs of citizens, patients, and health professionals; it pursues the critical objective of further enabling patient-centred care with a particular focus in achieving tight system integration and continuity of care across the whole healthcare ecosystem; it looks at public health needs and the way in which anonymised data may be used to achieve advances in medicine and healthcare; it defines the essential ingredients for interoperability between healthcare IT systems; it describes essential governance structures and important enablers for successful digital transformation; and it presents the opportunities that digital health provides for radical innovation of healthcare.

8.2.1. Digital Health Services for Citizens and Patients

(a) Development of new Integrated Digital Health Streams

- Information Technology is an essential tool in the delivery of Health Care Services across the National Health System (NHS). Health Information Systems such as the Master Patient Index, Patient Administration Management System, Laboratory Information System, Radiology Information System, Picture Archiving and Communication System, Health Data Exchange Engine, and Electronic Patient Records, amongst others are core to the provision of digital health care services, especially within clinical settings. Other Information Systems of administrative nature are equally important to support the operational needs of the National Health System. Whilst acknowledging the scale and complexity of such systems, technology advancement establishes an urgent need to review and plan new digital pathways for renewed solutions towards more advanced technology with enhanced functionality that meet current and future needs. A renewed focus on digitalisation across the Health Sector, built on the results of the e-Health infrastructure implemented in recent years is critical to establish several Digital Health Streams sustained by proper governance structures, secure infrastructure, and support systems.

- The national patient portal, ***myHealth***, provides citizens and patients with secure online access to their personal health data. The usage of the *myHealth* portal tripled during the COVID pandemic; research indicates that citizens are keen to increase their online engagement with the health services through this portal and wish it to evolve into a single and comprehensive patient-centric portal for all online interaction with health services.

The Digital Health Strategic Roadmap will address the continuing development of the portal, as it evolves into user interface layer of the National Electronic Health Records (NEHR) platform. Integration will be established with a large set of data sources. A Personal Health Records component will be implemented, allowing users to upload copies of their medical records and to contribute with their own data. Access will be enabled for all citizens (including children, elderly and disabled) through enhancement of the existing proxy facilities, in line with a key Europe Digital Decade target for 2030[39]. The consent model within *myHealth* will be widened to include health professionals other than doctors, and the ability to allow access to a wider range of healthcare providers. Users will also be given the facility to monitor who is contributing to their medical records.

- The Digital Health Strategic Roadmap will seek to expand existing **ePrescription services** to the national level. The use of computer-generated prescriptions within the Pharmacy of your Choice scheme has been long established, and the system became paperless during the COVID pandemic. After consultation with stakeholders in pharmacy services, these services will be widened to encompass all prescriptions, including those generated at the point of hospital discharge and those issued by private providers in the community and dispensed at retail pharmacies. The establishment of a national ePrescribing and eDispensing platform with access to a national catalogue of medical products will be an important step forward in the digitalisation of the healthcare ecosystem.

(b) **Telemedicine services** in Malta developed rapidly during the COVID pandemic. A Primary HealthCare Telemedicine Centre was set up, staffed by family doctors and specialist trainees. Virtual medical consultations became the everyday norm, mediated by a responsive Client Support Centre. These services will be sustained and enhanced in the coming years through a suite of digital services as an essential component of primary care services. The delivery of telemedicine services will be regulated through specific legislation.

(c) The **Remote Patient Monitoring** programme piloted during the past years will be expanded further. The experienced gained from this programme will support the development of wider services for close monitoring of patients in the community, both by family doctors and by hospital specialists, using remote sensing devices, wearables, trackers, and other home-based measuring equipment. These are of particular benefit to elderly persons and those with mobility impairment, who often find it difficult and tiring to attend hospital-based outpatient consultations. In addition, remote sensing devices can also be used to advance research and prevention of healthcare to help in lowering cases of obesity and better management of chronic health conditions such as diabetes, amongst others. Application of Internet of Things technologies to such use cases promises to make a real difference in the lives of people.

8.2.2. Digital Health Services for Health Professionals

(a) It is envisaged that all health professionals in Government health services will have access to fully-fledged **Electronic Patient Records (EPR)** functionality that matches the professionals' specialty, allowing them to keep detailed clinical records securely and in a way that is interoperable with the National Electronic Health Records platform. Such functionality has already been implemented in Primary HealthCare and at SAMOC. The aim is to ensure that all Government hospitals will transition into the use of Electronic Patient Records covering all medical specialties, including mental health and rehabilitation medicine.

