

Health Service Executive

Acute Hospital Bed Capacity Review:
A Preferred Health System in Ireland to 2020

Detailed Report

7 September 2007



Contents

1. Executive summary	2
1.1 1. Introduction	2
1.2 2. Overview of Approach	2
1.3 3. The use of Hospital Beds in Ireland	6
1.4 4. Current and future demand for Acute Beds	13
1.5 5. Implementing Ireland's Preferred Health System	21
2. Introduction	27
2.1 Background	27
2.2 Acute bed capacity review terms of reference	29
2.3 Scope of the review	29
2.4 Definitions	30
2.5 Final report structure	31
3. Review approach	33
3.1 Research documents	34
3.2 Analyse data	35
3.3 Develop assumptions	38
3.4 Validate assumptions with stakeholders	42
3.5 Project requirement	43
3.6 Complete report	44
3.7 Review limitations	44
4. Hospital beds in Ireland and how they are used	47
4.1 Current and planned hospital beds	47
4.2 Comparison with bed numbers in other countries	49
4.3 Profile of current bed usage	53
4.4 Review of current bed usage	59
4.5 Changes in configuration of bed stock	71
4.6 Implications for the Irish health system	72

5.	Future demand for acute beds	76
5.1	Existing demand for existing beds	76
5.2	Existing demand for additional beds	77
5.3	Demographic changes	81
5.4	Changes in the health market	84
5.5	Health demand	87
5.6	Bed requirement to meet this demand	88
6.	Future demand for acute beds if Ireland implements the planned changes across the health system	93
6.1	Overview of preferred health system	94
6.2	Preferred health system characteristics and attributes	96
6.3	Configuration of services	101
6.4	Preferred health system assumptions	103
6.5	Future bed requirement	110
6.6	Plan to deliver preferred health system	115
6.7	Barriers to implementing the preferred health system	124
Appendix A:	Steering group and project group	127
Appendix B:	Methodology	129
B.1	Acute patient activity	129
B.2	Bed requirement calculation	131
B.3	Existing and planned bed volumes	134
Appendix C:	Irish consultation list	135
Appendix D:	International Consultation List	140
Appendix E:	Public Submissions to the Review	141
Appendix F:	Organisation submissions to the review	142
Appendix G:	Expert peer review group	143
Appendix H:	Future health innovations	144

Appendix I: Sensitivity analysis	146
I.1 Further 10% increase in population	146
I.2 Only delivery 33% of reduction in acute admission target	147
I.3 Reduction in ALOS improvements	147
I.4 Achieving a proportion of proposed improvements.	147
Appendix J: Network model	149
J.1 Current referral scenario	149
J.2 Regionalisation scenario	150
Appendix K: Beds by specialty group	151
Appendix L: Critical care	152
Appendix M: Capital and operating costs	153
M.1 Capital costs	153
M.2 Operational costs	155
Appendix N: Preferred health system links with HSE transformation programme	156
Appendix O: International case studies	157
Appendix P: Illustrative patient stories	162
P.1 No care requirement	162
P.2 Patient self care	163
P.3 Primary, community and continuing care	164
P.4 Acute care	165
Appendix Q: Bibliography	166

1. Executive summary



1. Executive summary

1.1 1. Introduction

The Health Service Executive (HSE) is committed to ensuring that patients are treated in the healthcare setting most appropriate to their needs while at the same time, maximising the use of its resources. Central to this role is the requirement to plan effectively for the future healthcare needs of the population based on empirical evidence.

PA Consulting Group was commissioned to complete an independent review of acute bed capacity requirements for Ireland until the year 2020.

The objective of the Review was to:

- Identify the acute bed capacity needs to the year 2020
- Identify the number and type of beds required
- Identify capital and revenue cost implications
- Advise on how to meet the identified need.

The Review included all acute hospital beds excluding psychiatry across public and private hospitals in Ireland. Existing non-acute beds were not considered. However, any additional non-acute beds required to facilitate change in the acute hospitals were included.

1.2 2. Overview of Approach

The Review was undertaken between January 2007 and May 2007 and comprised six key stages. This ranged from extensive desk research on the use of and planning for acute beds in Ireland, to the development of a sophisticated health model to project acute beds within the Irish healthcare system. The model and its assumptions were tested with a wide variety of national and international healthcare experts.

The Review was informed by a comprehensive stakeholder consultation exercise, including over 130 Irish and 20 international health experts. Further, an independent Peer Group of international health experts signed off the Review methodology, detailed assumptions and Final Report. The Peer Group included a:

- Professor of International Health Systems and WHO advisor
- Senior Lecturer in Operational Research specialising in modelling the delivery of acute health services
- NHS expert in health system delivery improvement
- Former Deputy Director General of Health for New Zealand.

1. Executive summary

The research involved extensive statistical comparison of the Irish Healthcare system with overseas experience, using well established performance indicators from the Organisation for Economic Co-operation and Development (OECD) health data and from within specific health systems, such as in Australia, Canada and the United Kingdom. The research made full use of Hospital In-patient Enquiry Scheme (HIPE) and was supplemented by data provided by VHI on private acute patient activity and additional health data provided by the HSE and a number of other sources.

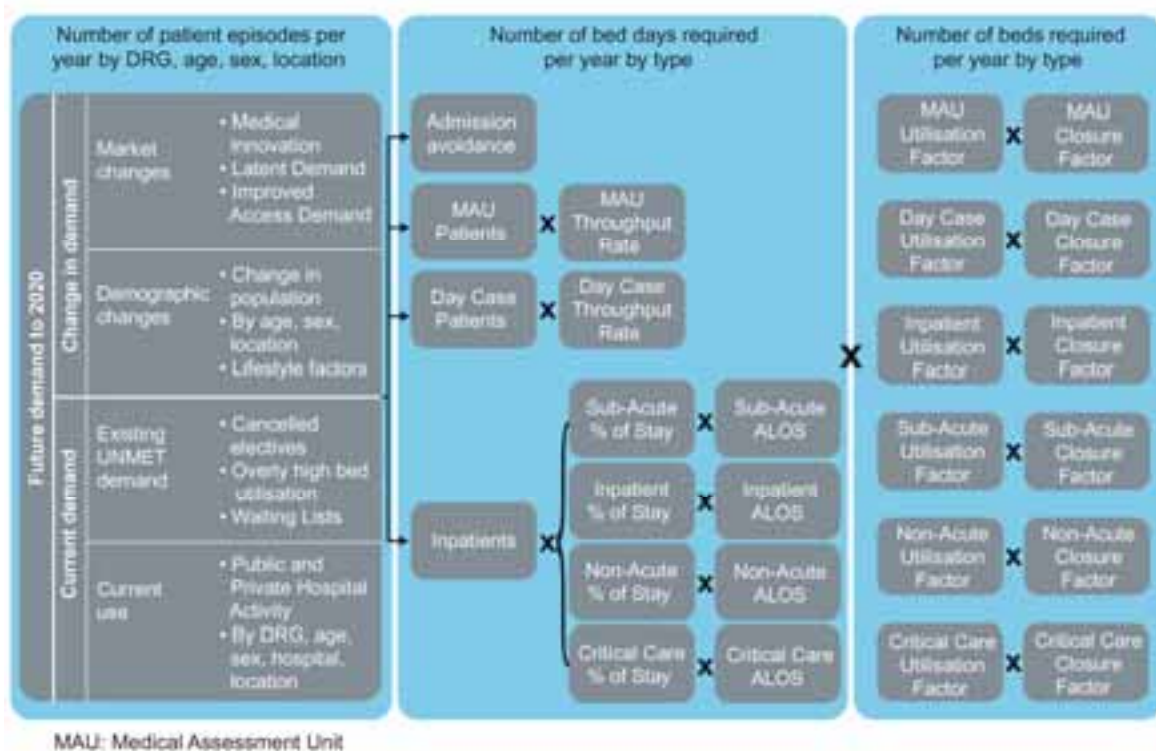
The Australian Refined Diagnosis Related Groups (DRGs) is the Irish standard and was used as the primary method of categorising each patient episode. A detailed analysis of this data considered the relative performance for a variety of health statistics across Irish hospitals. Irish population information and projections were provided by the Central Statistics Office (CSO). The Review also consulted with a wide range of international health experts on best practice in healthcare delivery, future health innovation and the enablers of healthcare reform.

