



Spending Review 2017

Acute Hospital Expenditure Review

July, 2017

Contents

Section 1 - Executive Summary	4
Section 2 – Context.....	6
Expenditure review.....	6
Economic Context.....	6
Demographic Context.....	7
Overview of Acute Hospitals Programme	11
Section 3 - Expenditure Trends.....	16
Pay Expenditure Analysis.....	18
Non-Pay Expenditure Analysis.....	19
Section 4 - Productivity.....	24
In-patient Activity	25
Day Case Activity	27
Complexity of In-patient and Day Case Activity	28
In-patient & Day Case Efficiency.....	30
Outpatient Expenditure, Activity & Efficiency	33
Emergency Department Expenditure Activity & Efficiency.....	34
Section 5 - Conclusions	36
Next Steps.....	37
References:	38

Section 1 - Executive Summary

- This paper has been prepared by Department of Health as part of the Expenditure Review 2017.
- This paper examines the level of investment in the acute sector since 2011, the composition of this expenditure, and trends in acute activity and efficiency during this time.
- 2011 was used as a basis for comparison, but contextual consideration has been given to the effects of the economic crisis on the acute hospitals budget up until this point, as well as demographic issues and the considerable structural and funding mechanism changes that have taken place within the acute hospital section in recent years.
- Gross expenditure has increased by 14% between 2011 and 2016.
- Pay (Excl. Superannuation), which makes up the largest proportion of Gross Expenditure, has increased by 7% over the period 2011 -2016.
- The largest increase in expenditure over the period, 29%, can be seen in the Non-Pay category. Of this, the Non-Pay Non-Clinical category has grown by 39% since 2011, however outsourcing of activity due to the Waiting List Initiative in 2015 and 2016 contributed significantly to this increase. The amount spent in 2016 on Non-Pay Clinical expenses was 25% higher than in 2011.
- Acute hospitals provide a complex array of services and types of activity, including In-patient, Day Case, Outpatient and Emergency Activity. In order to analyse productivity consideration has been given to changes both in the volume of these activities, and where data is available, to the complexity of cases being treated.
- Between 2011 and 2015, the volume of discharge activity has increased for both for In-patients (6.2%) and Day Cases (15.6%), amounting to an additional 176,000 discharges in 2015 compared to 2011.
- Critically, in terms of cost, the volume increase in discharges for the 65+ age cohort has had a significant effect, particularly for In-patient discharges, where the increase in this age cohort is responsible for more than 80% of the overall increase in discharges. This age cohort also has the highest In-patient Casemix Index (CMI), meaning that they are more complex, and therefore more costly to treat.
- The analysis of the Casemix Index (CMI) for this period has also shown increases in the average complexity of In-patient (4.1%) and Day Case (3.9%) cases being treated in Acute Public Hospitals.
- Reduction of Average Length of Stay, increased Day of Surgery Admission rates, and a greater rate of volume increase in Day Case activity compared to In-patient activity are indicators of improved efficiency in the provision of care.

- Changes to the average cost per weighted unit of activity over the period 2011 – 2015 demonstrate increases in the efficiency of resource use for In-patient and Day Case activity.
- Over the review period the volume of attendances for both Outpatient and Emergency Department activity have also increased.
- For both In-patient and Outpatient discharge activity, changes to the types of activity recorded mean that further analysis will need to be undertaken in order to fully understand the impact of these changes on the volume of activity recorded.
- Availability of more detailed data in relation to Emergency Department and Outpatient activity would allow for more detailed analysis of these activity types, particularly in relation to complexity of cases and efficiency.
- This paper has highlighted areas which require further analysis. These include Drugs Expenditure, the impact of pay increases on Pay Expenditure, and the effects of the inclusion of Medical Assessment Unit (MAU) data on In-patient activity trends. The Department intends that subsequent analysis papers will look at these areas in more detail.

Section 2 – Context

Expenditure review

The Minister for Public Expenditure and Reform announced alongside the publication of the Expenditure Report 2017 that a Spending Review would take place in advance of Budget 2018. The Review will reflect the changed economic and fiscal context.

The Review will be undertaken on a targeted basis operating in parallel with the Estimates process for 2018, preparation for which began earlier this year. This year's Spending Review round will examine a significant portion of the expenditure base for each Department, with all current Departmental expenditure - with the exception of pay rates - examined over a three year horizon. It was decided by DPER that in the case of Health, acute hospitals and drugs schemes would be the areas to be reviewed.

The purpose of a spending review is to increase the fiscal space available to the Government for new, higher priority policies. This is achieved by examining the scope for savings within baseline expenditure.

In service of the Expenditure Review, the objectives of this paper are to:

- Examine the baseline expenditure in the public acute hospital sector over the period 2011 to date, and identify trends and drivers in hospital expenditure,
- Consider the levels of activity undertaken and consider whether there have been improvements in productivity over time.

In order to do this, the Department of Health analysed general acute hospital expenditure data received from the HSE Finance Section, In-patient and Day Case activity data and Activity Based Funding (ABF)/Non ABF expenditure data received from the Healthcare Pricing Office, and Outpatient and Emergency Department activity data collected by HSE Business Intelligence Unit.

Economic Context

This Spending Review looks forward from 2011, using 2011 as a basis for comparison, but contextual consideration needs to be given to the effects of the economic crisis from 2008 up until this point. Prior to these recessionary years, the total public health budget in 2008 was €14.5bn but by 2013 it had reached a period low of €13.4bn¹ (Department of Health, 2016a).

During these years, the greatest immediate pressure on the Irish health system was the reducing health budget notwithstanding the increasing demand for healthcare in a growing population. In order to achieve

¹ In 2014 funding of c. €540 million was transferred, in the context of the establishment of the Child and Family Agency, from the HSE Vote to Vote 40 (Office of the Minister for Children & Youth Affairs). For comparison purposes, these figures exclude expenditure in respect of children and family services.

this level of reduction in expenditure, it was necessary to make considerable cuts to staff numbers and staff pay, as well as driving efficiencies across the public health system. A moratorium on recruitment and promotions and an incentivised voluntary early retirement scheme combined to drive whole time equivalent numbers in the public health service down by 11,000 during these years (Nolan et al, 2014). Pay adjustments backed by legislation introduced cuts to basic pay, overtime rates, premium payments, increment freezes and increases in hours worked.

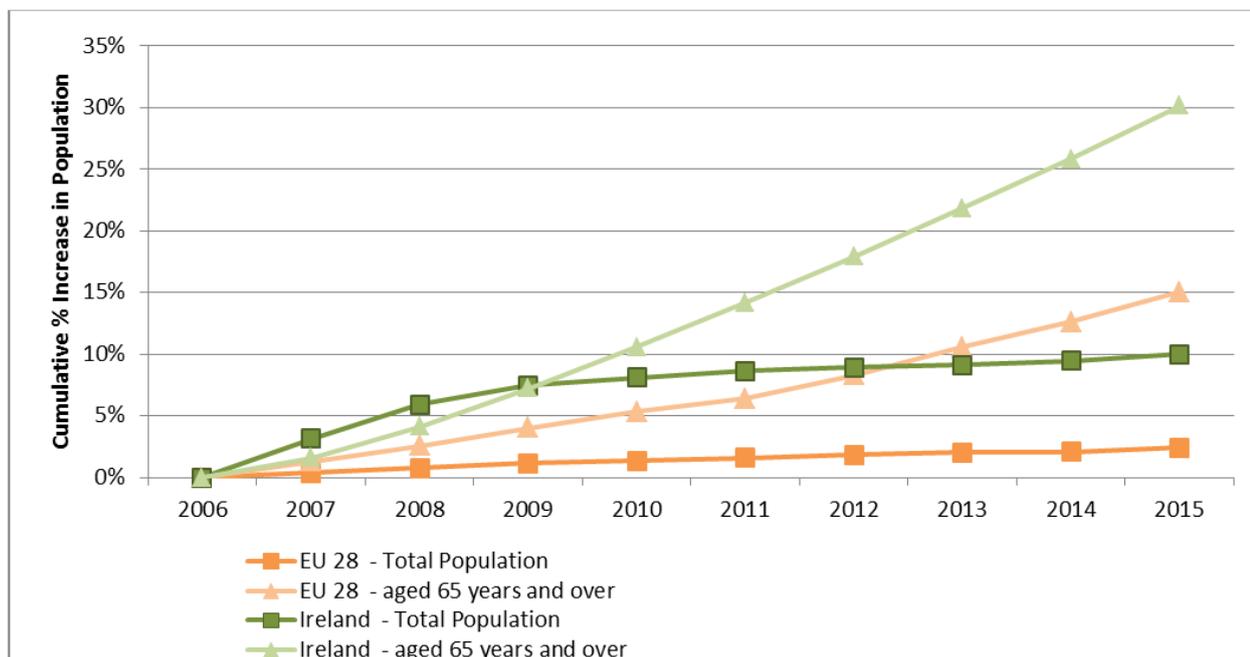
Importantly, the timeframe of this Spending Review is primarily comprised of those years from 2011 onwards in which the total public health budget reached its lowest point in 2013 and increased thereafter as the country exited the recessionary period. Consequently, it should be borne in mind that increases in public health funding observed over the duration of this Spending Review are also attributable to the restoration of public health budget funding levels observed in the pre-2008 Economic Crisis period.

Demographic Context

The demographic and epidemiological challenges facing Ireland in the realm of health care are well known. The overall population in Ireland has increased by 10% between 2006 and 2015 (compared with 2.4% for the EU 28 over the same period) (Department of Health, 2016a). Life expectancy has also improved significantly in this period, with life expectancy in Ireland for males increasing from 76.9 years to 79.6 years and for females from 81.7 to 83.4 years (OECD, 2017). This is a positive development which reflects, in part, improvements in healthcare.

Figure 1 below shows in clear terms the cumulative percentage increase in the 65+ age population in Ireland in comparison with the total Irish population and within the EU 28 between 2006 and 2015.