(b) A consistent **automation process management platform** will be implemented to improve access for health professionals in both public and private sectors to services outside their own healthcare provider organisation, such as investigation requests and specialist referrals.

(c) Doctors and other health professionals, such as pharmacists, will be given access to a **Clinical Portal** that will, after checking their identity, level of authorisation, and professional relationship with patients, provide access to the National Electronic Health Records platform, both to view existing data about their patients and to add new records about them.

8.2.3. Digital Health Services for Continuity of Care

(a) The **National Electronic Health Records (NEHR) platform** has been designed to exchange data with all health service providers, public and private, and collect essential personal health data in a single data repository, ensuring that continuity of care can be provided to Maltese citizens and residents, whichever healthcare provider they encounter. The core data categories of NEHRs are Allergies & Alerts, Health Conditions, Procedures, Medications, Lab Results, Medical Image Reports, and Vaccinations. The Digital Health Strategic Roadmap will focus on migrating existing data repositories to the NEHR platform and enabling standards-based two-way exchange of data with various EPR systems in both primary care (Health Centres and private family doctors) and secondary care (public and private hospitals).

(b) Comprehensive and consistent identity provision for all Maltese residents and visitors using health services will be a crucial element for the success of linkage of health records through the NEHR platform and hence the achievement of greater continuity, quality, and efficiency of healthcare across the Maltese health ecosystem. Important lessons

were learnt during the COVID pandemic about the importance of efficiently identifying every single person who comes in contact with health services, even if briefly. The practical implementation of the Government's Person Register and the emergence of new electronic forms of national and cross-border identification, authentication and authorisation created the opportunity for the development of an Enterprise **Master Patient Index** for efficient yet secure management of person demographics and contact details in the context of health service delivery. The development of a standalone, central **Enterprise Patient Health Index (EMPI)** is critical to ensure consistency and accuracy of the information on patients, including demographic data registered across the National Health System. EMPI integrates with all the administrative and health information systems to aggregate patient data and applies the 'once only' principle for data to be updated across the NHS only once. The EMPI must ensure data integrity, security, and reliability across the NHS.

(c) Malta was one of the first EU countries to successfully implement **cross-border eHealth services**, in 2019. The myHealth@EU[40] services aim to support continuity of care when Maltese (and other EU) citizens travel in EU countries. If the need for healthcare arises while the traveller is in another EU country, health professionals in that country can retrieve essential health data from the Maltese digital health infrastructure. So far, the exchange of Patient Summaries has been implemented. The Digital Health Strategic Roadmap will aim for implementation of the following exchanges: Original Clinical Documents; ePrescriptions; Hospital Discharge Reports; Laboratory Test Results; Medical Imaging Reports; and upscaling of the Patient Summary to fully cover Rare Diseases. Malta will be an active participant in the EU4Health programme[41].

(d) Malta will continue and further its participation in **European Reference Networks**[42]. These have progressed well and have proven to be important for cross-border exchange of health data, with centres of clinical excellence, on specific patients, such as those affected by rare diseases.

(e) The **Health Data Exchange** is the technical platform that ensures that personal health data repositories in different EPR systems can be effectively exchanged. Many bilateral data exchanges already take place between pairs of systems. Two-way exchange of data with the NEHR platform will reduce the number of interfaces required and achieve greater consistency, as well as increased efficiency in the process of presenting personal health data to patients and health professionals according to healthcare needs.

8.2.4. Digital Health for Public Health

(a) Traditionally, public health **registries** have focussed on collecting data on incidence and prevalence of specific diseases and health conditions, using a range of data sources. It is envisaged that the scope of registries will be widened to encompass other elements of healthcare, such as risk factors, procedures, treatments, and medical devices, taking advantage of the new technical facilities related to the Geographic Information System Mapping, Health Data Exchange and the NEHR platform. In addition, concepts such as anonymised Open Data Sets will be further explored.