Throughout the Review the process was managed by a Project Group comprising representatives from the HSE, Department of Health & Children and ESRI. Further, it received direction from a Steering Group including the Project Group members and representatives from Department of Finance, the CSO as well as clinicians.

The Review assessed the current efficiency of acute hospital beds in Ireland based on standard bed utilisation performance statistics, such as average length of stay (ALOS), day case rates, etc. It then forecasted the demand for acute hospital services based on changes in the population size and demographics as well as increases resulting from medical innovation and rising consumer expectations. This showed a significant increase in the demand for acute health services.

The Review then calculated the number of bed days required to service this demand based on a series of assumptions around the provision of health services, eg Day Case rates and inpatient ALOS. A further uplift was applied to the bed day requirement to ensure appropriate bed utilisation rates and for bed closures. This was then translated into an actual requirement of beds by type. A graphical representation of the Bed Capacity Model is provided below (Figure A).

Figure A: Graphical Representation of Bed Capacity Model



The Review considered the implications on the number of required acute hospital beds based on current practice in hospitals and compared it with the bed requirement if Ireland moved to a model of care more consistent with a selection of other countries, including Denmark, Sweden, New Zealand, Australia and the United Kingdom. This practice is consistent with the changes articulated in the HSE Transformation Plan. These include the development of integrated services across all stages of the care journey, the configuration of Primary, Community and Continuing Care (PCCC) services to deliver optimal and cost effective results, hospital reform and improved management of chronic illness.

The Preferred Health System seeks to deliver:

- **Better service to patients.** More accessible health services configured locally around the patient, rather than centrally around hospitals, eg increasing the diagnostics available from your GP, expanding community nurse services to enable more patients to be treated at home
- **Better patient outcomes.** A shift towards prevention and better self care to reduce acute episodes as well as less invasive surgery, eg day case as standard for cataracts. Patients also spend fewer days in hospital, which reduces the risk of infection
- **More efficient service for taxpayers.** Bring the performance statistics for Irish hospitals more in line with international comparisons. Installing a performance improvement culture across the health system, eg hospital inpatient discharge planning as standard.

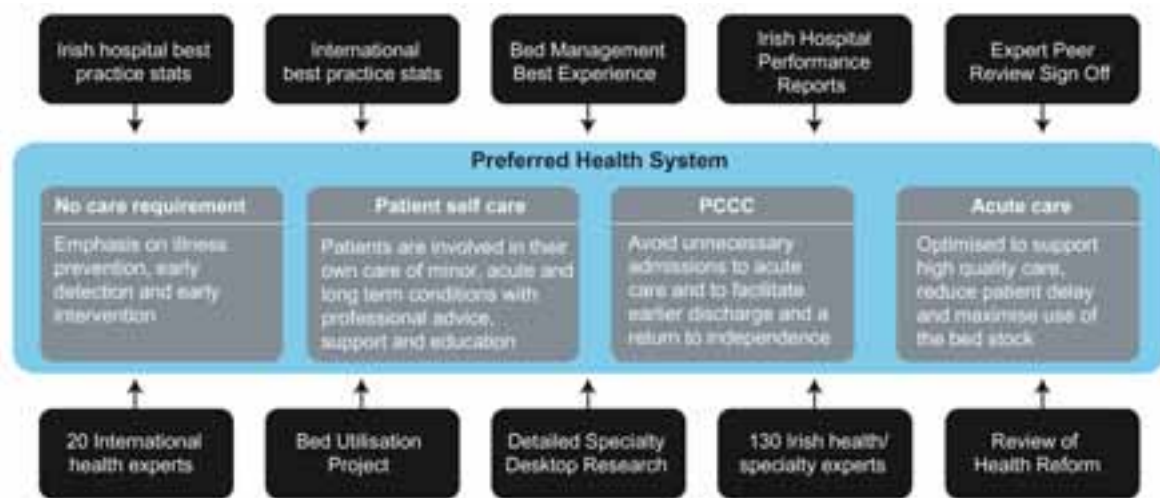
1. Executive summary

A rigorous approach was applied to define the Preferred Health System and the impact it has on the acute health system. It included an extensive expert stakeholder engagement approach within Ireland and overseas and information from the aforementioned other countries who have delivered similar models of healthcare.

This is summarised below (Figure B) and assumes:

- Significant investment in and reconfiguration of PCCC services to minimise the number of patients requiring acute hospital services and the time they spend in hospital
- An extensive programme led by the National Hospitals Office that uses the relevant information to improve the performance of all key acute hospitals.

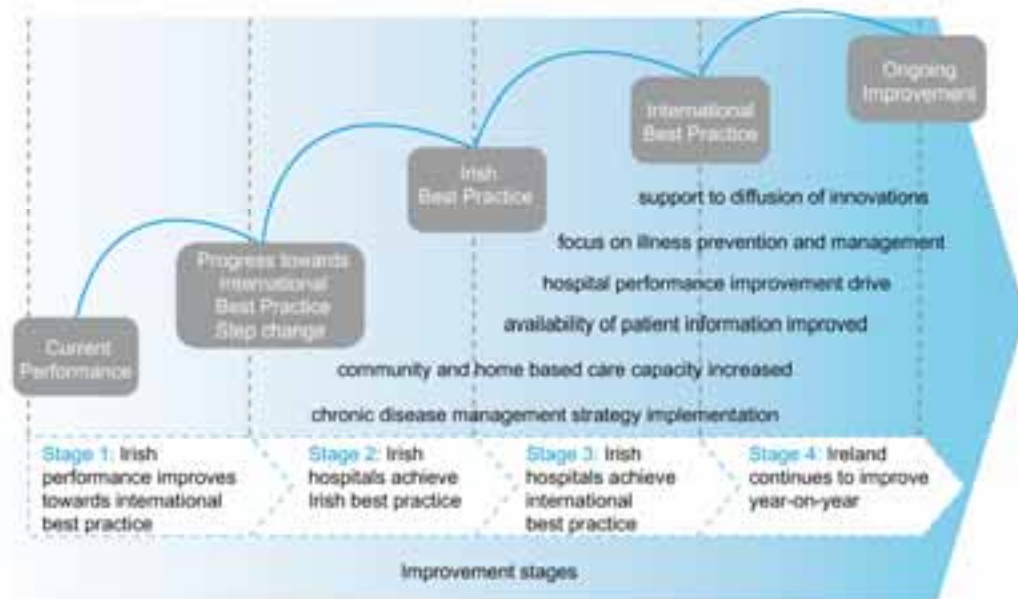
Figure B: Summary of Approach to Defining the Assumptions



The detailed approach for modelling the actual improvements in Irish health performance is summarised below (Figure C). Each assumption for the model resulted in an improvement curve by DRG Group to 2020.

It should be noted that there is significant variation in performance across Irish hospitals and a number currently perform relatively well for day case rates in particular. Stage 3 on the improvement curve targets other hospitals to meet that existing Irish standard. It should therefore be seen as attainable.

Figure C: Modelling the improvement from current performance to international best practice



1.3 3. The use of Hospital Beds in Ireland

For the purposes of this study an ‘acute’ bed is the collective term for inpatient beds, day case beds, day places and critical care beds. This includes all public patient beds in public hospitals and all private patient beds in public and private hospitals.