Figure 1: Cumulative percentage increase in population



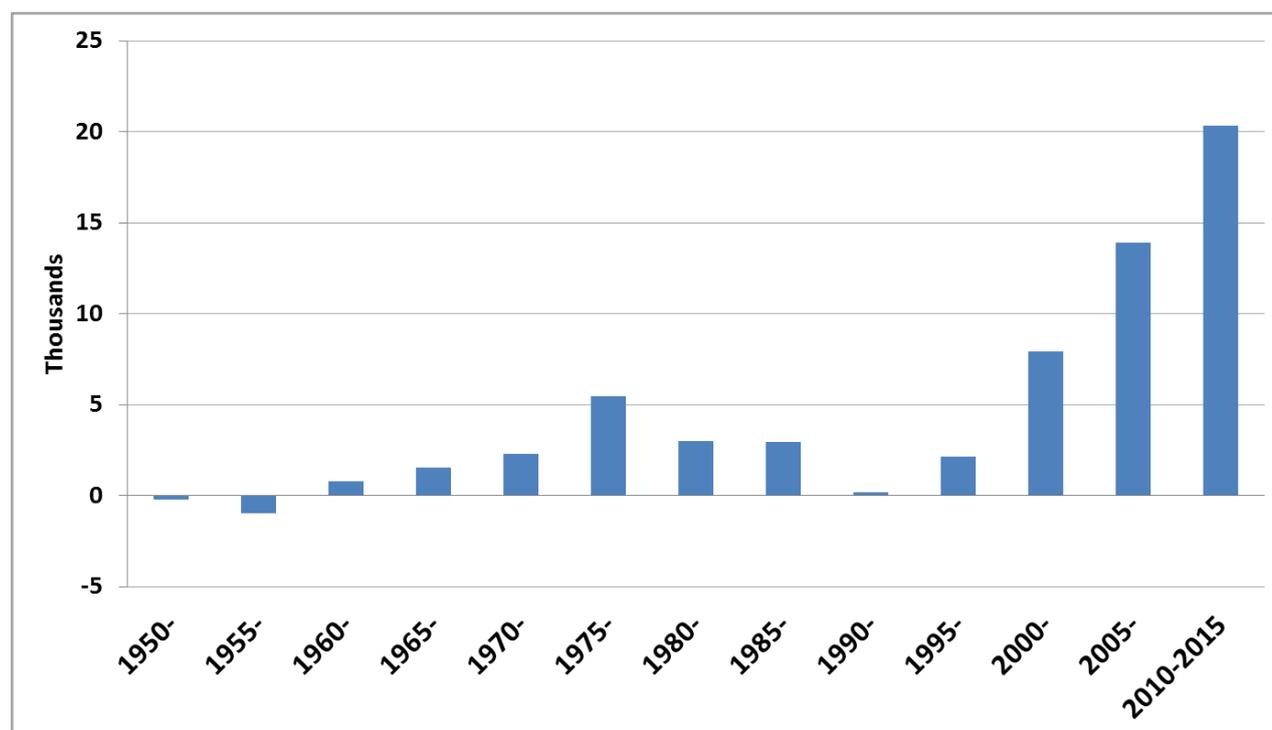
Source: Department of Health (2016a)

When combined with the consequences of Ireland’s post-1950 changing net migration pattern becoming an inward flow and the increases in birth rates that took place in the 1970s (CSO, 2000), improved life expectancy in Ireland means that the number of older people in Ireland is increasing rapidly, with significant demand for healthcare services. As can be seen in Figure 1 above, the number aged 65 years and over has increased by 30.2% between 2006 and 2015 (compared with an increase of 15.1% for the EU 28 over the same period).

The significant rate of growth in the population aged 65 years and older shown above in Figure 1 is set to continue, with a projection of 644,000 in this cohort for 2017. This is an increase of 19,800 (3.2%) compared to 2016. Projections suggest that by 2022 this cohort will increase by up to 21% (131,000). Furthermore, the 85+ age cohort is expected to increase by 3.7%, or 2,600 people, between 2016 and 2017, with an additional 16,100 people aged 85 years and over by 2022. (Smyth B et al, 2017).

While healthcare systems across Europe have been experiencing the burden of ageing for some time now, its impact has only recently been significantly felt within the Irish system. This means that the ageing population is no longer a future prospect but an existing reality which has an impact on the level of demand for health and social care services (see Figure 2 below which illustrates the increase in the 65+ cohort over the period 1950 -2015).

Figure 2: Change per annum in Population 65+, Ireland, 1950 - 2015



Source: CSO

In 2016, approximately 542,400 people aged 65 years and over, had at least one chronic condition, i.e. conditions which are of long duration, and approximately 65% of people 65 years and over have two or more chronic conditions, which equates to 404,470 people (Smyth B et al, 2017). Chronic disease accounts for 80% of all GP visits, 40% of hospital admissions, and 75% of hospital bed days² (Department of Health, 2016b). As the number of older people increases, this burden of chronic disease will also increase. Chronic disease, of its nature, is continuous and long-lasting. It can also be complex, in the sense that patients suffering from chronic disease may have multiple conditions or needs. Patients may have more than one illness (comorbidity), and those with physical conditions, for example, may also have mental health vulnerabilities.

The impact of our ageing population is particularly evident in demand for acute hospital services. Data from the HSE shows that in 2015 adults aged 65 years and over made up 13% of our population but used 54% of hospital In-patient bed days³ and approximately 37% of Day Case and same day⁴ bed days (Smyth B et al, 2017)

² Bed days – Bed days are computed from the length of stay data for each patient

³ In the figures taken from Smyth B et al, 2017, In-patient bed days refers to overnight in-patient bed days only, and not same day in-patient bed days.

⁴ A same day in-patient is a non-elective case admitted and discharged on the same day.

The very elderly (over 85 years) often have multiple and particularly complex health and social care needs and require a high level of care and support from acute hospital services. This age group constitute about 1.4% of the population and in 2015 used 14% of all In-patient bed days (Smyth B et al, 2017).

While healthcare staff can treat illness, the consequences of an illness may need to be addressed by a range of other professionals and services, including social care. Systems are required which are able to manage patients with multiple needs on an ongoing basis, as well as frail elderly patients who also have complex and ongoing needs.

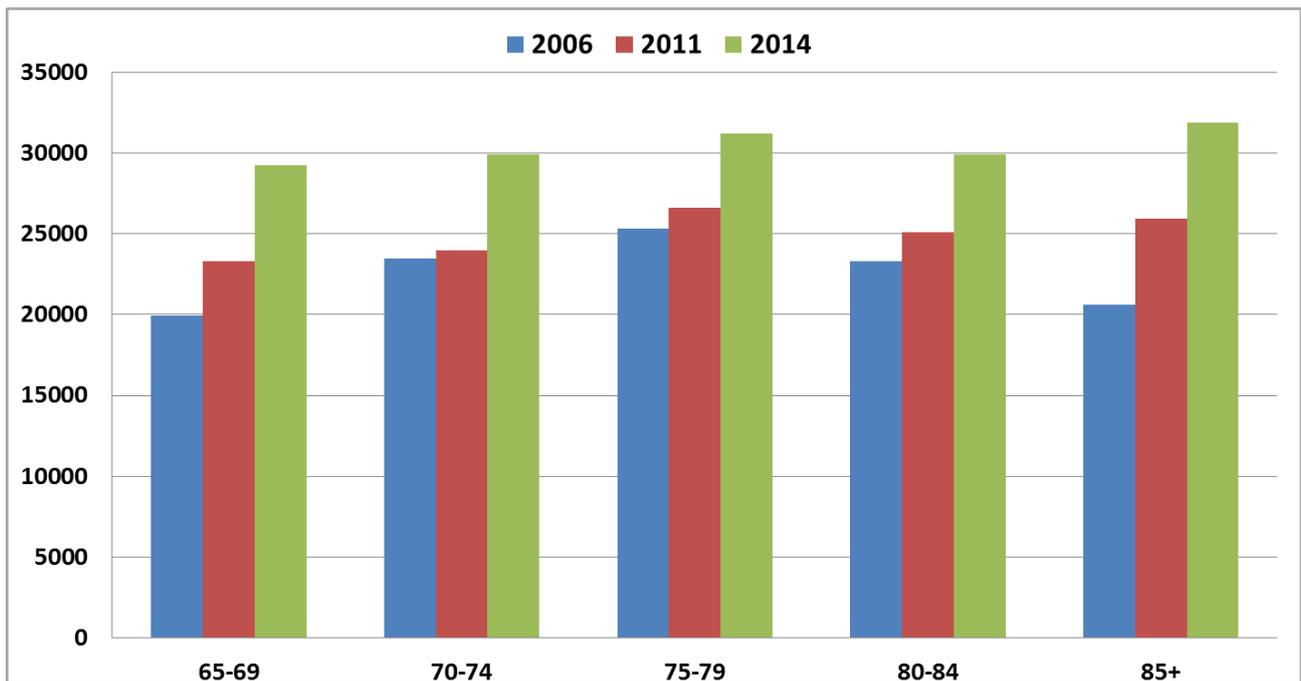
Across the world, this is a major challenge for healthcare systems, which have traditionally been developed to provide care that is essentially episodic in nature. Episodic care lends itself to specialisation, but greater specialisation makes it harder to integrate and manage the totality of the patient's needs. Specialist care may also be expensive. As a result, many healthcare systems are looking for ways to complement high-tech, episodic, specialist care, with a greater focus on managing patients' needs at the lowest possible level of complexity on a continuous and integrated basis, starting with the patient themselves. A core focus of these approaches is to do more to keep patients well, thereby reducing the need for acute services in the first instance.

In health service terms, this means moving from a traditional approach which focused on providing the best possible episodic care, to one which integrates care across providers. It means shifting activity from acute hospitals to primary care, thereby reducing the need for hospital admissions, but also ensuring far greater integration within primary care and between primary care, hospitals and social care. The need for this change in the model of healthcare and the ways in which it can be developed are outlined in policy discussion papers such as *Better Health, Improving Healthcare* (Department of Health, 2016b). Services need to be joined up across acute, primary and social care, so that the individual needs of patients are managed in a more integrated manner. Care should be provided at the lowest level of complexity, with most services being provided in the primary and community settings, as suggested in the *Slainte Care Report* (2017, Houses of the Oireachtas⁵). It is well understood, therefore, that activity in the acute hospitals system is inextricably linked with the capacity of primary and social care to meet the demands placed on them.

Our growing and ageing population is evident in the increased demand for health services. Over the period 2011-2015, demand for public acute hospital services has increased on a year-on-year basis. With an annual average growth rate of 2.8%, by 2015 the annual number of discharges had increased by 176,000 to over 1.66 million which is 12% higher than 2011 (See data relating to Acute Hospital Activity in Section 4 for more details). The increase in the numbers of older people requiring emergency admission between 2011 and 2014 is illustrated in in Figure 3 below.

⁵ <http://www.oireachtas.ie/parliament/media/committees/futureofhealthcare/Oireachtas-Committee-on-the-Future-of-Healthcare-Slaintecare-Report-300517.pdf>

Figure 3 - Number of discharges of patients admitted as emergency



Source: Statistics & Analytics Services, Department of Health.

Overview of Acute Hospitals Programme

The acute hospital system aims to provide high quality, safe care to patients in need of acute hospital care. The focus is on ensuring that patients in need of acute hospital care can access it as quickly as possible in the most appropriate setting and as close to home as possible, consistent with patient safety and the achievement of the best patient outcomes.

There are 48 hospitals funded by the Health Service Executive’s Acute Hospitals Directorate which deliver a wide range of services from assessment and diagnosis to treatment and rehabilitation. The services cover a spectrum from highly complex medical and surgical care to minor conditions, and hospitals may be major tertiary hospitals with national specialities, regional general hospitals, or smaller local hospitals. In addition, there are a number of single speciality hospitals for maternity, paediatric and orthopaedic services.

Advancement of Structural Changes

The public acute hospital sector has been subject to significant structural changes in the last two decades. The establishment of the HSE reformed the existing Health Boards structure. Following the establishment of the HSE in 2004 all hospitals were reclassified into one of four HSE regions of Dublin Mid Leinster, Dublin North East, South and West.