(b) Anonymised personal health data has important uses in statistics, epidemiology, health service management, population-based health research, and health economics. The European Health Data Space (EHDS) Regulation proposal[43] envisages the creation of a **national health data access body** to act as an intermediary between data holders and data users; the Digital Health Strategic Roadmap will look at creating the secure data processing environment that will be needed for efficient, effective and secure secondary use of personal health data at both national and EU levels, working in close co-operation with other EU Member States.

8.2.5. Digital Health Interoperability and Security of Data

(a) The Digital Health Strategic Roadmap will define important **interoperability standards** for health data storage and messaging. These include use of the SNOMED CT clinical terminology[44], use of HL7 standards for data messaging[45], and the implementation of Integrating the Healthcare Enterprise® (IHE) profiles to ensure interoperability between health IT systems[46]. The NEHR platform makes use of OpenEHR archetypes[47].

(b) The Digital Health Strategic Roadmap will encourage the development of a **corporate health data architecture** to achieve greater efficiency in the exchange of data between different clinical and administrative IT systems across the healthcare sector.

(c) At the technical level, it is envisaged that an **integrated IT system architecture** will span across the whole of the Government health service. This will bring together many of the interfacing and interoperability elements that have already been described above. A standard three-tier approach is envisaged, with presentation, business logic and data layers.

(d) The Digital Health Strategic Roadmap will also establish a framework of security prevention, detection, and response on all the Health Information Systems within the different Digital Health Streams to ensure that patient data is captured, processed, and stored securely in line with the GMICT policies and other relevant policies established in this domain.

8.2.6. Digital Health Governance

(a) An essential element of the Digital Health Strategic Roadmap will be the establishment of the **governing bodies** needed to ensure its implementation. A high-level **Digital Health Steering Committee** will be established to oversee the digital health strategy and policy, take major decisions on financing, and enforce standards. A Data Governance Board will be entrusted with policy making and governance of corporate systems that enable sharing of personal health data, such as the NEHR platform, as well as consider data quality issues. A **national digital health authority** will be designated by virtue of the EHDS Regulation[43]. Other groups of a more technical or clinical nature will be established to manage the implementation of the information systems envisaged by the Strategy.

(b) A **Digital Health Forum** is to be set up to encourage interaction among Government, citizens, patients, health professionals and other stakeholders. The Forum will consider digital health in general as well as specific digital health services. This is in addition to continued wide-ranging consultation with key stakeholders, including private service providers and professional unions before the implementation of major digital health systems.

(c) A **Digital Health Laboratory** will be setup to establish collaboration amongst the Private, Public, Non-Governmental Organisation and Academica to collaborate on innovative ideas in the early stages and pave way for the development of such solutions. A sandbox environment will be set up to serve as a safe space to test and learn more about new technologies within a mirrored, real-life environment.

8.2.7. Digital Health Enablers

(a) A robust **legal framework** is one of the principal enablers for successful delivery of the Digital Health Strategic Roadmap. The proposed **National Electronic Health Record Regulations** within the Public Health Care Act will provide the legal basis for the two-way flow of personal health data between the NEHR platform and all its users, especially

those in the private sector. The EU's proposed **European Health Data Space Regulation**, which will apply directly to Malta without any transposition into national law, will have a profound impact on the further development of digital health services in Malta, as well as across the rest of the European Union, in respect of both primary and secondary use of health data. Consideration will be given to whether these legal instruments should be supplemented by a national **Digital Health Act**, which would regulate specific aspects of digital health service delivery, such as telemedicine services. Other relevant EU law, such as the General Data Protection Regulation and the Network and Information Security (NIS) Directive will continue to influence the development and running of digital health services.

(b) The successful uptake of digital health services depends on the **digital health literacy** of the citizens and health professionals. The roadmap will promote intersectoral collaboration between the Ministries responsible for health and education and the tertiary educational establishments in Malta. The aim is to improve both the digital literacy and the health literacy of all citizens, in support of greater citizen engagement and patient self-management through enhanced use of digital technologies, as well as to improve the digital skills of all health professionals.

(c) The development of highly skilled **digital health professionals** is another challenge to be considered by the Digital Health Strategic Roadmap. Academia has a leading role to play in this sphere; the challenge has already started to be addressed by the University of Malta through its Master of Science Digital Health programme[48]. A role must be established within the Information Management Unit to engage Consultants with experience, knowledge, and interest in Digital Health Strategic and Operational Development. Such a role will assist the Chief Information Officer to further advance and accelerate digitalisation across the National Health System.