1.3.1 (a.) Current and planned Hospital Beds

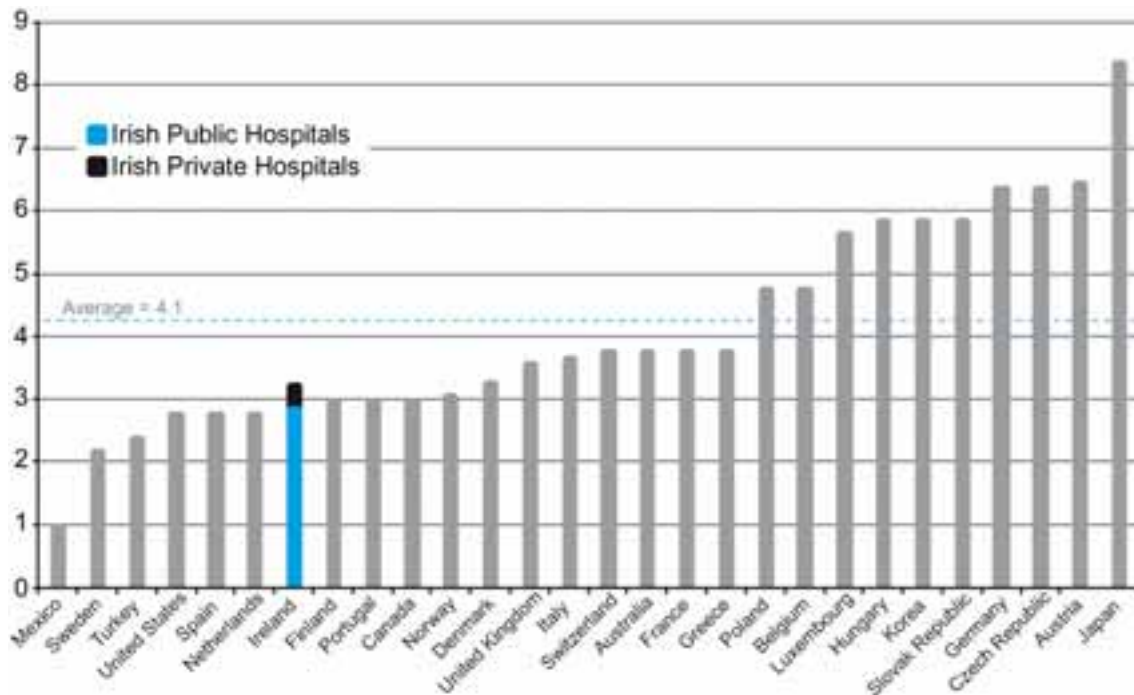
There are currently in total 11,660 public patient beds and 2,461 private patient beds in public hospitals. There are also a further 1,926 private patient hospital beds that fall within the scope of this study. A further 458 public patient beds and 770 private patient beds are planned to be delivered from 2007 to 2011. (This excludes the additional beds projected to be delivered by the Co-Location Project.)

The research examined the number of acute beds in Ireland versus that in other countries.

OECD data shows that Ireland has 30% fewer acute hospital inpatient beds per capita, but this excludes private hospitals and does not necessarily mean we require more beds.

It is commonly stated that Ireland has 30% fewer inpatient hospital beds than the OECD average. However, care must be taken with this comparison. Ireland and Hungary are the only two OECD countries who exclude inpatient beds in private hospitals from their OECD submission. Private hospital beds accounts for almost 12% of the total Irish inpatient bed stock. Adding private hospital beds means that Ireland in fact has 20% fewer beds per capita.

Figure D: Acute Inpatient Beds Per Capita for OECD Countries (Source - OECD Health Data 2006)



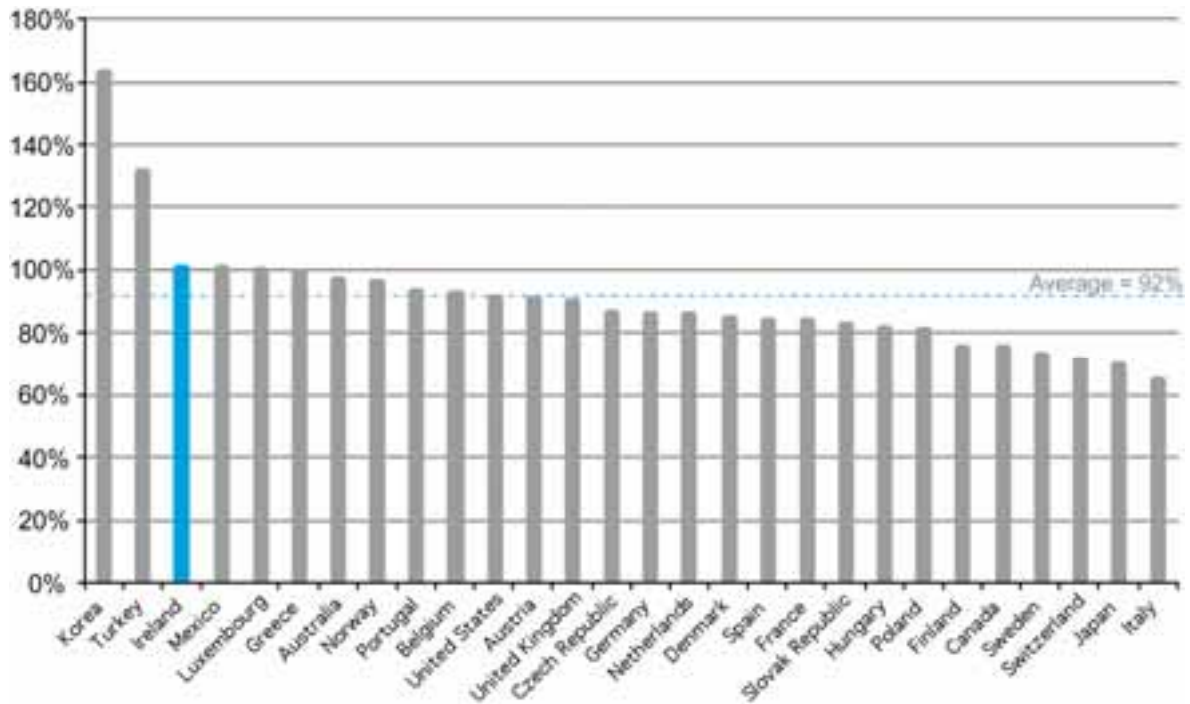
Further, this ratio may be appropriate for Ireland's health demand. Ireland has a relatively young population (with only Turkey, Mexico and Korea having a lower proportion of people aged over 64 years old) which results in a lower relative demand for acute health services. It follows that Ireland requires fewer acute beds. Also, Ireland also has a similar acute bed ratio with countries such as the Netherlands, Canada and Finland, who are often cited as examples healthcare systems Ireland should strive for.

That is, this comparison is overly simplistic and is of little value. A more rigorous analysis is therefore required that considers the specific health requirements of the Irish population.

The number of hospital beds in a significant number of countries is steadily decreasing whilst they have been increasing their inpatient activity.

The total number of inpatient beds in the OECD has decreased by 11% since 1995. Further it has decreased by on average 8% for each country (Figure E). During this same period, countries have delivered an average increase of 27% in inpatient activity. Since 1995, Ireland has increased the number of acute beds by 2% and increased inpatient activity by 37%. That is, the general trend is to increase inpatient activity in hospitals through other means than simply adding further beds, eg formal patient discharge planning.

Figure E: Acute Inpatient Beds in 2005 as a % of Acute Beds in 1995 (Source - OECD Health Data 2006)