In 2013, the Minister for Health published the Higgins Report⁶ on the establishment of Hospital Groups. The establishment of Hospital Groups is designed to deliver more responsive and equitable access to vital services for all patients and organise our public hospitals into more efficient and accountable hospital groups, which can deliver better patient care for less cost. It also ensures that smaller hospitals continue to play a key role in the delivery of health services. In addition, Hospital Groups with robust academic linkages will integrate and embed education, training, research and innovation in the acute hospital service.

The overriding concern in reorganising our hospital service is ensuring that the quality and safety of care provided is of the highest standard. Best practice in hospital care has changed, with more specialisation and a focus on achieving critical mass in the treatment of less common conditions. Organising hospitals into Hospital Groups allows for acute hospital services to be configured in such a way as to provide a full range of services appropriate to a region and to designate suitable roles for each type of hospital including major, general and local hospitals.

Each Hospital Group has larger and smaller hospitals, includes a cancer centre and maternity services and has a primary academic partner. Management teams are in place for all of the Hospital Groups and all Groups produce annual Operational Plans. Advances are being made to progress from disparate individual hospitals towards an integrated group with a more co-ordinated approach to the planning and delivery of services across all hospitals within the Group. Clinical networks have been developed to allow hospitals to work together to support each other, providing a stronger role for smaller hospitals in delivering less complex care and ensuring that patients who require true emergency or complex planned care are managed safely in larger hospitals. The establishment of a Clinical Network for Maternity services between the Coombe and Midlands Regional Hospital, Portlaoise and elective surgical links between the Mater and Navan are good examples in this regard.

Work continues to address remaining legacy issues arising from the creation of the HSE by the consolidation of the Health Boards, such as access to consolidated financial information at Hospital Group level. Issues such as these will be addressed via the HSE's Finance Reform Programme (FRP) which was established in 2014 to implement the new Finance Operating Model (FOM). This aims to reshape finance from a reactive, fragmented reporting function to a proactive, coherent decision-support service, adding value at all levels of the business. The Finance Reform Programme is a key enabler for wider Health Service Improvement.

Advancement of Funding Mechanism Changes

Up until 2016 hospitals were funded on a block grant basis, which was fundamentally based on the outturn of the previous year with adjustments made for the following year. From 2016 onwards a fundamental change has been introduced in how hospitals are funded with the introduction of Activity Based Funding for

⁶ <http://health.gov.ie/wp-content/uploads/2014/03/IndHospTrusts.pdf>

In-patient and Day Case services for the 38 largest public hospitals. Hospitals are now allocated a budget which is based on the number and complexity of the patients that they are expected to treat in the coming year. Under this model, hospitals only receive funding up to the agreed target level of activity and funding can be removed where hospitals fail to meet the agreed target level of activity. Performance in this regard is being monitored on a monthly basis. In order to avoid instability in funding levels and to allow time for the acute hospital system to adjust to the new ABF funding system, the new model incorporates additional payments called “transition adjustments”. These adjustments can be positive or negative and essentially fund the difference between the hospital’s expected expenditure level and the level of funding as determined by the ABF model. It is intended to reduce these payments over a number of years until hospitals have transitioned to a fully ABF allocation of funding. Preliminary work in relation to the future expansion of ABF to Outpatient Services is being undertaken as part of the ABF Programme. Currently all other activity, apart from In-patient and Day Case, remains block funded.

Initiatives which have Increased Efficiencies in the Acute Hospital Sector

The period 2008-2014 saw significant reductions in hospital budgets and staffing, but with continued increase in hospital output. Expenditure in 2014 on acute hospital services was below 2008 levels but a significant increase was achieved in the volume and complexity of activity. Efficiency has improved significantly as is evident from major reductions in unit costs (Department of Health, 2016c).

Over this period, the introduction of over thirty National Clinical Programmes which are clinically-led, have resulted in improvements to patient care through the development of standardised models of care and clinical guidelines. These Programmes have undertaken and implemented a range of initiatives, including:

- Achievement by the National Clinical Programme for Stroke of thrombolysis rates which are now among the best in Europe (Department of Health, 2016b), resulting in the saving of additional lives and prevention of disability every day
- Initiatives aimed at hospital avoidance and early discharge which include heart failure hospital specialist teams, which are called to ED when heart failure patients present and are frequently able to avert admission which would otherwise occur. These teams also arrange rapid follow-up clinic visits and liaise with community nurse specialists and general practice. The initiative has reduced length of stay and bed days, in addition to exceeding international performance indicators for reduction in readmission rates.
- Development by the National Clinical Programme for COPD (Chronic Obstructive Pulmonary Disease) of hospital/community outreach teams in 15 sites around the country, supporting community diagnosis and management of COPD, case managing patients at high risk of hospitalisation and enabling the early discharge of COPD patients that have been admitted. Reduction of hospital readmissions due to COPD

has the potential to save a significant number of bed-days (The HSE estimate that a 40% reduction in readmissions would save 5,150 bed days).

- The publication by the National Clinical Programme in Pathology in 2016 of the first volume of the National Pathology Handbook which includes national guidelines for common diagnostic problems, particularly those that are associated with high volumes or potential over-usage of laboratory investigations⁷, which is aimed at efficient usage of laboratory resources.

Achievements also attributable to the National Clinical Programmes include measured improvements in Average Length of Stay and reduced surgical bed day usage. These improvements are discussed further in Section 4.

Other measures which seek to provide more timely access to specialist care in acute hospitals include the introduction of Acute Medical Assessment Units (AMAs)⁸ to enable more effective management of medical admissions. In addition, the larger hospitals have acute medical units (AMUs) and injury clinics linked to them. The Units provide either 24/7 service or less depending on the size of the hospital. They are primarily designed to ensure rapid management of adult patients with a wide range of medical conditions presenting at an Emergency Department. The objective of the Units is to enable quicker decisions regarding discharge or admission typically within 6 hours of patient arrival and will be facilitated by dedicated same day diagnostic imaging, laboratory and other services. Injury Clinics are attached to many hospitals which provide an alternative service for patients to access appropriate care for non-life threatening injuries, such as broken bones, dislocations, sprains, wounds and burns. Staff in Injury Units perform x-rays, reduce joint dislocations, apply plaster casts and treat wounds by stitches or other means.

Interlinkage with wider Health System

While the focus of this review is the acute hospitals system, it is important to acknowledge its interlinkage with the overall health system. Reviewing the acute system as a discrete element therefore has the limitation that not all of the factors affecting expenditure, activity and efficiency will be included. Well-known examples include the impact of delayed discharges on the acute hospital system, arising from a lack of community capacity.

The development of integrated care pathways across care settings, and the delivery of more care in the community and at the appropriate level of complexity, are key elements of improved quality, access, efficiency and value.

⁷ HSE submission on Integrated Care to the Committee on the Future of Healthcare

⁸ See Circular CX/2/2012 for more information re: AMAs/AMUs/MAUS: <http://www.iaem.ie/wp-content/uploads/2012/06/CX2-2012-Acute-Medical-Assessment-Units.pdf>

Building on the progress of the National Clinical Programmes mentioned above, the more recent introduction of five Integrated Care Programmes by the HSE aims to ensure that appropriate care is delivered closer to the preferred location for the patient, and at an appropriate level of acuity. The model should result in better quality of care but also has significant potential to alleviate service pressure points and waiting lists.

The Integrated Care Programme for Patient Flow is currently supporting a Proof of Concept programme in University Hospital Limerick and Galway University Hospital, to test the application of scientific management practices to improve patient flow. The change and the improvements in patient flow are delivered primarily via skills transfer to the local teams in the two hospitals. While the programme is not about measured improvement per se in the very short-term, tangible progress is being made. Examples of the impact of process improvement in Galway University Hospital include a doubling of pre-noon discharges from In-patient wards, and a clear improvement trend in non-admitted patient experience times (PET) for November 2016 to February 2017.

Section 3 - Expenditure Trends

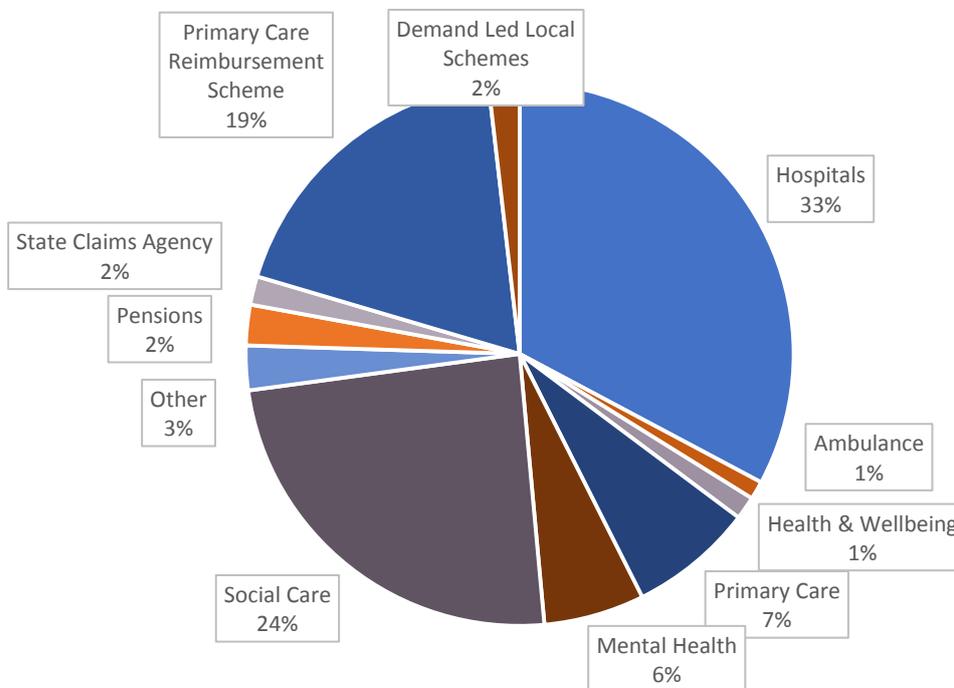
This section looks at spending trends over the period 2011-2016. As mentioned in the description of the economic context to this review given in Section 1, consideration needs to be given to the effects of the economic crisis from 2008 up until 2011, given that 2011 is the base year for the analysis of expenditure and activity data in this review.

The acute sector is subject to on-going expenditure pressures which, in the past, have led to the need for supplementary funding to deal with growing deficits. Much of the pressure in the acute sector can be attributed to increasing demographic pressures and population health demand. In addition the Government provided funding for a number of new initiatives in an effort to meet some of the growing demand for elective care and social care services over the three years 2014 to 2016.

As can be seen in Section 4, the volume of In-patient and Day Case discharge activity, as well as average complexity for these activity types, has increased over the period 2011 - 2015, as have levels of Outpatient and Emergency Department attendances.

As per Figure 4 below, the acute public hospitals' net expenditure of €4,441 million accounted for c. 33% of the total Health Service Executive's (HSE's) net expenditure in 2016.

Figure 4 - Composition of Health Spend in 2016.