(d) The digital facilities available require constant upgrading and expansion to be able to accommodate the increasing digitalisation planned and required in several areas and especially those that are promoted for implementation by the different strategies connected or emanating from the NHSS.

8.2.8. Digital Health for Innovation

(a) Evidence shows that **Artificial Intelligence (AI)** improves the care of patients, from enhanced diagnostics and care planning, through to patient safety and risk management. It is anticipated that AI will feature prominently in many aspects of medical care and is the basis of increasing investment opportunities by many companies and governments.

AI uses the aggregated data collected from data stores across the healthcare ecosystem to automate clinical and biomedical processes and to tailor make treatments and automate diagnosis with increasing precision[49]. In Malta, the first applications of AI are envisaged to be in medical imaging, to detect and grade lesions, and in the analysis of symptom data to identify possible diagnoses and offer triage information to guide patients to the most appropriate clinical pathway.

(b) Malta is already at the forefront of AI developments, having been ranked 32nd in the Global AI Index[50]. This ranking is based on the extent of investment, innovation and implementation of digital technologies across different sectors, including health. This is, in part, the result of the launch of Malta's AI Strategy in October 2019[51], which also places a special focus on health. This strategy contends that "*The increased availability of data and recent advancements in AI could present unprecedented opportunities in healthcare which create value for citizens, providers and regulators*". It continues to claim that AI and its related disciplines such as "deep learning" and Predictive Analysis would transform medicine and provide the basis to improve care, gain greater efficiencies and improve performance across the board.

(c) The national AI Strategy states that it seeks to prevent disease, optimise care for persons with chronic diseases and develop and apply precision therapies for complex illnesses. AI, like many other aspects of digital health, is intimately linked to a more radical innovative approach, whilst providing a paradigm shift towards greater value for care[52].

(d) **Robotics** is an important growth area in innovative digital health. Applications of robotics, such as robotic surgery for some specialties and robotic dispensing of drugs at hospital, have already been launched. The existing services will be reviewed and a plan for their further development will be drawn up.

(e) **Predictive analytics** in healthcare uses historical data to generate predictive models into the future, personalising care to every individual. It is the prelude to widening the scope of personalised medicine and makes use of data mining, machine learning and Big Data analysis and AI. Predictive Analysis also assists in predicting early signs of patient deterioration, develops early warning systems using AI, prevents inappropriate hospital admissions, generates hospital scheduling systems and assists in maintaining equipment through automated preventative maintenance programmes. As an example, the University of Chicago Medical Center (UCMC) used real-time data to solve operating room delays that affected staff, patients and families[53]. Malta is well placed to attract players developing tools in this regard, given its centralised healthcare system and consequent high population cover for health care records and registries, which are already coded in English.

(f) The field of **genomics** has progressed steadily in recent years. Genomic data is of increasing clinical relevance. The Digital Health Strategic Roadmap will pursue collaboration between Government and University with a view of connecting genomic data and electronic patient records, in order to attract international players in the field of precision medicine, including tailored treatment and safer prescribing.

8.3. Research as a means to innovate and improve outcomes and performance

Renewed emphasis needs to be placed on the creation of a research infrastructure to allow increased access to and support for the uptake of research opportunities by various sectors of the health system. Coupling research activities with the provision of healthcare services improves standards of care and enhances the overall performance of the health system. It also draws the interest of high-level expertise within a health system and encourages the engagement and retention of top professionals. The emergence of digital technologies, including the use of big data and AI, as well as the development of genomics and bioinformatics will spur additional research interests and opportunities, both within the health service and in academia. Better health outcomes and improved quality of care would result from these endeavours and health professionals would be spurred on to achieve better outcomes for our patients and population. Malta is well positioned to take advantage of these developments and take a lead in innovation and health system research.

The illustration below (Figure 15) portrays how the innovation and research objectives can be integrated.