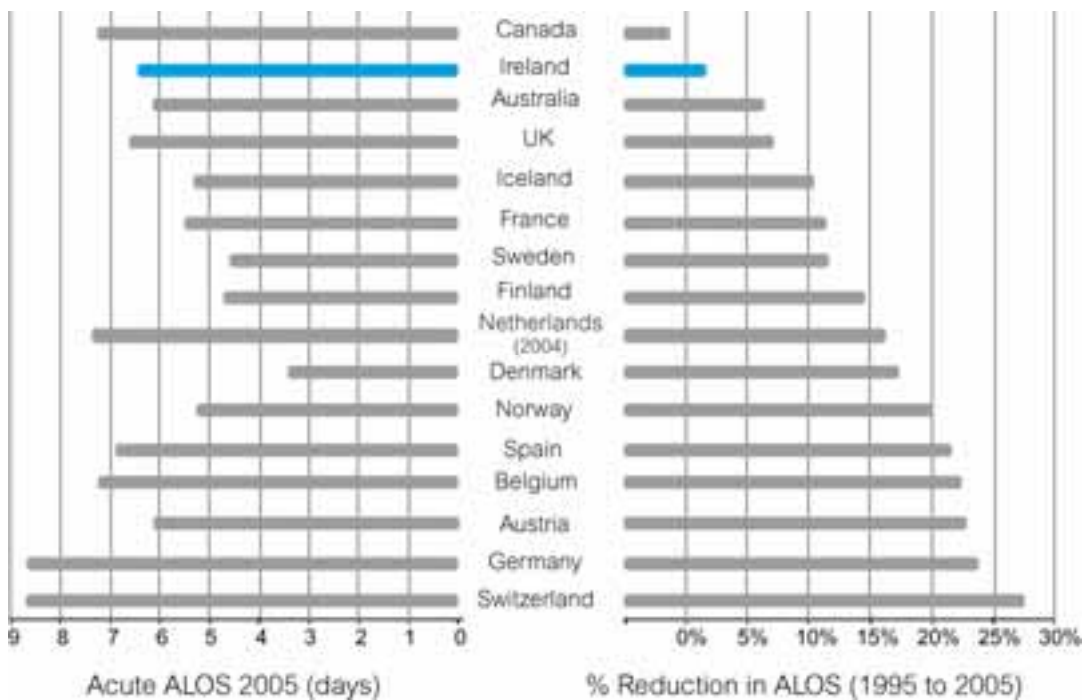


1.3.2 (b.) Review of current Bed usage

There is scope for improving the efficiency of Irish hospitals.

Ireland has delivered the second lowest reduction in length of stay of any OECD country over the last ten years (Figure F). Canada is the only country that has delivered a lower reduction in ALOS than Ireland. However, this must be put into context with Canada’s health reform agenda of shifting to ambulatory and community services as well as having world leading day case surgery rates. Thus, the acuity of their hospital inpatients has increased significantly with this approach (as healthier patients are transferred to alternate care settings). It is therefore arguably understandable they have not also delivered length of stay reductions alongside this change. The average length of stay in Ireland is also relatively long and so there is significant potential to reduce it.

Figure F: Acute ALOS versus reduction in ALOS since 1995 (Source - OECD Health Data 2006)



Ireland has a slightly higher overall ALOS than the United Kingdom. However, the Irish population is significantly younger and therefore should generally spend less time in hospital. A detailed analysis which incorporates the age difference in hospital population for both countries shows the same inpatient typically stays between 0.6 and 1.9 more days in an Irish hospital. Medical inpatients typically spend an additional 0.7 days and surgical 1.2 additional days.

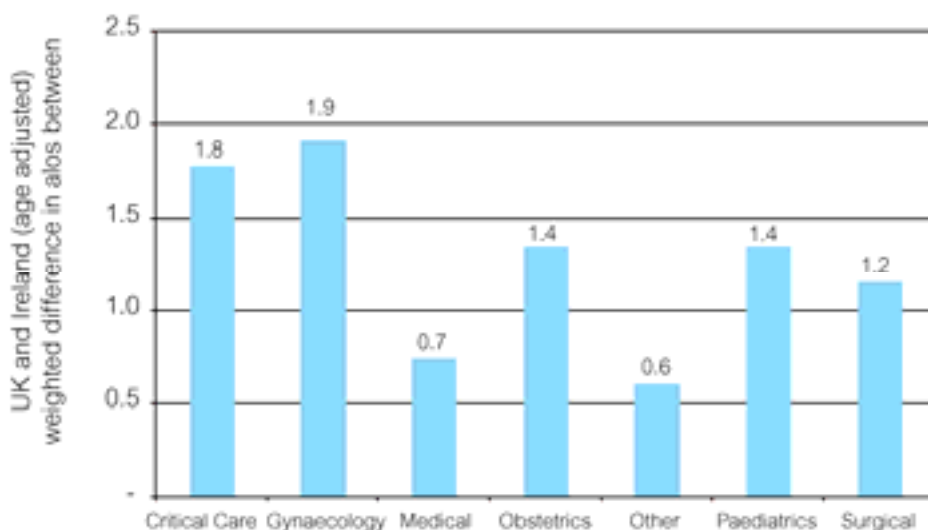
That is, the ALOS performance for Irish hospitals is significantly worse than the United Kingdom for patients with the same condition and of the same age. This alone costs Ireland an additional 900 inpatient beds – 8% of the total NHO hospital bed stock.

Ireland's poor performance for inpatient ALOS is confirmed when compared with Australian acute hospital trim points. A trim point defines the maximum expected length of stay for Australian patients per DRG. 1.3 million Irish bed days are in excess of the trim point. That is, 37% of Ireland's total inpatient bed stock is used by patients who in Australia would be expected to no longer be in hospital.

A number of operational statistics help inform why Irish hospitals perform relatively poorly:

- Irish hospitals still predominately operate from Monday to Friday, discharging three times more patients per day than on Saturday or Sunday
- More than half of surgical inpatients are admitted before their day of surgery
- Delays in accessing diagnostics cause significant bottlenecks throughout the hospital and have the potential to increase hospital throughput by 6%.

Figure G: Comparison in Length of Stay for Irish and UK Hospitals (Adjusted for Ireland’s Younger Population)¹



Many countries have delivered improved capacity in their health system by moving inpatients to be performed as day cases as standard. Ireland’s day case rate is 12% below the OECD average and less than half of that of Canada. For example, 338,000 more Irish patients could be treated as day cases if Ireland performed the same as Canada.

The actual day case rate varies significantly across Irish hospitals. Some hospitals attain day case rates as low as 15%. Other hospitals exceed even Canada’s average with 69% of all patients as day case. This demonstrates the potential for improvement in specific Irish hospitals.

The HSE Acute Hospital Bed Review surveyed 36% of the medical and surgical inpatients across Irish hospitals between November 2006 and March 2007. It found that 39% of all inpatients could potentially be treated in a more fitting (alternative to acute hospital) environment on that day of care. Further, it found that half had still not been discharged from hospital a week later. The principal alternatives to acute admission identified for these patients were:

- Access to assessment / diagnostics without acute admission
- Home-based patient care including GP support, therapy, specialist nursing, community nursing and home care packages
- Access to a non-acute bed with therapy support eg physiotherapy.

This Review also found that discharge planning is not the norm in Irish hospitals, with only 40% of the surveyed inpatients having any form of discharge plan and 17% an expected discharge date. This lack of formal process unnecessarily extends the stay for some Irish hospital inpatients. It also impacts each hospital’s ability to effectively schedule future activities.

¹ This analysis compared the ALOS for UK and Irish inpatients of the same age and with the same conditions. UK information was sourced from www.hesonline.nhs.uk for inpatient episodes in 2005-2006 and Irish information from HIPE for patient episodes (known as finished consultant episodes) in 2005. It showed that for most conditions Irish inpatients remained in hospital longer. This was then aggregated by Specialty Group as shown above.

1. Executive summary

It is also in the patient's interest to remain in hospital only for as long as is necessary:

- Inappropriate admissions and overly extended hospital stays cause unnecessary inconvenience to their lives
- Less invasive surgery (such as those applied as day case) often has a better health outcome and reduced recovery time for patients
- Extended hospital stays increases the risk of infection
- For vulnerable patients unnecessarily long stays in hospital run the risk of their social networks breaking down.²

In conclusion, there is significant opportunity for both improving the efficiency of Irish hospitals and transferring the delivery of health services out of acute hospitals to a more appropriate setting. This is illustrated below (Figure H).