*Other includes: NCCP, Clinical Strategy & Programmes, Quality Assurance & Improvement, Overseas Treatment and Other National Services
 Source: HSE Management Data Report (MDR) December 2016

In this section of the Spending Review, we will take an in-depth look into Irish hospital expenditure trends. The table below shows expenditure during the review period over the main categories.

Figure 5 – Gross Expenditure, Income & Net Expenditure, Acute Hospitals 2011 - 2016

	2011	2012	2013	2014	2015	2016	Change 2011 - 2016	
	€000s	%						
Gross Expenditure	4,745,390	4,777,148	4,802,553	4,941,557	5,173,191	5,404,371	658,981	14%
Pay	3,390,636	3,387,976	3,333,547	3,419,680	3,522,362	3,653,430	262,793	8%
Pay (Excl Super Ann)	3,290,840	3,273,490	3,234,510	3,312,978	3,407,054	3,536,654	245,814	7%
Superannuation Pay	99,797	114,487	99,037	106,702	115,308	116,776	16,979	17%
Non Pay	1,354,753	1,389,158	1,469,006	1,521,916	1,650,845	1,750,942	396,189	29%
Clinical	931,705	955,313	984,713	1,023,105	1,105,000	1,164,704	232,999	25%
Non Clinical	423,048	433,845	484,293	498,811	545,845	586,238	163,190	39%
Income	-809,692	-849,991	-821,095	-889,072	-947,536	-963,390	-153,697	19%
Net Expenditure	3,935,697	3,927,143	3,981,458	4,052,524	4,225,671	4,440,982	505,285	13%

Source: HSE Finance

Figure 5 shows us the funding the acute sector has received in the period 2011 – 2016. Gross spend has increased by €659m (14%) since 2011 however the majority of this (70%) increase has occurred since 2014. The cumulative annual growth rates in gross expenditure, income and net expenditure from 2014 to 2016 were 4.6%, 4.1%, and 4.7% respectively.

As shown above, Pay makes up the largest proportion of the Gross Expenditure (in 2016 Pay accounted for nearly 68% of Gross Expenditure).

While Pay has increased, with an additional €263m spent on this category in 2016 compared to 2011 (an 8% increase), the fastest growing spend area is the Non-Pay category which has increased by 29%, or €396m, since 2011. Analysing the cumulative annual growth rate (CAGR) of these categories also indicates a significant investment in non-pay expenditure items. The CAGR of the non-pay category at 5.3% is 3.5 times higher than the annual increases in pay at 1.5% per annum.

In 2016, the acute hospital income amounts to €963m. Patient charges and internal drug reimbursement income from the PCRS are the predominant sources of acute hospital income. Patient charges income includes maintenance charges associated with private patient charges in public hospitals and statutory public in-patient, A&E and long stay patient charges. Internal drug reimbursement income from the PCRS relates to reimbursement received from the PCRS for expenditure incurred on drugs for which a corresponding expenditure amount is recorded in non-pay. Superannuation income is also included under this heading, but as discussed below, both income and expenditure related to Superannuation are non-productive⁹. The balance of income is generated from a number of areas, including income from retail units and car parks, drug rebate income, etc.

⁹ The use of the term 'non-productive' is meant purely to reflect the fact that this expenditure has no impact on the level of service or activity provided.

Income as a percentage of total gross expenditure has remained relatively constant. In absolute terms income has increased by over €150m since 2011. While income increased by 5% in 2012 and then decreased by 3.4% in 2013, more significant increases were seen in 2014 and 2015 of 8.3% and 6.6% respectively, before levelling out with a 1.7% increase in 2016. The increase in income is substantially due to growth in amount of maintenance (hospital) charges collected, €626m was collected in 2016 compared to €457m in 2011. The reason for this is the introduction of the Health (Amendment) Act, 2013 which provided for the introduction of charges for all private in-patients, including those accommodated in public beds.

Pay Expenditure Analysis

Figure 6 – Breakdown of Pay Expenditure by category

	2011	2012	2013	2014	2015	2016	Change 2011-2016	
	€000s	%						
Pay	3,390,636	3,387,976	3,333,547	3,419,680	3,522,362	3,653,430	262,793	7.8%
Pay (Excl Super Ann)	3,290,840	3,273,490	3,234,510	3,312,978	3,407,054	3,536,654	245,814	7.5%
Basic Pay	2,395,565	2,367,979	2,340,080	2,366,936	2,455,074	2,554,025	158,459	6.6%
Allowances *	318,999	316,442	296,596	297,019	298,869	305,706	-13,293	-4.2%
Overtime	195,487	196,031	177,317	155,586	165,588	175,242	-20,245	-10.4%
Arrears/Other	8,586	10,904	9,337	10,981	15,976	13,933	5,347	62.3%
Locum/Agency	127,081	129,988	165,082	230,956	207,712	207,306	80,225	63.1%
PRSI Employers	245,121	252,145	246,098	251,499	263,835	280,443	35,322	14.4%
Superannuation Pay	99,797	114,487	99,037	106,702	115,308	116,776	16,979	17.0%

Note: *Allowances includes Weekend/PH, Night Shift, On Call

Source: HSE Finance

While overall Pay expenditure increased by €263m over the period, €17m of this increase was related to Superannuation Pay, which is by its nature non-productive. The Superannuation Pay included in Figure 6 relates to Section 38/Voluntary hospitals, with Statutory hospital superannuation recorded centrally in the HSE.

As noted above, Pay (excluding superannuation) has also increased, with an additional €246m spent on this category in 2016 compared to 2011, a 7.5% increase. Within this, Basic Pay increased by 6.6% whereas Allowances reduced by 4.2% and Overtime reduced by 10.4%. For the same period, Locum/Agency related pay increased by 63.1%

In considering the €246m increase in Pay-related Expenditure, we also need to consider how much of this was related to productive and non-productive pay changes.

Figure 7 - Total Acute Service Whole Time Equivalents

Public Health Service Employment in HSE Acute Services WTEs (excluding Career Break) , 2011 to 2016								
							change	% change
Grade Category	2011	2012	2013	2014	2015	2016	2011-2016	2011-2016
Medical / Dental	6,286	6,280	6,312	6,785	7,231	7,591	1,306	21%
Nursing	19,909	19,478	19,289	19,822	20,391	20,818	909	5%
Health and Social Care Professionals#	6,080	5,995	6,002	6,229	6,739	6,943	863	14%
Management / Administration	7,406	7,343	7,282	7,407	8,048	8,321	915	12%
General Support Staff	5,906	5,694	5,601	5,562	5,735	5,831	-75	-1%
Other Patient and Client Care	3,606	3,499	3,448	3,932	4,382	4,616	1,010	28%
Total	49,193	48,289	47,934	49,737	52,526	54,121	4,928	10%

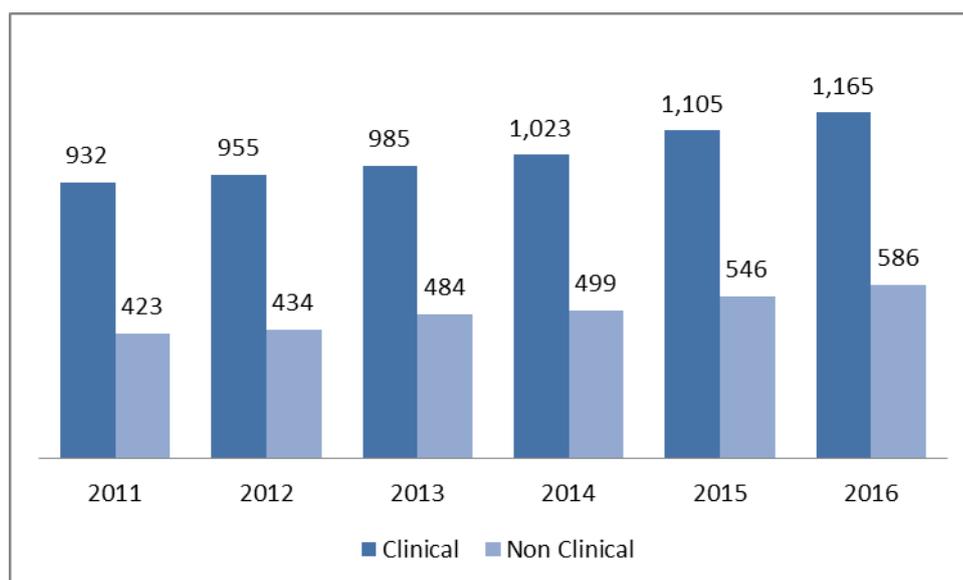
Source: HSE Health Service Personnel Census

The total Whole Time Equivalent staff numbers for Acute Hospitals have increased by approximately 10% between 2011 and 2016. While this has been a substantial increase, it must be considered in the context of the effects of reduced funding for public health in the years pre-2011 such as the employment moratorium, as outlined in Section 2.

In addition to increasing staff numbers there are other factors that influence expenditure on Pay. One factor which needs to be considered is the effect of central pay decisions, such as the Lansdowne Road Agreement (LRA) and increments. Further analysis will be undertaken to examine the extent of the effect of these pay changes on the overall increase in Pay-related expenditure.

Non-Pay Expenditure Analysis

Figure 8 - Composition of Non-Pay Expenditure



Source: HSE Finance

Further analysis of the non-pay expenditure category reveals that clinical expenditure accounts for about two thirds of the non-pay expenditure and non-clinical accounts for the remaining third. In absolute terms, clinical expenditure increased by more than non-clinical at €233m and €163m respectively since 2011. However the annual growth rate in non-clinical (6.7%) is higher than the 4.6% annual growth rate in clinical expenses.

Figure 9 - Breakdown of Clinical Expenditure

	2011	2012	2013	2014	2015	2016	Change 2011 -2016	
	€000s	€000s	€000s	€000s	€000s	€000s	€000s	%
Clinical	931,705	955,313	984,713	1,023,105	1,105,000	1,164,704	232,999	25%
Year-on-year % change		3%	3%	4%	8%	5%		
Drugs & Medicines	282,488	301,322	310,529	336,359	379,210	415,073	132,585	47%
Medical / Surgical Supplies	308,781	314,835	328,678	337,025	358,857	378,227	69,446	22%
Laboratory	114,504	120,095	122,638	135,310	144,368	148,231	33,727	29%
Bloods / Blood Products	108,153	99,414	98,033	95,234	97,316	95,059	-13,093	-12%
X Ray/Imaging	52,036	53,392	56,184	47,562	45,494	48,614	-3,421	-7%
Supplies & Contract Other Med Equip	31,809	35,441	35,480	39,194	42,150	41,420	9,611	30%
Other Medical Equipment	26,843	23,769	25,950	25,355	30,038	30,466	3,624	13%
Medical Gases	7,093	7,045	7,222	7,065	7,568	7,613	520	7%

Source: HSE Finance

As can be seen above, Clinical expenditure has increased by 25% (€233m) over the period 2011-2016.

Drugs, laboratory and medical/surgical supplies accounted for 80% of expenses within this category in 2016. These costs have been increasing steadily since 2011 when they accounted for 76% of the category. The growth in expenditure on both medicines and medical supplies has arisen due to volume growth driven by increased demand for health services.