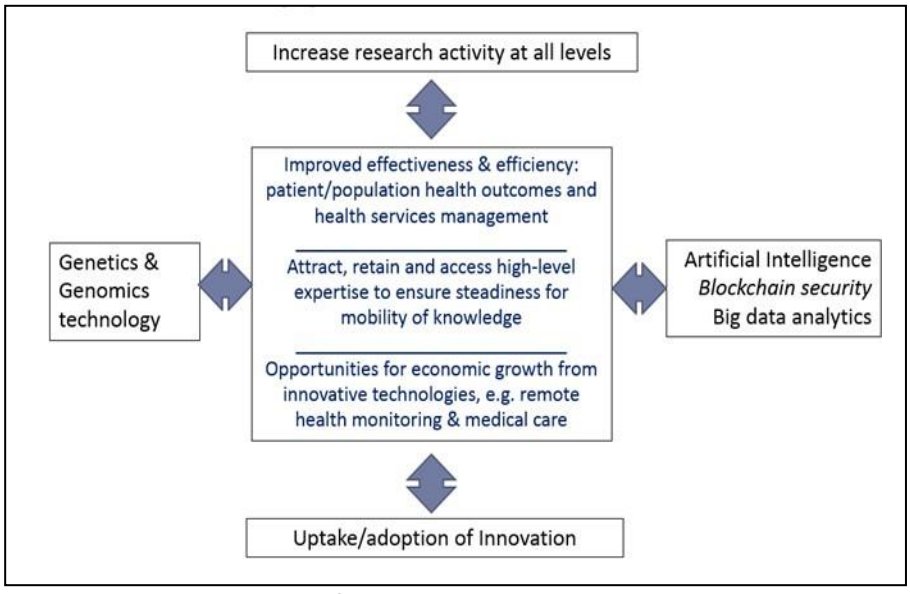


Figure 15: Integration of Innovation and Research Objectives

8.4. Research and the workforce

Proper research depends on a workforce that is both well trained and well-positioned to carry out research activities that can range widely in terms of scope, for example clinical research, clinical audit, public health research and evaluation of current services. The health workforce in Malta is highly professional with the majority of healthcare workers possessing graduate and post-graduate qualifications. Hence there is no lack of expertise within the overall health community. However, as of late, there have been only a few initiatives and incentives to encourage healthcare professionals to engage in research and more so to link their research activities and findings with health service and system improvements. Therefore, apart from having a trained, updated and 'mobile' health work force, the health leadership needs also to take responsibility for effective knowledge management to support innovation and change within the workplace. This could be achieved by developing, fostering and facilitating a learning environment in which the workforce is given every encouragement to learn continuously, by understanding and harnessing the enablers of change through the creation of a culture of innovation, and empowering the workforce to lead on such initiatives and projects.

> *"Healthcare organisations will need to develop a learning environment in which the workforce is given every encouragement to learn continuously. We must better understand the enablers of change and create a culture of innovation, prioritising people, developing an agile and empowered workforce, as well as digitally capable leadership, and effective governance processes to facilitate the introduction of the new technologies, supported by long-term investment."*[54]

8.5. Knowledge transfer and integration of research into clinical practice

Knowledge Transfer (KT) can be defined as a process by which relevant research information is made available and accessible for practice, planning, and policymaking through interactive engagement with audiences. The EU Council of Health Ministers acknowledged the importance of knowledge transfer in specific policy areas and advocated for the generation of new methods, tools and practices to embed research into the European policy cycle[55]. It is increasingly acknowledged that knowledge transfer of research findings and aligning the use of research knowledge with clinical practice are critical elements in improving healthcare delivery.

Knowledge transfer facilitates the integration of research into clinical practice. There is ample evidence to show how research can be successfully integrated into improvements and

changes in medical practice, leading to improved health outcomes[56–58]. Apart from a fresh injection of funding through research grants and other means, this can be achieved through a number of proposals such as mapping of and consolidating existing research initiatives, identification and prioritisation of research needs and gaps, developing career pathways to bridge the clinical and research fields, and review of job and performance plans to facilitate, encourage, and acknowledge research activities.

8.6. How will this vision be implemented?

Several initiatives, programmes and projects could be undertaken to implement the vision delineated in this section. Whilst some are already ongoing implementation, others are still in the planning stage.

The first step that needs to be taken is the creation of a structure that provides governance and promotes, supports, and coordinates research opportunities and activities across all levels. Apart from research carried out through academic institutions, Malta is one of the few nations that does not have a dedicated entity to spearhead and coordinate public health and clinical research. Such an entity can take the form of a **research institute** under the auspices of the Ministry for Health, with links and funding from several funding, social, and business bodies, both locally and abroad. This will also create opportunities for economic growth from entrepreneurship ventures with the healthcare services, e.g. the testing of novel technologies and digital transformation ventures in Malta and/or by the national health system.