Further, Australia, the United Kingdom, Finland, Denmark and Canada would deliver the same throughput in their health system with 2,000 – 5,000 less hospital beds.³

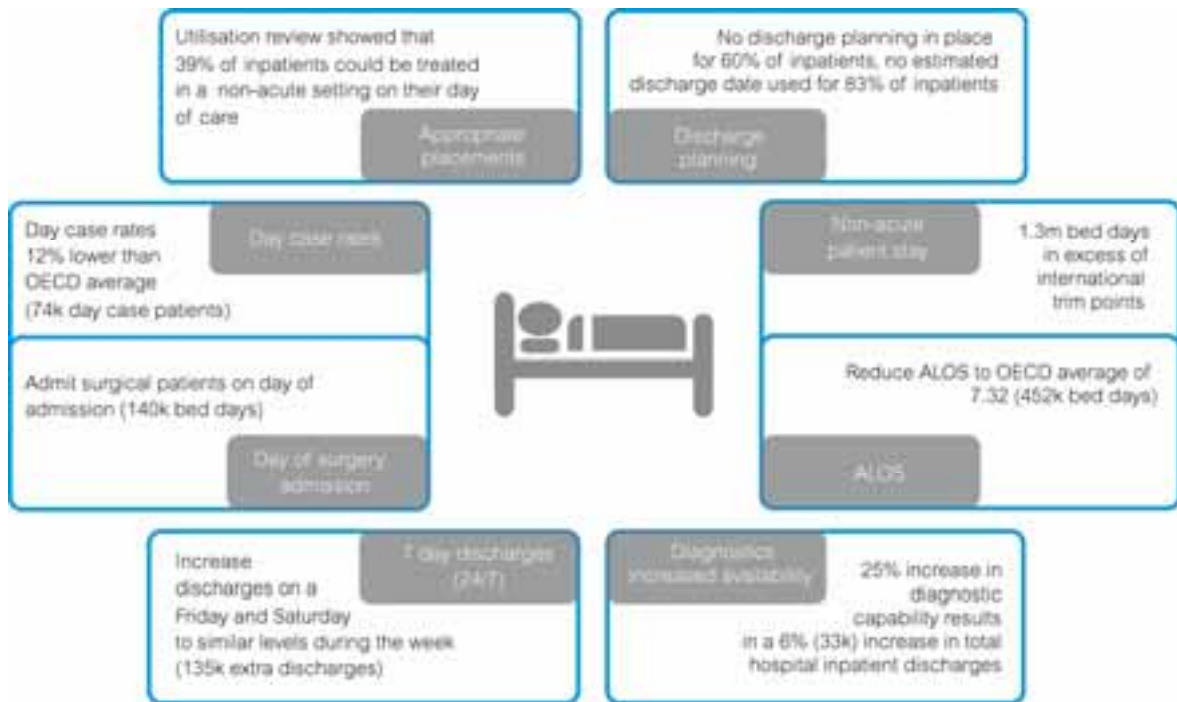
“There is clear evidence to show that patients who have day surgery have an overall better experience, improved clinical outcomes and less risk of hospital acquired infections.”

NHS Modernisation
Agency – 10 High
Impact Changes

² Why we need fewer hospital beds NHS Confederation 2006.

³ Ireland currently delivers 995,000 day case and inpatient episodes. This analysis used OECD day case rates and ALOS to calculate how many beds Ireland would require to deliver for the same activity if it attained day case rates and ALOS of other countries. A detailed breakdown of these figures is provided in the accompanying Technical Report.

Figure H: Impact of Current Hospital Use and Practice



...however, this is also due to wider issues in the health system.

Whilst there is certainly scope to increase the efficiency of Irish hospitals and thereby improve patient experience during their hospital stay (through better process and practice), it must also be acknowledged that the current problems are also due to the wider health system.

For example, there is a lack of available long-term care beds particularly around Dublin. This means that in many cases acute hospitals in Dublin have nowhere to transfer patients who have completed the acute component of their treatment but still require long-term care. As a result, the patient remains in an acute bed. Similarly, the HSE Acute Hospital Bed Review found that 12% of all adult medical and surgical admissions were for IV therapy only. Many countries deliver this service in the patient's home. It is also available at home for Irish private patients. However, this is not the case for Irish public patients and therefore they must be admitted to hospital. This inconveniences the patient and puts more strain on the acute hospital.

A general theme to emerge from the research is that countries have been most successful at delivering change when it has been done across the whole health system – including acute, non-acute, primary and continuing care. At the same time the configuration of beds within acute hospitals in other countries is also changing with a greater emphasis on flexibility and infection control, privacy and patient choice. Evidence from other countries also indicates that improved hospital performance is delivered via dedicated programmes (similar to the Winter Initiative, proposed Chronic Disease Management Programme and Cancer Control Programme in Ireland). These provide a structure for the reform as well as enable changes to be adopted relatively quickly at a local level within hospitals and the community.

1.4 4. Current and future demand for Acute Beds

This research shows that there are pressures on the existing acute public patient beds. Acute hospital bed occupancy rates consider the percentage of available inpatient bed days used by patients in the system. Overly high utilisation can mean that some new patients cannot be serviced and so can result in cancelled elective operations or delays. Equally it can result in overcrowding or inappropriate bed designations. Ireland has the fourth highest bed occupancy rate for OECD countries. High occupancy impacts on each stage of the patient pathway, including contributing to delays in Emergency Department (ED) admissions to hospitals and refused referrals to critical care units within hospitals. It also puts considerable strain on those working in hospitals.

There is also unmet demand within the existing Irish system. For example, around 200 elective surgery procedures are cancelled each week. Further, the Government have been required to set up the National Treatment Purchase Fund to service patients waiting three months or more for treatment. This is public health demand the system should have serviced.

“Emergency departments have an extremely important function and compromising the ability of the staff and units to perform it by allowing them to be dangerously overcrowded is potentially life threatening and absolutely unacceptable.”

Dr Peadar Gilligan, Consultant in Emergency Medicine, Beaumont Hospital, Letters to the Editor, Irish Times, 26 February 2007

1.4.1 (a.) Current situation

Ireland must now choose the healthcare system it wants;

- The current model focuses on delivery of health services via acute hospitals where patients are in attendance for many services better suited to be delivered in the community. Inpatients remain in hospital when the acute component of their treatment is finished and it would be more appropriate for these services to be delivered in an alternative environment if available. This puts significant pressure on hospital beds. Further, this demand for beds will only continue to increase.
- The Preferred Health System changes the role of the acute hospital. More patients can be cared for in the community or at home with support, eg community occupational therapists visits for patients with hip replacements. This will diminish the current reliance on the hospital and therefore alleviate many of these pressures. Patients will only attend a hospital when necessary and when admitted will have a reduced stay.

The model estimated that if the Preferred Health System was in place today Ireland would require 5,202 fewer hospital beds than currently in place to meet existing demand. This is the same health system currently operating in a number of countries. If only 75% of the improvements for this preferred system were delivered, Ireland would require 3,845 fewer hospital beds than exist today.

A reduction in acute bed numbers in this context should not be interpreted as a cut in services. It represents a transfer in the delivery of care to a setting more appropriate and convenient for the patient. This Preferred Health System necessitates an increase of capacity in the community. If this is not delivered, then neither will the reduction in acute beds.

For example, it is estimated that Ireland will require an additional 10,021 long term care beds in 2021⁴. The Department of Health and Children’s policy is to significantly expand community services to reduce this long term care bed requirement and allow citizens to remain at home. This is in the citizen’s interest and consistent with the Preferred Health System. It equally gives a clear indication of the scale of investment required in community services to enable the acute sector reform.

Clearly such reforms cannot be delivered immediately. Therefore, based on existing practice, the model estimated that Ireland requires 12,778 public patient beds to meet existing demand. This is in comparison with an actual figure of 11,660 – a short-fall of 1,118 beds.

The HSE currently has a further 458 beds in plan which leaves the overall deficit at 660. It is projected that the Co-Location Project will deliver more than this number of public patient beds. The exception to this is critical care beds where a further addition of beds is required.

Table A: Requirement for Public Patient Hospital Beds in 2007

	Hospital beds	Change in requirement
Existing public patient hospital beds in 2007	11,660	N/A
Requirement for public patient hospital beds in 2007 based on preferred health system	6,458	-5,202
Requirement for public patient hospital beds in 2007 based on preferred health system (75% delivery)	7,815	-3,845
Requirement for public patient hospital beds in 2007 based on existing practice	12,778	1,118

⁴ HSE Assessment of Need for Residential Care for Older People, 2006.

1.4.2 (b.) Forward to 2020

Determining the future demand for acute beds is a complex process. Account must be taken of a range of factors that work in an integrated way to determine the overall picture of demand today and forward to 2020. This includes changes in population size, age, lifestyle, expectations and health innovation. This research was based on an extensive statistical model, the assumptions of which were tested with national and international health experts.