In addition to this, the growth in cost of both medicines and medical & surgical supplies is well recognised internationally and arises for a number of reasons. Key among these is the emergence of new and more expensive medical technologies (e.g. Transcatheter Aortic Valve Implantation (TAVIs)) which provide treatment for conditions previously untreated, or new and improved treatments for existing conditions. Medical inflation is running ahead of the general inflation rate, with Consumer Price Index (CPI) data indicating that the overall increase in health inflation during the period (2011-2016) was 2.4% compared with an increase of 2.0% in the “all items” index¹⁰.

The largest expenditure increase has been in Drugs & Medicines which has increased by 47% from €282m in 2011 to €415m in 2016, an 8% cumulative annual growth rate (CAGR). Further analysis of this increase will be undertaken in order to fully understand the drivers of this change in expenditure.

¹⁰ CPA01: Consumer Price Index by Commodity Group, Year and Statistic, Statbank, CSO
<http://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=CPA01&PLanguage=0>

Figure 10 - Breakdown of Non Clinical Expenditure

	2011	2012	2013	2014	2015	2016	Change 2011 -2016	
	€000s	%						
Non Clinical	423,048	433,845	484,293	498,811	545,845	586,238	163,190	39%
Year-on-year % change		3%	12%	3%	9%	7%		
Cleaning & Washing	82,775	81,514	83,366	85,976	88,815	94,539	11,764	14%
Professional Services	28,826	29,080	36,345	36,347	50,704	85,743	56,916	197%
Office Expenses Rent/Rates	60,010	59,570	63,474	67,430	73,500	83,133	23,124	39%
Other	63,811	66,444	79,397	83,837	80,616	77,075	13,264	21%
Maintenance	40,217	37,635	43,497	44,319	52,168	56,608	16,391	41%
Heat Power & Light	45,791	51,530	57,228	54,216	54,175	50,462	4,672	10%
Catering	36,997	36,936	37,804	38,254	40,326	42,022	5,024	14%
Computer	23,847	24,439	27,360	28,331	31,833	33,168	9,321	39%
Transport (Patients)	10,228	15,512	16,664	16,984	21,985	25,552	15,324	150%
Bad & Doubtful Debts	17,335	17,718	24,141	26,119	32,380	16,950	-385	-2%
Education & Training	8,547	8,864	9,762	10,923	11,722	13,442	4,894	57%
Furniture Crockery & Hardware	4,664	4,602	5,255	6,076	7,621	7,545	2,880	62%

Source: HSE Finance

Over the period 2011 – 2016, Non Clinical expenditure increased by €163m which is a considerable increase in percentage terms (nearly 40%). All sub-categories showed considerable increases, with the exception of a small decrease in Bad & Doubtful Debts. Cleaning and washing, professional services, office expenses rent/rates and “other” being the largest cost items, accounted for 58% of the non-clinical costs in 2016.

Cleaning & Washing is the single largest cost item in Non Clinical Expenditure, and has increased by 14% in the period under review. In this context, it is important to note the need for adherence to hygiene standards and the prevention of Healthcare Associated Infections (HCAIs). It can be noted that in 2013, the cost of HCAIs in Ireland was estimated at €118m with 29,000 patients acquiring a HCAI¹¹. In the future, treating HCAIs will also become more expensive as Antimicrobial Resistance (AMR) expands, so good preventative hygiene is even more of a requisite across all our healthcare settings now.

The reduction of infection and disease spread is an important element of the forthcoming Action Plan to address Antimicrobial Resistance (AMR). A wide range of initiatives aimed at educating and supporting staff and their organisations in combatting AMR have been put in place over several years by the HSE, a core component of which is infection prevention and control standards. Regulation is also playing its part here- under its monitoring programme HIQA has, since 2013, undertaken 113 unannounced inspections against the National Standards for the Prevention and Control of Healthcare Associated Infections.

In light of this HIQA programme and the other activities mentioned, it is likely that there has been a system response by way of focusing more resources on hospital hygiene for prevention purposes as well as increased cleaning in response to specific HCAI issues and outbreaks at local levels.

¹¹ National Clinical Guideline “Prevention and Control Methicillin-Resistant Staphylococcus aureus(MRSA)

Over the time period of this Spending Review, Professional Services have been the biggest driver of the increase non-clinical costs - they have nearly tripled from €29m in 2011 to €86m in 2016 increasing on annual cumulative basis by 24.4%. Professional Services vary per hospital but typically would include items such as the following (not exhaustive); Outsourcing – Radiotherapy, ENT, Renal Dialysis, Health Insurance Claims Management, Recoupment of Pay – Consultants on shared contracts, Recoupment of Pay – Non Clinical and ICT related consultancy.

In addition, funding for waiting list initiatives operated by the HSE during the Spending Review period have been reported under the heading “Professional Services”. As part of the Waiting List Initiative, additional funding of €51m was allocated to the HSE in 2015 to maximise capacity across the public and voluntary hospitals or to outsource activity. Of this funding, €15m was utilised in 2015, and the remaining €36m relating to the 2015 Initiative was spent in 2016, along with an additional €11m of funding for the 2016 Waiting List Initiative. This has contributed significantly to the increases in expenditure under “Professional Services” in 2015 and 2016, as seen in Figure 10 above. For completeness, it should be noted that outsourced activity is not included in the activity data captured by the HPO.

Office Expenses have increased by €23m over the review period, with the majority of this taking place between 2013 and 2016.

The other noticeable increases in non-clinical costs include maintenance and patient transport expenses.

Maintenance has increased by 41% since 2011. Older physical infrastructure in hospitals poses risks associated with the spread of infection. Cost, both financially and time-related are incurred in terms of clean-up and control, including refurbishment.

Patient transport expenses have more than doubled since 2011 from €10m to €25.6m in 2016. Non-emergency Patient Transport Services, known as PTS, are typified by the non-urgent, planned, transportation of patients with a medical need for transport to and/or from a HSE (or funded agency) premises providing healthcare and between HSE (or funded agency) healthcare providers. There is no statutory requirement for the HSE to provide Patient Transport Services and they are provided on a discretionary basis, as opposed to there being a mandatory requirement for provision.

Traditionally, the ambulance service has been responsible for providing ambulance and transport services to acute hospitals and other medical and care facilities. The introduction of the Intermediate Care Service in order to provide transport for patients between hospitals and other medical facilities has reduced the reliance on emergency ambulances and ensures that these vehicles are available to respond to emergency situations.

In 2013, €3.25m was used to buy an extra 25 Intermediate Care Vehicles; however demand for this service exceeds the availability of these vehicles, and therefore hospitals pay for private vehicles to undertake these patient transfers.

The former Health Boards had no standardised criteria for determining eligibility for Patient Transport Services on a national basis. This had led to inequities in terms of services made available to the population.

Policies have since been developed to set out standardised criteria for determining eligibility for Patient Transport Services (PTS), and to provide clear direction to all designated budget holders, staff responsible for processing requests and healthcare professionals authorised to request patient transport or validate patient eligibility.

Key Points:

Gross expenditure has increased by 14% in the period 2011 – 2016; this is a Cumulative Annual Growth Rate of 2.6%. During this time Pay (excluding Superannuation) has increased by 7.5%. This was partially due to a 10% increase in the numbers of WTEs and partially due to non-productive pay increases arising as a result of increments and LRA. Further analysis on the breakdown between Productive and Non-Productive¹² pay changes will be undertaken in order to fully understand the drivers and effects of this change in expenditure.

Clinical Expenditure increased by 25% between 2011 and 2016. The majority of clinical expenditure is spent on Drugs and Medical/Surgical supplies which accounted for €200m of the €233m increase in this category. Increases in expenditure on these components are driven by increased activity, and also as a result of the increased cost of providing health services, with medical inflation running ahead of the general inflation rate.

Non Clinical expenditure increased by €163m in the period 2011 - 2016. Professional Services, which increased by nearly €57m in this time contributed to this increase. This increase in Professional Services was in part due to the allocation of funding for the Waiting List Initiative in the period 2015 - 2016, a considerable amount of which was expended on outsourcing.

The intention of this paper was to focus on the main elements of expenditure, and further work will be undertaken on the additional areas of interest noted within this section in a subsequent paper.

¹² The use of the term 'non-productive' is meant purely to reflect the fact that this expenditure has no impact on the level of service or activity provided.

Section 4 - Productivity

While it is apparent that Gross Expenditure has increased in recent years, this must be considered within the context of activity and productivity levels within acute public hospitals. Productivity is a measure of the efficiency of a system in converting inputs (funded by expenditure) to outputs (activity). As shown in the tables below, over the course of 2011 to 2015 numbers of discharges/attendances across In-patient, Day Case, Outpatient and Emergency Department Activity have all increased. In addition to this, the average complexity of the In-patients and Day Cases being treated has also increased. While greater expenditure has occurred, greater volume and complexity of activity has been achieved.

Figure 11, below, shows the changes in expenditure across various types of activity in the Activity Based Funding (ABF) hospitals and the overall expenditure for Non-ABF funded hospitals. Since January 2016, the 38 public hospitals which had to date participated in the National Casemix Programme are now being funded for In-patient and Day Case activity on an ABF basis. All other activity in these hospitals, such as Emergency Department and Outpatient activity, is currently funded on a block grant basis. While all Hospital Groups are participating in the ABF system, some of the smaller hospitals within the Groups continue to be fully block funded where an ABF approach is not practicable for them at this time. (See 'Gross Expenditure – Non-ABF Hospitals in Figure 11 below). Expenditure in ABF hospitals makes up approximately 95% of overall Acute Gross Expenditure.

Figure 11: Expenditure across ABF and non-ABF Hospitals and Activity, 2011 - 2015

	2011	2012	2013	2014	2015	Change 2011-2015	
	€000s	€000s	€000s	€000s	€000s	€000s	%
Gross Expenditure Overall	4,745,390	4,777,148	4,802,553	4,941,557	5,173,191	427,801	9%
Gross Expenditure - Non-ABF Hospitals	252,422	256,511	253,950	245,992	270,369	17,947	7%
Gross Expenditure - ABF Hospitals	4,492,968	4,520,637	4,548,603	4,695,565	4,902,822	409,854	9%
<i>of which is ABF Funded</i>	3,069,791	3,105,586	3,152,151	3,253,483	3,370,644	300,853	10%
<i>Inpatient</i>	2,553,602	2,543,637	2,554,896	2,650,474	2,704,091	150,489	6%
<i>Daycase</i>	516,189	561,949	597,255	603,009	666,553	150,364	29%
<i>of which is Block funded</i>	1,423,178	1,415,051	1,396,452	1,442,082	1,532,179	109,001	8%
<i>Outpatient</i>	454,791	468,800	476,494	495,273	530,567	75,775	17%
<i>ED</i>	311,454	313,408	308,611	319,779	344,438	32,984	11%
<i>Other</i>	656,932	632,843	611,347	627,030	657,174	242	0%

Source: Healthcare Pricing Office

NOTE:

The method used by the Healthcare Pricing Office to allocate expenditure across different activity types within ABF hospitals uses the Specialty Costing Return Data. Within these returns, the costs are taken from their Annual Financial Statements (AFS) and General Ledger (GL) and the hospitals allocate these based on the Specialty Costing Manual. This breakdown of expenditure was not available for 2016 at the time this analysis was being undertaken.