Defined and structured **career pathways** need to be created for all health professionals to seek alternative options for career progression than purely those existing today in clinical and public health disciples. These can follow alternate specialist routes and be organized and coordinated through existing specialist training programmes. Job plans for clinical professionals may also be reconfigured to allow and acknowledge appropriate dedicated time for research activities during office hours.

Organisational **protocols and policies** need to be established for the recruitment of patients and other persons in clinical research at both the local and international level through the development of an enabling environment for the involved stakeholders including the patients, the healthcare workforce and the healthcare facilities.

Links with industry and business players need to be established through transparent and open mechanisms. Research into safeguarding the sustainability and efficiency of the health system through emerging opportunities and potential stemming from innovation and research could be implemented through such alliances.

Utilisation of digital health solutions to improve the management of chronic diseases, strengthen effective prevention, health promotion and screening practices and fast-track early diagnosis.

To improve the diagnosis and management of rare diseases through *inter alia* facilitation of communication and exchange of expertise with relevant reference centres, laboratories and networks, increasing the frequency and regularity of opportunities for exposure to cross-border and international high-level expertise and ensuring steady and safeguarded channels for mobility of knowledge.

To inspire, prepare and empower the healthcare workforce to evolve, develop and absorb the skills, attitudes and behaviours that individuals require to become competent in and confident with fast progressing domains such as genetics and genomics and technologies such as digital medicine, AI and blockchain in health systems.

Consolidation, possibly under one umbrella, of existing research programmes such as Cancer Research Foundation, ALIVE Charity Foundation, research programmes and projects the University of Malta and other research agencies. This could also lead to the creation of a Research Passport scheme, such as that in the UK NHS, where non-NHS researchers would be able to gain access and conduct research within Government and other state environments.

Chapter 9: Lessons learnt from COVID-19, its impact and the aftermath

This strategy is formulated within the context of an ongoing pandemic. COVID-19 has transformed the health system landscape and healthcare would not be the same in the aftermath of this global phenomenon. Many lessons have been learnt and it would be incumbent of those responsible for health services planning and policy to take heed of this experience.

9.1. Lessons learnt

Reserve capacity and flexibility in a health system was key in ensuring an adequate and robust response to the pandemic. This included the ability to gear up rapidly to face the challenges, to adapt quickly and innovate continuously. Whilst small incremental improvements were the mainstay of health systems pre-COVID, rapid transformations and innovative approaches were required during the pandemic. Evidence-based research has shown that those countries which were able to adapt quickly and meet the rapidly changing demands that COVID-19 brought about, were more successful in not only dealing with the immediacy of COVID-19, but also in harnessing the required resources to overcome the longer-term impacts of the pandemic[59]. This included the re-positioning and re-structuring of hospital services, re-skilling of the workforce on a mammoth scale, shifting of services across sectors, the introduction of new and pioneering processes and procedures, rapid increase in the digitalization of care and communications, and breaking down the barriers and traditional silos between healthcare providers. Another innovative initiative driven partly by Malta was the establishment of joint procurement processes for the diagnostic/screening tests, medical equipment, and consumables and vaccines. COVID-19 has shown that this new method of procurement will soon become mainstream for a wider diversity of items.

Adequate responses to the onslaught of COVID-19 also required the re-positioning of primary care and public health as the bulwarks of community defences. It also highlighted the absolute need to integrate the care between acute hospital services, primary and community care and long-term care for the elderly[60]. The connection between health and many other sectors was also indispensable in offering adequate services to large swaths of the population. This including close collaborations with social care, addictive services, housing, education and schooling, the business community, tourism, airports, and many other sectors. Suddenly, as if by design, health and public health in particular, was hurled into the centre of all considerations. It was the fulfilment of the maxim of 'health in all policies' long advocated by proponents of public health. Whether health will be able to sustain this advantage and fulfil its obligations towards society is yet to be seen.