The Central Statistics Office (CSO) projects that the population will increase by 19% to over 5 million citizens in 2020. During this time, they also predict a gradual ageing of the population with significant increases particularly in the number of citizens over 64 years old. Like many other Western countries the Body Mass Index of the Irish population is increasing. Further, Ireland continues to be amongst the highest consumers of alcohol in the world. Ireland is observing increased rates in a number of conditions, including cancer, diabetes and cardiovascular disease. These and many other factors will contribute to an ongoing increase in the need for acute health services. In addition, like other areas, the health sector is subject to a variety of pressures including technological innovation, unmet demand and changing patient expectations.

Based on these potential changes, this research estimates almost a 60% increase in the demand for acute hospital services from 2007 to over 1.6 million patient episodes occurring in 2020.

Looking forward, based on the Preferred Health System, the number of public patient hospital beds Ireland is going to require in 2020 will be 8,834. This is a reduction of 2,826 fewer acute hospital beds being required than are in place today. However, it is an increase of 2,376 hospital beds than the number required if the Preferred Health System was in place today.

This is achieved through increasing the overall health system capacity by offsetting reductions in inpatient hospital beds with making more services available within primary and community care as well as increasing the number of day case beds, Medical Assessment Units (MAUs)⁵, sub-acute and non-acute beds. The requirement for critical care beds continues to increase. This is consistent with the new role of the hospital and increased acuity of hospital inpatient admissions. It will also only be achieved if reductions in acute hospital spend are re-invested in the community.

Reducing the number of acute hospital beds also provides an opportunity to improve the stock within our existing hospitals. For example, it would enable an increase in the space between inpatient beds and an expansion in the number of specialist single rooms in acute hospitals. Both will help in reducing hospital acquired infection rates.

⁵ MAUs are medically led units where the patient can access assessment and diagnostics without being admitted to a hospital bed. Sub-acute beds are inpatient bed used for the continuing care of a patient requiring rehabilitation or other semi-acute services. Non-acute beds are inpatient bed used for the continuing care of a patient no longer requiring acute services, eg long-term care of the elderly.

1. Executive summary

Based on current practice, the number of public patient hospital beds Ireland is going to require in 2020 will be 19,822. This is 8,162 more public patient hospital beds than are currently in place and so requires an annual increase of 4% per year until 2020. This will be during a period where most other countries are reducing their acute hospital bed numbers.

The cost of provision based on current practice will be immense. It will require extensive investment across the hospital network to deliver the additional beds as well as the associated staff and technology. Delivering this additional number of beds would require a total capital investment of over €4 billion and additional revenue costs of almost €26 billion over 14 years.

“The Department of Finance must fully understand this is not about reducing healthcare spending. In fact, additional budget may be required during the transition.”

Lindsay Sales, Expert Peer Review Member and former Deputy Director General of Health for New Zealand

Further, this demand for acute hospital beds will only increase beyond 2020. The 2006 Census shows that almost a third of the Irish population is between 25 and 44 years old. By 2020, the citizens that make up this population peak will still be relatively young, aged between 39 and 58 years old. Citizens aged between 65 and 74 years old are almost three times more likely than average to be in an acute hospital bed.⁶ This then rises to between six and eight times more likely as citizens become older than 74 years old. This means that under current practice, the demand for acute hospital beds may rise to unsustainable rates through 2030 to 2050 and beyond as Ireland's current population peak ages past 64 years old.

It is important to note that the figures in the below table only consider the total cost of one specific element of the health system, namely acute hospitals. The Preferred Health System assumes a shift in the focus of health service delivery to the community. It is therefore logical that the costs follow. The HSE Transformation Plan includes detailed programmes to deliver this change. Each has completed or is completing robust financial exercises to quantify the cost of these strategic changes. They will require significant capital investment and incur huge ongoing operating costs. This has been the experience in many other countries. Further, there is no guarantee (or necessarily expectation) that the net result is a reduction in total health spend. In fact, most countries who have implemented such health systems continue to increase their annual health budget. However, it results in the delivery of a more effective and efficient service to patients.

⁶ Source – HIPE 2006, CSO Census 2006, illustrated in the main report.

Table B: Requirement for Public Patient Hospital Beds in 2020⁷

	Hospital beds	Additional requirements	Additional capital costs (€MM)	Additional operational costs (€MM) ⁸
Existing public patient hospital beds in 2007	11,660	N/A	-	-
Requirement for public patient hospital beds in 2020 based on preferred health system	8,834	-2,826	539	-12,187
Requirement for public patient hospital beds in 2020 based on preferred health system (75% delivery)	10,743	-917	543	-5,491
Requirement for public patient hospital beds in 2020 based on existing practice	19,822	8,162	4,066	25,915

The detailed projection of required public patient beds to 2020 for the Preferred Health System by type is shown in Table C. It projects a significant reduction in acute inpatient beds offset with increases in day case beds as this becomes the standard. Similarly, increased capacity is delivered via injections of MAU and non-acute beds. The requirement for critical care beds continues to increase. This is consistent with the new role of the hospital and increased acuity of hospital inpatient admissions.

Note that non-acute bed requirement is related to Ireland's hospital population only. It should therefore be seen as in addition to the aforementioned long term care bed requirement for the wider Irish population. Further, it is fully possible that the net result is an increase in the total number of beds in the health system.

⁷ These projections are based on the best available epidemiology information. It is recommended that the HSE updates the projections as new epidemiology research becomes available.

⁸ The operational cost per hospital bed increases over time. However, fewer beds are required and therefore the total operational costs reduce.

Table C: Public Patient Bed Requirement to 2020 (Preferred Health System)

Type bed	2007	2014	2020
Public patient beds			
Inpatient	9,823	3,767	4,025
Day Bed/Place	1,598	2,673	3,160
Additional Non Acute	0	270	196
Sub Acute	368	119	133
MAU	0	55	66
Total public	11,789	6,883	7,581
Critical Care	989	1,125	1,253
Total public (inc critical care)	12,778	8,008	8,834

Table D shows the detailed breakdown of the reduction in hospital beds by source. The most significant saving is attained through reductions in inpatient ALOS.

Table D: Delivery of Preferred Health System - Bed Requirement (Public Patient Beds)

	2007	2014	2020
Public patient bed requirement			
Current Practice	12,778	16,036	19,822
Reduction in Acute Admissions		762	1,555
Increase in Day Case Rates		1,610	1,803
Increase in MAU		542	620
Reduction in Inpatient Acute ALOS		4,511	6,460
Additional Non-Acute Beds		602	549
Preferred Health System	12,778	8,008	8,834

The Preferred Health System should not be seen as an overly aggressive target. The improvements Ireland attains to 2020 to deliver this requirement based on existing practice in Irish hospitals and within other countries.

1. Executive summary

It is, however, fully recognised that the Preferred Health System is a significant challenge. On that basis, Table E considers the impact on bed requirements if Ireland delivers only part of the defined improvements. If Ireland attains only 75% of the proposed improvements then 10,743 public patient beds are required in 2020. This is 917 less than exist today. If Ireland attains 50% of the proposed improvements then 1505 additional beds than exist today are required in 2020.

Table E: Public Patient Bed Requirement to 2020: Sensitivity Analysis

	2007	2014	2020
Public patient beds			
Current practice	12,778	16,036	19,822
Achieve 25% of improvements	12,778	13,439	16,174
Achieve 50% of improvements	12,778	11,262	13,165
Achieve 75% of improvements	12,778	9,467	10,743
Preferred health system	12,778	8,008	8,834

Table F compares the difference in capital investment requirement between the two systems. Some capital investments for the Preferred Health System are for refurbishment of bed types, eg making inpatient wards into day case surgery wards.

The Preferred Health System requires €3.5 billion less capital investment in the acute hospital sector.