"Other" refers to areas in the costs that aren't directly allocated to pricing of patients care in the hospital e.g. Externs or community based functions the hospital might run, or blood testing for GPs etc., as well as reconciling items like superannuation and fixed assets, capital projects, bad debts.

Acute hospitals provide a complex array of services and types of activity including In-patient, Day Case, outpatient, emergency and other activity. Any evaluation of productivity of hospitals must incorporate the evaluation of complexity, all types of hospital activity and the interplay between these types of activity.

In-patient Activity

Although expenditure data was available for the period 2011 – 2016, detailed In-Patient activity data for 2016 was not yet available. The Tables and charts below show total In-patient discharge activity for all hospitals reporting their activity on the HIPE database, by age for the years 2011 to 2015. The number of In-patient discharges within the wider Acute Hospital system increased by 37,029 from 597,788 to 634,817 (6.2%) over the period. As the notes relating to these figures state, in 2012 there was a change in the way Medical Assessment Unit (MAU) activity was recorded. Further analysis of MAU data will be required in order to allow for a more detailed understanding of the components of the change in the volume of discharges at that point in the time series.

Figure 12 – Total In-patient Discharge Activity 2011 – 2015, By Age Group

	2011	2012	2013	2014	2015	Change 2011-2015	Change
Age Category	N	N	N	N	N	N	%
1. 0-4	55,646	58,057	54,166	54,178	53,592	- 2,054	-3.7%
2. 5-14	29,889	31,125	30,539	31,181	31,366	1,477	4.9%
Sub Total 0-14	85,535	89,182	84,705	85,359	84,958	- 577	-0.7%
3. 15-44	235,017	241,995	235,727	236,370	230,288	- 4,729	-2.0%
4. 45-54	49,122	53,550	54,943	54,766	54,697	5,575	11.3%
5. 55-64	60,888	64,580	66,048	67,008	67,459	6,571	10.8%
Sub Total 15-64	345,027	360,125	356,718	358,144	352,444	7,417	2.1%
6. 65-74	68,504	73,686	78,363	79,769	82,570	14,066	20.5%
7. 75-84	67,833	72,354	74,971	76,024	77,273	9,440	13.9%
8. 85+	30,889	33,789	36,027	36,165	37,572	6,683	21.6%
Sub Total 65+	167,226	179,829	189,361	191,958	197,415	30,189	18.1%
Total	597,788	629,136	630,784	635,461	634,817	37,029	6.2%
Year on Year Change		5.2%	0.3%	0.7%	-0.1%		
Cumulative Change		5.2%	5.5%	6.3%	6.2%		

Source: Healthcare Pricing Office, HSE

Notes:

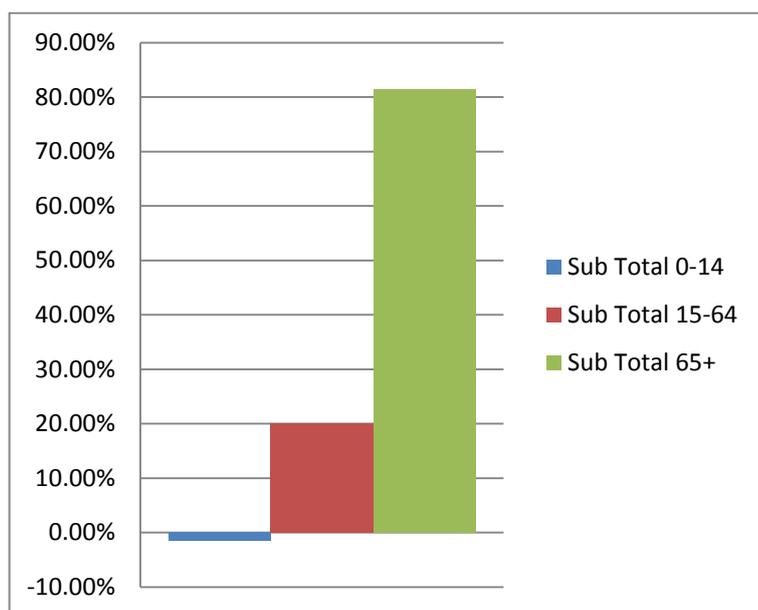
This data relates to all hospitals that report on their activity using the HIPE database

No estimations have been made for data that is not on PAS.

MAU activity was recorded since late 2012 as requested by the Acute Medicine Programme

An analysis of the increase in activity by age below in Figure 13 shows that most of the increase was among the 65+ age cohort. The other age cohorts showed much lower increases with the 0-14 cohort decreasing by 577 (-1.6% of the overall change) and the 15-64 cohort increasing by 7,417 (20% of the overall change).

Figure 13 – Breakdown of Increase in In-patient Discharges 2011 – 2015, by Age Cohort



Source: Healthcare Pricing Office, HSE

As shown in Figure 14 below, this has resulted in a change in the breakdown of total In-patient discharges by age group. As a proportion of overall In-patient discharges the 0-14 category decreased from 14% to 13%, the 15-64 category from 58% to 56% and the 65+ category increased from 28% to 31%. This reflects the impact of the demographic changes outlined earlier.

Figure 14 – Age cohorts as a % of Total In-patient Discharges 2011 - 2015

	2011	2012	2013	2014	2015
0-14	14%	14%	13%	13%	13%
15-64	58%	57%	57%	56%	56%
65+	28%	29%	30%	30%	31%
Total	100%	100%	100%	100%	100%

Source: Healthcare Pricing Office, HSE

Key Points:

While expenditure related to In-patient activity in ABF hospitals has increased by 5.9% in the period 2011 – 2015, the overall volume of In-patient activity across the acute system, encompassing both ABF and Non-ABF Hospitals, has increased by 6.2%. In addition to this the 65+ age cohort has increased by 18.1%, with the effect that this group now represents 31% of all In-patient Discharges in 2015. Further analysis of MAU data will be required in order to allow for a more detailed understanding of the components of the change in the volume of In-patient discharges.

Day Case Activity

Although expenditure data was available for the period 2011 – 2016, detailed Day Case activity data for 2016 was not yet available. The tables and charts below outline total Day Case discharge activity, by age for the years 2011 to 2015. Figure 15 shows that the number of Day Case discharges continues to increase with a 138,993 (15.6%) increase over that period. The large increase in Day Case activity as compared to the trend in in-patient activity is evidence that the system is managing increased demand by delivering care in lower cost settings.

Figure 15 – Total Day Case Discharge Activity 2011 – 2015, By Age Group

	2011	2012	2013	2014	2015	Change 2011-2015	Change
Age Category	N	N	N	N	N	N	%
1. 0-4	23,167	21,167	21,496	20,691	20,443	- 2,724	-11.8%
2. 5-14	27,282	27,071	26,164	26,830	28,340	1,058	3.9%
Sub Total 0-14	50,449	48,238	47,660	47,521	48,783	- 1,666	-3.3%
3. 15-44	211,497	219,753	226,924	230,368	234,306	22,809	10.8%
4. 45-54	134,376	139,926	140,458	144,107	153,829	19,453	14.5%
5. 55-64	173,516	176,916	175,955	177,292	194,266	20,750	12.0%
Sub Total 15-64	519,389	536,595	543,337	551,767	582,401	63,012	12.1%
6. 65-74	176,120	184,162	193,057	200,901	223,852	47,732	27.1%
7. 75-84	119,491	122,981	124,507	130,824	143,027	23,536	19.7%
8. 85+	25,548	27,772	29,071	30,321	31,927	6,379	25.0%
Sub Total 65+	321,159	334,915	346,635	362,046	398,806	77,647	24.2%
Total	890,997	919,748	937,632	961,334	1,029,990	138,993	15.6%
Year on Year Change		3.2%	1.9%	2.5%	7.1%		
Cumulative Change		3.2%	5.2%	7.9%	15.6%		

Source: Healthcare Pricing Office, HSE

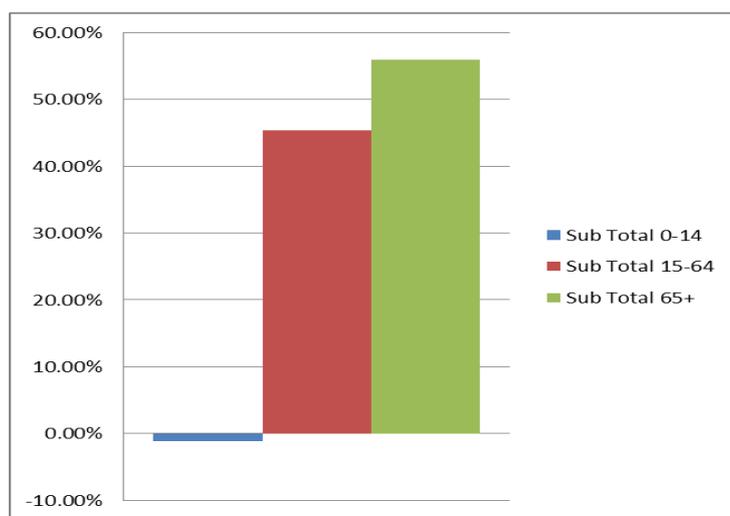
Notes:

This data relates to all hospitals that report on their activity using the HIPE database

No estimations have been made for data that is not on PAS.

As shown in Figure 16 below, over half of this increase (nearly 56%) was related to the 65+ age cohort.

Figure 16 – Breakdown of Increase in Day Case Discharges 2011 – 2015, by Age Cohort



Source: Healthcare Pricing Office, HSE

As a proportion of overall Day Case discharges, both the 0-14 category and the 15-64 categories decreased slightly, and the 65+ category increased from 36% to 39%.

Figure 17 – Age cohorts as a % of Total Day Case Discharges 2011 – 2015

	2011	2012	2013	2014	2015
0-14	6%	5%	5%	5%	5%
15-64	58%	58%	58%	57%	57%
65+	36%	36%	37%	38%	39%
Total	100%	100%	100%	100%	100%

Source: Healthcare Pricing Office, HSE

Key Points:

While the expenditure on Day Case activity in ABF hospitals has increased by 29% the data above shows us that Day Case activity across both ABF and non ABF hospitals has increased by a significant volume 138,993 (15.6%) and that discharges in the 65+ cohort in particular have increased by 24.2%. This change has resulted in the 65+ cohort now representing 39% of all Day Case discharges in 2015.

Complexity of In-patient and Day Case Activity

While an analysis of discharges provides an indication of hospital activity at a high level, it does not take into account the complexity of the activity. Complexity of cases is a crucial factor when measuring hospital activity, particularly in relation to productivity, because, for instance, one complex case such as a heart transplant requires far more hospital resources than less complex cases such as an appendectomy. Figure 18 below therefore provides a fuller picture of the complexity of hospital activity over recent years.