9.2. Impact of COVID-19

COVID-19 has undoubtedly had a massive impact upon the health, economy and social fabric of the nation[61]. Apart from its immediate devastation on many of its victims and their families, the pandemic has had collateral effects upon other aspects of health and healthcare services. In many countries, several services had to be curtailed, many postponed and access to much needed care was sometimes absent. Malta had also to face these challenges, although certainly not to the extent of other harder hit countries. There is an accelerated demand for many services post-COVID, to keep up with postponed demand and increased need. This is especially relevant in the primary and secondary prevention of chronic disease patients as well as treating the complications that arise thereon. Many countries are now starting to experience the consequences of delayed diagnosis and hence treatment of important diseases, including cancer and cardiovascular diseases. A surge in mental health problems and illnesses is also starting to be experienced, and mental health services would need to gear up to face this onslaught over the next few years[62].

COVID-19 has continued to accentuate health inequalities, with certain strata of society being harder hit[24]. These inequalities have been amplified even more by COVID-19, and it would be important to gauge whether this were also true in Malta. The EU funded project on social determinants of health would need to be re-scoped to assess this properly. Many countries would certainly also face difficulty in meeting their Sustainable Development Goals (SDGs) objectives and milestones.

The extent of the 'damage' caused, and the costs and resources required to reverse and address the setbacks resulting from all the issues mentioned above needs to be studied and determined for Malta so that the appropriate strategies are planned and implemented.

9.3. Aftermath of COVID-19

The COVID-19 pandemic has managed to 'unmask' gaps and shortcomings in the service and magnify several inefficiencies within the health system to an unprecedented degree. This became evident after many services were re-configured or downscaled to adapt to the added strain caused by COVID-19. Whilst it is too early to fully grasp the impact of these findings, the new methods and processes that were adopted in caring for our patients allowed for greater efficiency in the use of our resources, better use of our time, and more effective means to care for those in need. Telemedicine and teleconsultations, digital prescriptions, increased discharge of patients from the hospital out-patients to the community, increasing access to specialist services in primary care, reconfiguration of the POYC protocols, less prescriptions, are but a few examples of how Malta's health services adapted to the changing landscape caused by COVID-19. Many of these practices and policies should continue and gain permanence, even after COVID-19.

The health service also needs to redirect its services to the new phenomenon of 'Long COVID'. This is fast becoming a reality as more persons become infected and 'recover' from this illness. Specific services and specialist care may need to be set up to meet the needs of these COVID- 19 survivors. This is led by Primary Care with input as required from hospital specialists. Access to investigations such as radiology, echocardiology, renal function tests and neurological assessments are important to offer a holistic care package for these patients. Also, given that there are strong indications that COVID may become endemic and a long- standing reality, continued mass vaccination programmes and infrastructure would be needed to ensure adequate coverage for the whole population.

The health system would be a key player in the post-Covid recovery in Malta. The health system needs to respond effectively and contribute meaningfully toward the socio-economic recovery post-COVID in Malta. This would be achieved through continued intersectoral working, ramping up mental health services, improved screening for cancer and other chronic diseases, assist in environmental improvements, contribute to the safety in travelling, maintaining social cohesion within society and allowing economic activities to recover and strive once more. The health sector is crucial for this recovery and should be at the forefront of this endeavour.

Chapter 10: Conclusions

This is Malta's second National Health Systems Strategy. The need for a second iteration was precipitated by Malta's rapidly changing socio-demographic landscape as well as the considerable technological and medical advances over the past decade and expected in the next few years. The changes to Malta's societal fabric have brought about new opportunities but also significant challenges in the form of mounting inequities, a growing and ageing population, growing costs and changing health risks and disease burdens.

This strategy showcases the tremendous work that has been carried out over the past decade, the ensuing successes and the direction that needs to be taken for the next decade. It encapsulates the main components of the policies that have been drawn up or are being planned in the near future and the investments necessary to improve the health of the local population by preventing avoidable illness, detecting early disease, reducing health inequalities and ensuring the delivery of a quality and continuously updated health service.

This strategy builds on the successes registered to date and provides the backdrop for the development of related policies and strategies in those areas that need it most. It will serve to generate the required investment in terms of new technologies, human resources and infrastructure. It also delivers the impetus and direction to pursue the digital advancements in health that would herald Malta's health system into the new millennium. By embracing the principles of equity, innovation and sustainability it ensures a bright future of the health system and the population it seeks to protect.

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