Table F: Capital Costs Preferred Health System Vs Current Practice (Public Patient Beds)

	2007	2008 – 2014	2015 – 2020	Total
Capital costs (€m)				
Preferred Health System	476	40	23	539
Current Practice	476	1,603	1,986	4,066
Difference	0	1,563	1,963	3,526

1. Executive summary

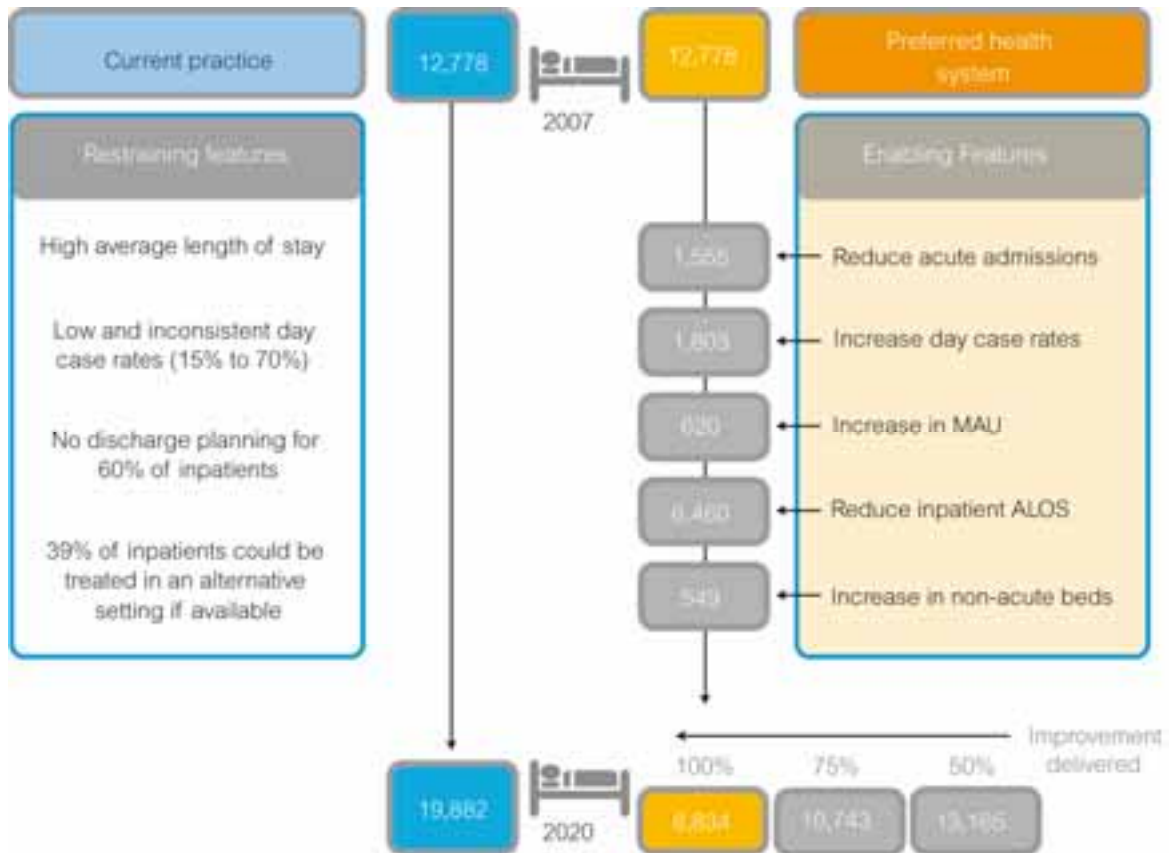
Table G compares the difference in operating costs between the two systems. The Preferred Health System reduces the number of total beds and also replaces inpatient beds with more appropriate options in the community that are often cheaper. This contributes to the reduction of the current operating costs of the NHO by €12 billion (over the period 2007 – 2020) and requiring over €38 billion less in operating costs than the current practice projection. It is expected that at least the value of this saving will be required for significant investments in the community and related health services.

Table G: Additional Operating Costs Preferred Health System Vs Current Practice (Public Patient Beds)

	2007	2008 – 2014	2015 – 2020	Total
Operating costs (€m)				
Preferred Health System	470	-6,787	-5,871	-12,187
Current Practice	470	8,632	16,813	25,915
Difference	0	15,419	22,683	38,102

In conclusion, Ireland must now choose the healthcare system it wants. The demand for public patient hospital acute beds in 2020 will differ significantly depending on that decision.

Figure I: Irish Public Health System Decision and Implications on Public Patient Bed Requirement



1. Executive summary

The overall requirement for private patient beds will also continue to reduce in the Preferred Health System to 3,399 beds in 2020. However, this will include increases in day case beds and MAUs. It is also broadly consistent with VHI's projection of surplus private patient hospital beds in Ireland.

Table H: Private Patient Bed Requirement to 2020 (Preferred Health System)

Type bed	2007	2014	2020
Private patient beds			
Inpatient	3,779	2,060	2,415
Day Bed/Place	475	793	965
MAU	0	15	18
Sub Acute	3	1	1
Total private	4,257	2,868	3,399

A summary of the total health system acute hospital bed requirement is provided below. It is separated by public patient beds and private patient beds. Private patient beds can be in either a public or private acute hospital.

Table I: Summary of Total Bed Requirement

	2007	2020 (current practice)	2020 (preferred health system)
Requirement for public patient hospital beds	12,778	19,822	8,834
Requirement for private patient hospital beds (in public or private hospitals)	4,257	5,844	3,399
Total requirement for hospital beds	17,035	25,667	12,233

1.5 5. Implementing Ireland's Preferred Health System

The HSE Transformation Programme sets a new Preferred Health System for Ireland that seeks to improve services to citizens. It is characterised by:

- An emphasis on illness prevention, early detection and early intervention
- The nature, capacity and availability of responsive community based services is configured to avoid unnecessary admissions to acute care and to facilitate earlier discharge and a return to independence
- Internal hospital processes are optimised to support high quality care, reduce patient delay and maximise use of the bed stock
- Greater involvement of patients in their own care of minor, acute and long term conditions – with professionals providing a supportive, advisory, educational and skills training role.

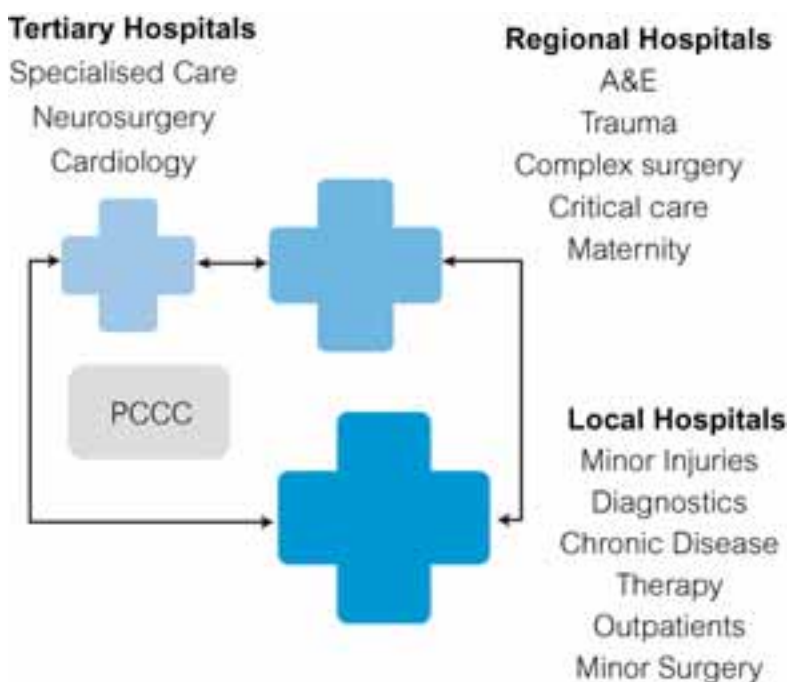
1. Executive summary

The Irish health system currently relies overly on acute hospitals with service provision configured around them. The preferred model of care fundamentally changes this. Increasing the provision of primary and community care and enhancing the health and well-being of the population all shift the focus of the healthcare model from the hospital to the patient.

The number of beds in acute hospitals may reduce as services are developed within the community. However, this should not be seen as a reduction in the capacity of the health system as additional beds and other facilities and financing move with these services.

The new configuration of services is summarised below. It requires a fully integrated approach across all directorates of the health system.