The tables below outline by age, for the years 2011, 2013 and 2015, the Casemix Index (CMI) and the percentage change in CMI. CMI is a measure of the average complexity of cases and is calculated by dividing the number of weighted units of activity by the number of cases. The analysis applies the latest relative values for complexity to all years in order to examine fluctuations in the complexity of cases. By applying the same relative values to each year, it allows for time series, year on year comparisons.

Figure 18 – Complexity Profile of Acute Public Hospitals, 2011 – 2015, By Age Group

Inpatient Activity					Day Case Activity				
	2011	2013	2015	% Chg in		2011	2013	2015	% Chg
Age	CMI	CMI	CMI	CMI	Age	CMI	CMI	CMI	in CMI
1. 0-4	0.96	0.96	0.95	-1.2%	1. 0-4	1.08	1.10	1.10	1.8%
2. 5-14	0.73	0.69	0.69	-4.9%	2. 5-14	1.10	1.13	1.14	3.4%
3. 15-44	0.65	0.66	0.68	3.2%	3. 15-44	0.92	0.92	0.92	0.9%
4. 45-54	1.16	1.21	1.24	6.9%	4. 45-54	0.92	0.96	0.95	3.3%
5. 55-64	1.35	1.45	1.47	9.0%	5. 55-64	0.90	0.96	0.94	4.9%
6. 65-74	1.51	1.56	1.59	4.8%	6. 65-74	0.89	0.96	0.94	5.5%
7. 75-84	1.58	1.60	1.61	2.1%	7. 75-84	0.91	0.97	0.97	6.7%
8. 85+	1.58	1.63	1.61	1.4%	8. 85+	0.94	0.99	1.04	10.4%
All	1.05	1.07	1.09	4.1%	All	0.92	0.96	0.95	3.9%

Source: Healthcare Pricing Office, HSE

Notes:

CMI- Complexity/Casemix Index.

The latest relative values were applied to all years to get a consistent analysis of complexity change in the system.

Medical Assessment Units (MAU) came into operation at the end of 2012; to have a consistent baseline for comparison across years the In-patients quoted are therefore In-patients excluding MAU patients that were admitted and discharged from the same MAU.

The Complexity profiles demonstrate that in relation to in-patient cases older patients are generally more complex than younger cohorts, which is a reflection of the tendency for multi-comorbidity in the older cohort. The CMI in-patient activity score ranges from 1.51 to 1.61 for over 65s and is significantly higher and therefore more complex than the score for younger age groups. This is a particularly important point given that the increase in in-patient activity is largely due to the increase in the volume of activity related to this age group.

The complexity of Day Cases continues to increase considerably. The increased complexity has increased at the same time as there has been a significant increase in the volume of Day Case activity, see Figure 15 above. This has led to a substantial increase (29%) in Day Case related expenditure in ABF hospitals (See Figure 11).

These tables also suggest an overall increase in complexity for both In-patients and Day Cases over the period 2011 - 2015, with the average CMI across all In-patients having increased 4.1%, and the average CMI

across and Day Cases having increased 3.9%. This demonstrates an improvement in efficiency and improvements made in treating patients in clinically appropriate settings. The increase in complexity appears to be because the activity that was previously considered In-patient but is now carried out on a Day Case basis tends to be the less complex In-patient work. However, this work tends to be more complex than the previous Day Case activity. By shifting this less complex In-patient work to a Day Case setting, the overall level of complexity of both In-patient and Day Case work increases.

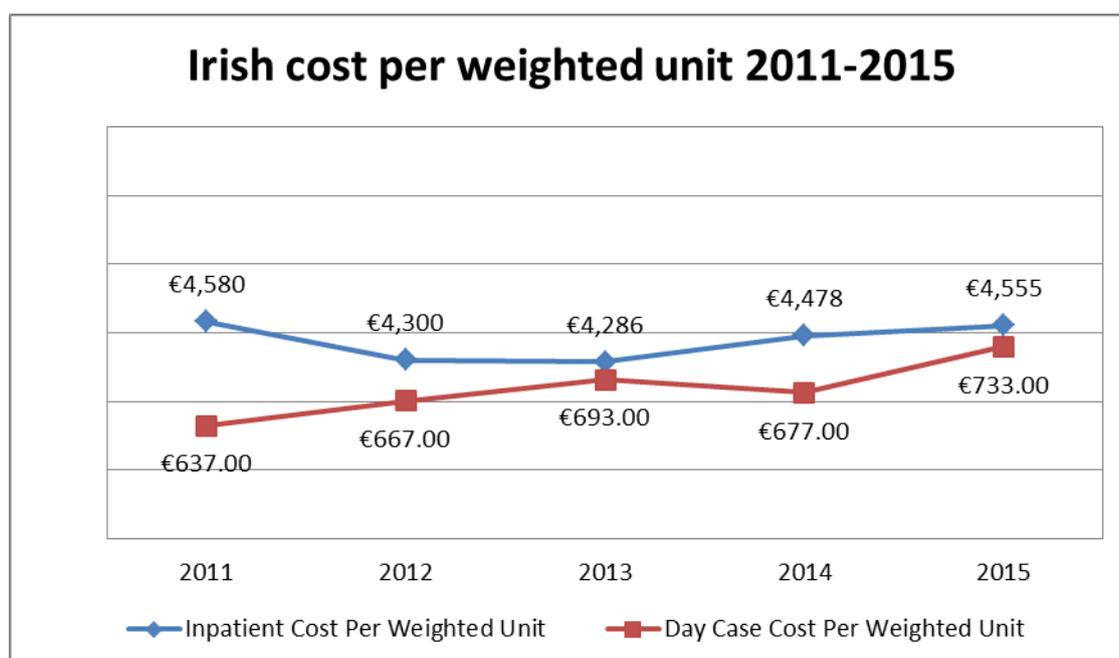
In-patient & Day Case Efficiency

Comparing weighted unit cost over a number of years is a useful approach to measuring hospital system efficiency and identifying trends in relation to value for money.

Each year the Healthcare Pricing Office undertakes a price setting process which generates the prices payable under Activity Based Funding in the following year. As part of this process, the average cost per case for each DRG taking into account adjustments for unusually short or long stay patients is calculated.

The average cost per In-patient and Day Case is calculated to give the base cost for both. Each DRG average cost is then divided by the appropriate base cost to give the value of a case in weighted units. This expression of the activity levels in terms of weighted units allows for the complexity adjusted comparison of hospitals' activity levels which are at the heart of all Casemix / ABF systems. In this terminology the average cost of a case can be found by multiplying its value in weighted units by the relevant base cost.

Figure 19 – Irish cost per weighted unit 2011 - 2015



Source: Healthcare Pricing Office, HSE

As evidenced from Figure 19, the cost per weighted unit of care between 2011 and 2015 fell by 0.6% for In-patient activity and increased by 15.1% for Day Case activity. The changes in these costs per weighted units occurred against a background of increasing average complexity of the cases treated in both In-patient and Day Case settings (see Figure 18 above), and in part as a result of improvements in a range of other productivity/efficiency metrics, as outlined below.

(i) Reductions in Average Length of Stay

The average length of stay is a recognised indicator of hospital efficiency. All other things being equal, a shorter stay will reduce the cost per discharge and shift care from In-patient to other less expensive settings.

Figure 20 – Average Length of Stay in Acute Hospitals 2011 – 2015

	2011	2012	2013	2014	2015
Average Length of Stay in Days	5.72	5.43	5.42	5.43	5.55

Source: Information Unit, Department of Health

Note: MAU activity was recorded since late 2012 as requested by the Acute Medicine Programme.

The Average Length of Stay has decreased between 2011 and 2015. This achievement is considerable, particularly when considered in reference to the increasing In-patient Complexity/Casemix Index outlined above. However, as changes to the recording of MAU activity occurred during 2012, further analysis of the effects of this on ALOS data will be needed.

(ii) Improvement in Day of Surgery Admissions

A day of surgery admission (DOSA) refers to an elective, In-patient, surgical patient who is admitted on the day of their surgical procedure with all necessary work-up having been carried out prior to admission. Higher rates of DOSA help to improve resource utilisation and efficiency through improved through-put, reduced patient length of stay and lower surgical bed requirements¹³.

Figure 21 – Number and Percentage of In-patients Admitted on their Day of Surgery 2011 and 2015

	2011	2015
Surgical In-patients with surgery same day (Number)	63,679	78,863
Surgical In-patients with surgery same day (Percentage)	47.3	58.7

Source: Information Unit, Department of Health

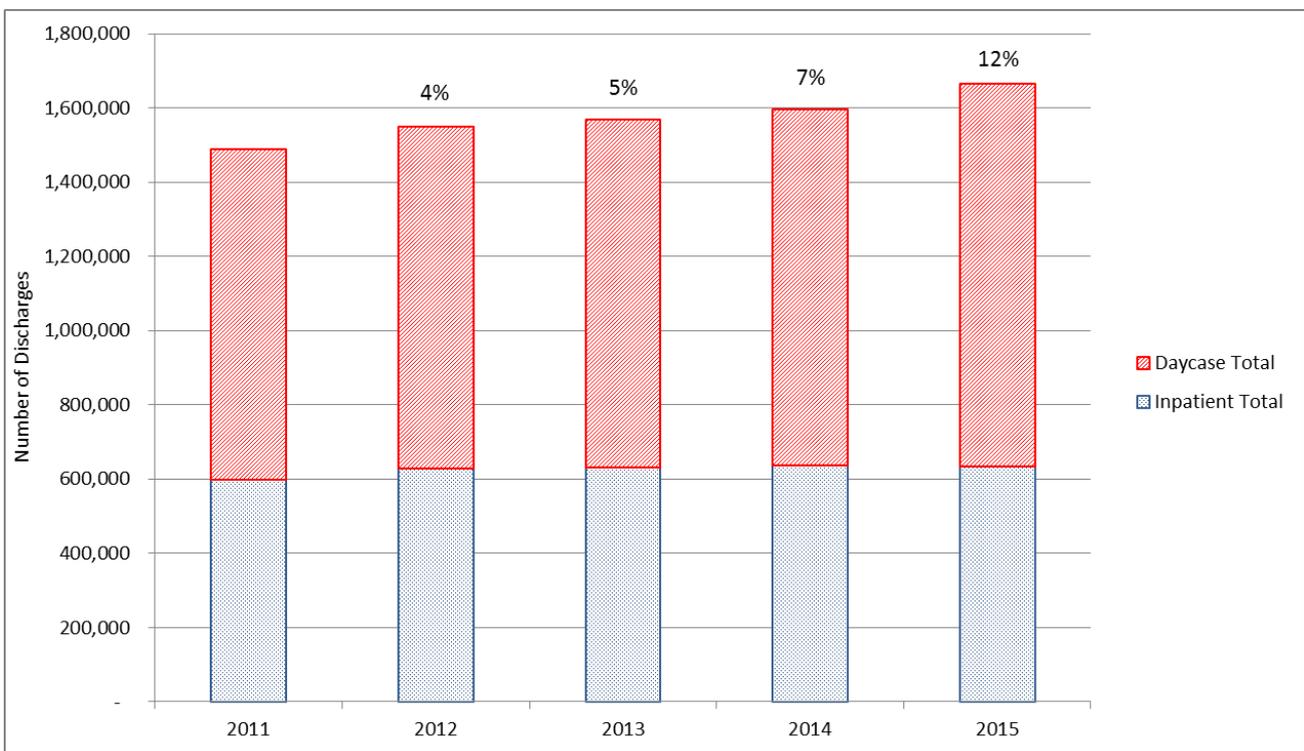
Note: Surgical patients were defined according to their AR-DRG, by selecting the partition that identifies discharges where the code indicates the episode of care was surgical.

¹³ RCSI, Irish College of Anaesthetists & HSE (2013) Model of Care for Elective Surgery

(iii) Shift in Activity to Day Setting

Performing procedures on a day surgery basis, where clinically appropriate, has a number of potential advantages over In-patient treatment, including reduced cost of treatment and lower wait times for patients. As evident from Figure 22 below, while overall discharge activity increased by 12% between 2011 and 2015, this growth mainly occurred on the Day Case side (where the discharge volume increased by 15.6%), with In-patient activity increasing at a much lower rate (6.2%). Figure 22 shows how the ratio of In-patient to Day Case activity changed during the period in question as well as the overall percentage increase.

Figure 22 – Ratio of In-patient to Day Case Activity and Cumulative Total % Increase 2011 – 2015



Source: Healthcare Pricing Office, HSE

As with the increase in complexity shown in Figure 18, a similar effect is replicated in the In-patient and day case weighted unit costs. As previously mentioned, the activity that was previously considered In-patient but is now carried out on a Day Case basis tends to be the less complex In-patient work. However, this work tends to be more complex than the previous Day Case activity. By shifting this less complex In-patient work to a Day Case setting, the overall level of complexity of both In-patient and Day Case work increases. This then has the knock-on effect of placing upward pressure on the unit cost of both In-patient and Day Case activity, and therefore would be expected to increase expenditure levels. This impact makes the reduction in In-patient weighted unit cost delivered in recent years even more impressive.

Outpatient Expenditure, Activity & Efficiency

Outpatient activity, in both ABF Hospitals and non-ABF Hospitals, remains block-funded rather than being funded on an ABF (Activity Based Funding) basis.

While for In-patient and Day Case activity, which are funded on an ABF basis in the 38 largest hospitals, we can draw conclusions regarding the efficiency of this activity based on a combination of volume of activity, complexity of cases, and cost per weighted unit, this data is not available for Outpatient activity.

As an interim measure, we can isolate the expenditure attributed to Outpatient Activity in ABF hospitals as part of the Specialty Costing data submitted to the HPO, and also the number of Outpatient Attendances, recorded in HSE BIU data, both across all Acute hospitals, and those recorded in ABF Hospitals.

Figure 23: Block Funded Outpatient Expenditure in ABF Hospitals, 2011 – 2015

	2011	2012	2013	2014	2015
	€,000	€,000	€,000	€,000	€,000
Outpatient Expenditure	454,791	468,800	476,494	495,273	530,567

Source: Healthcare Pricing Office, HSE

Outpatient Expenditure in “ABF Hospitals” has increased every year since 2011, with substantial increases seen in 2014 and 2015.

Figure 24: Outpatient Activity - Attendances 2011 – 2015 (All Public Acute Hospitals)

	2011	2012	2013	2014	2015
Outpatient Attendances	n/a	n/a	3,071,995	3,206,056	3,298,868

Source: HSE BIU

Outpatient attendance data for 2011 was not available due to the development of a reformed set of OPD data. For 2012, Outpatient data refers only to consultant delivered activity. From 2013 onwards, data on Outpatient attendances includes nurse-led clinics and maternity hospitals. As shown above, Outpatient attendances across all acute public hospitals have increased since 2013.

Figure 25: Outpatient Activity - Attendances in ABF Hospitals, 2013 - 2015

	2013	2014	2015
Outpatient Attendances	2,946,030	3,070,291	3,158,692

Source: HSE BIU

In keeping with the trend in with wider public hospital sector, outpatient attendances in “ABF Hospitals”¹⁴ have also increased since 2013.

The data in Figures 23-25 should be viewed with caution. As mentioned above this data is not sufficiently robust to allow for direct comparison between expenditure and activity figures, nor is it suitable for measuring changes in cost per attendance. Therefore, they can only be used for indicative purposes, and conclusions cannot be drawn on Outpatient efficiency and productivity.

Emergency Department Expenditure Activity & Efficiency

As with the discussion of Outpatient efficiency above, the data available for use in the analysis of Emergency Department expenditure, activity and efficiency is limited. While we can look at the trends expressed below in block-funded expenditure attributed to ED activity in ABF Hospitals, and, separately, the number of ED attendances, both across the acute hospital system, and those recorded in ABF hospitals, we cannot derive an approximate cost per attendance as this data is cross reported from sources that cannot be aligned.

Figure 26: Block Funded Emergency Department Expenditure in ABF Hospitals. 2011 -2015

	2011	2012	2013	2014	2015
	€,000	€,000	€,000	€,000	€,000
ED Expenditure	311,454	313,408	308,611	319,779	344,438

Source: Healthcare Pricing Office, HSE

Emergency Department Expenditure in ABF hospitals has increased across the period 2011 -2015. There was a slight decrease in 2013, and the most substantial increase was seen in 2015.

Figure 27: Emergency Department Attendances (All Public Acute Hospitals) 2011 - 2015

	2011	2012	2013	2014	2015
ED attendances	1,226,820	1,278,522	1,252,685	1,218,132	1,232,255

Source: HSE BIU

Notes: Data for Emergency Dept attendances refers to new and return presentations at Emergency Depts

While Emergency Department Attendance numbers across all public acute hospitals have remained fairly stable over the period being examined, the changes to Ireland’s demographic profile, in particular the growing cohort of older people, may be affecting the complexity of the cases being dealt with.

¹⁴ Note: ABF hospitals are funded on an ABF basis for In-patient and Day Case activity only – Outpatient and Emergency Department activity remain block-funded in these hospitals

Figure 28: Emergency Attendances (ABF-Hospitals), 2011 - 2015

	2011	2012	2013	2014	2015
ED Attendances	1,162,998	1,222,536	1,198,746	1,202,828	1,215,678

Source: HSE BIU

Notes: Data for Emergency Dept. attendances refers to new and return presentations at Emergency Dept.

The volume of ED attendances at “ABF Hospitals” has followed a similar trend of the attendances across the wider Acute Public Hospital sector, with the exception of the decrease in 2014 shown in Figure 27 that is not mirrored here. Again, changes to Ireland’s demographic profile, in particular the growing cohort of older people may be affecting the complexity of cases being treated in these Emergency Departments.

Given that the level of data available for this kind of activity is not on par with the data available for ABF-funded activity (i.e, In-patient and Day Case activity), caution must be exercised in drawing any conclusions.

Section 5 - Conclusions

From the data provided in this Spending Review we can see that Acute Hospital Gross Expenditure has risen by 14% over the course of 2011 to 2016. In analysing the increase in expenditure during this period it is important to bear in mind the significance of using 2011 as the basis for comparison, given the effects of the economic crisis on the amount of funding available for acute hospitals in the years pre-2011.

Expenditure on Pay (excluding Superannuation) accounted for more than 65% of gross expenditure in 2016. The increase in Pay (excluding Superannuation) expenditure of 7% over the period of 2011-2016 has been affected by a 10% increase in WTE staff numbers, as well as by non-productive pay related changes such as the effects of LRA and increments. In the years pre-2011 staff numbers reduced significantly. The increase in the volume and complexity of activity taking place in acute hospitals since 2011 may have contributed to the need for increased staffing levels. In addition to this, an increased focus on quality of care may also have influenced decisions to increase staff numbers. Further analysis on the breakdown between Productive and Non-Productive pay changes is needed in order to fully understand the drivers and effects of this change in expenditure.

Between 2011 and 2016 Clinical Expenditure has increased by 25%. The level of Clinical Expenditure required over this period has been impacted by both In-patient and Day Case activity which have seen an increase in both volume (6.2% and 15.6% respectively) and average complexity (4.1% and 3.9% respectively). Similarly, although the data is not as robust and does not take into account changes to the complexity of cases treated, the volume of block-funded activity (Outpatient and Emergency Department) has increased, both within ABF hospitals, and the wider hospital system.

Non-Clinical Expenditure has also increased between 2011 and 2016 (39%), partly due to inflation, and partly as a result of increased expenditure on professional services. The implementation of the Waiting List Initiative had a significant impact on outsourcing between 2015 and 2016 which is a component of Professional Services. Other significant areas of spend under this category were Cleaning & Washing, Office Expenses Rents/Rates, Other, and Maintenance.

While there has been an increase in Gross Expenditure as described above, there have also been substantial increases in activity as an output – both in terms of volume, and where measureable, average complexity. This is in line with the changing demographic context of the country. The average cost per weighted unit of care between 2011 and 2015 fell by 0.6% for In-patient activity, and increased by 15% for Day Case activity. Improvements in hospital performance as a result of progress made under efficiency measures such as reduced Average Length of Stay, increased Day of Surgery admissions, and the movement of lower complexity In-patient Activity to Day Case settings have prevented Acute Hospital Expenditure from increasing by a greater proportion during the period 2011-2015.

As mentioned above, there are limitations to the correlations that can be drawn in relation to productivity and efficiency, due to changes in the recording of activity data, and in particular the lack of detailed activity, complexity and cost data for Outpatient and Emergency Department care.

The purpose of the implementation of the Activity Based Funding (ABF) approach is to introduce greater levels of efficiency and transparency to the health system by creating an explicit link between expenditure and activity. While ABF has already been rolled out for In-patient and Day Case activity in the 38 largest public hospitals since 2016, this model will continue to evolve in subsequent years to encompass other aspects of hospital services. Preliminary work in relation to the future expansion of ABF to Outpatient Services has started, including a pilot project to assess the suitability of existing data sources for ABF purposes and this will continue during 2017.

While in the immediate period post-2008 greater efficiencies were achieved, consideration needs to be given to the fact that there are limits to the capacity of the system to absorb further cuts if adequate consideration is not given to their potential to damage patient access and care. This will be a significant challenge since growing demand will continually put the responsiveness of services to the test. Acute hospital services need to continue to respond to demographic and demand driven cost pressures. An estimated increase of 1.7% in costs associated with increasing population and age profile was predicted for acute hospitals in 2017 compared with 2016 (HSE, NSP 2017).

Next Steps

Within this paper it was noted that more analysis of Expenditure trends, and of particular lines of expenditure, is needed to better understand the drivers of the increases in expenditure. Similarly, deeper analysis is needed regarding the impact of changes in the recording of activity on activity trends. The Department of Health intends to pursue these issues in future papers. In the longer term, the planned future expansion of ABF to Outpatient activity will provide more detailed data for further analysis of activity trends, as will the continued application and embedding of ABF for In-patient and Day Case activity.

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