Figure J: Examples of Hospital Services within a Clinical Network



The majority of expert Irish stakeholders consulted as part of this review supported this Preferred Health System. However, many expressed two specific concerns around how Ireland moves towards it:

- The migration could result in a reduction in acute capacity before the necessary resources are fully up and running within primary, community and continuing care
- The model would be implemented without the supporting local infrastructures and networks essential to maintain good access across each element of the system.

Delivery of the Preferred Health System presents a huge challenge to the Irish health service. Change of the scale required in acute hospitals can only be delivered if the full model is implemented. The health service in Ireland must be considered as a total system in which a decrease in one area must lead to an increase in another.

Implementation not only requires hospitals to do things differently, it also requires services and capacity to be in place in primary and community care that are not currently sufficiently developed. It requires integration of care that enables patients to move easily between hospitals and the community. It presupposes the availability of new technology and infrastructure to facilitate local services better configured around the patient and community care.

It also requires changes in behaviours and work practices both within hospitals, primary and community care. Changing behaviour is typically the most difficult aspect of any reform programme. Practitioners have well established processes and viewpoints based on years of actual operational experience. In many occasions, learned behaviours have been the most appropriate for the system they have been working in. The system change must therefore coincide with a change by those working it.

“This vision takes too much for granted. It assumes that the provision of community and social care services precede the reduction in acute bed capacity.”

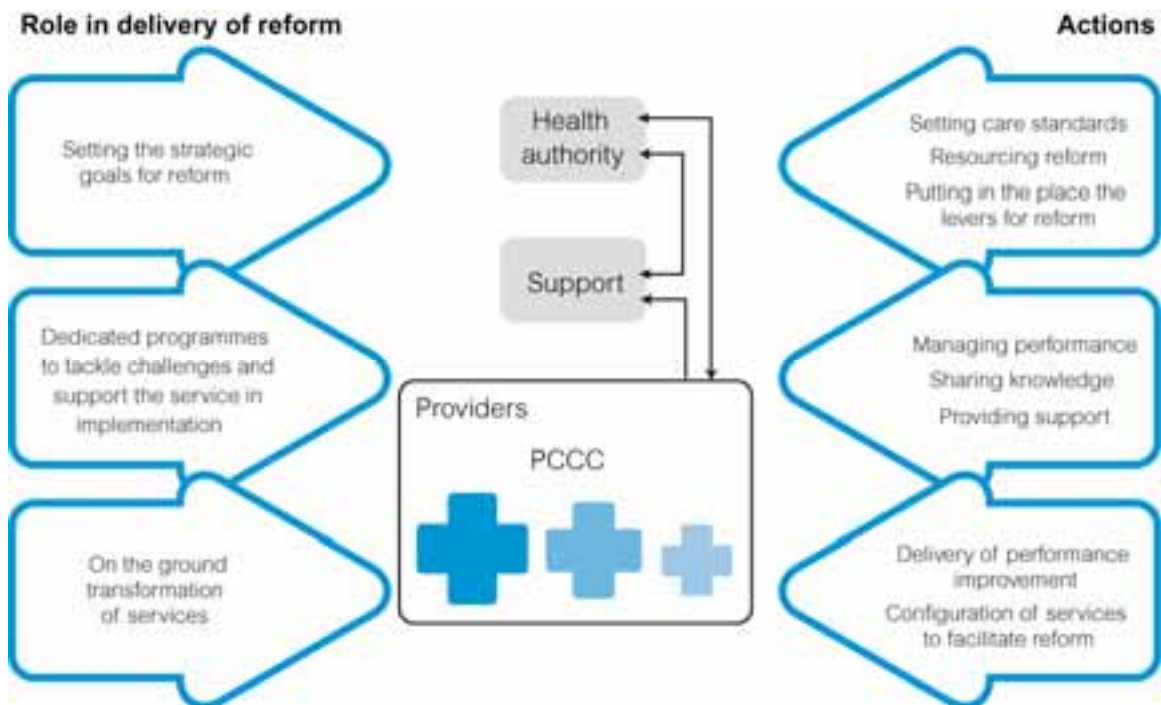
Irish Nurses
Organisation
submission

The sheer scale of the challenge requires dedicated support and resource linking national strategy and local implementation if reform is to be delivered. Experience elsewhere has shown that a health service cannot simply strategically decide reform. It requires a comprehensive reform programme setting standards and objectives and then working locally to enhance and develop practice and standards. This review of international health systems delivering such change shows that three levels of reform are required:

- National and System wide, which creates the right conditions and incentives for change
- Intermediate, which provides dedicated support structures to facilitate change on the ground
- Local, which delivers service change and performance improvement.

This is illustrated in Figure K.

Figure K: Delivering healthcare reform requires a joined up, supportive approach at three levels in health service delivery



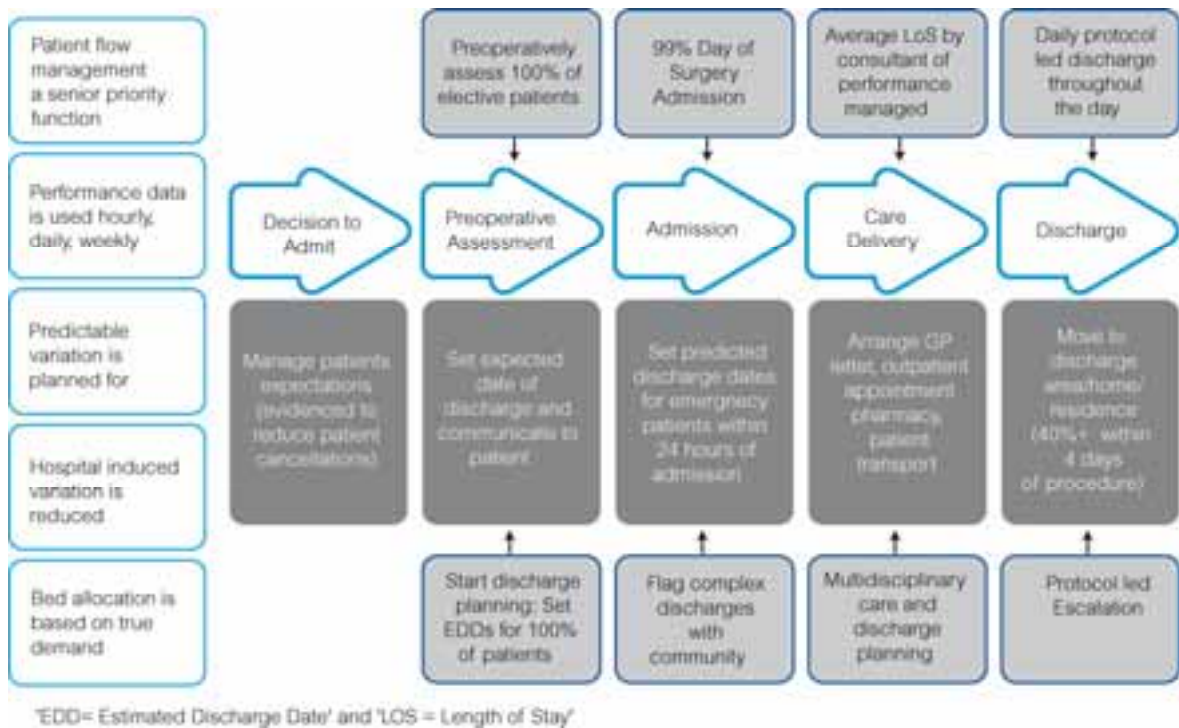
At a local level, strong operational bed management procedures must be established within each hospital to challenge current inefficient behaviours and improve the overall flow of patients through the hospital. Performance statistics consistent with those used in this Review should be fully available in hospitals to drive improvements on the ground, e.g. day case rates, days to first procedure, ALOS, etc.

An overview of local initiatives to improve bed utilisation is provided below.

The programmes within the HSE Transformation Plan incorporate these required changes in service configuration and practice required to deliver the Preferred Health System in Ireland. The hospital bed requirements for Ireland to 2020 are dependant on its implementation (Figure L).

1. Executive summary

Figure L: Overview of local initiatives to improve bed utilisation



“Clinical involvement and clinical leadership of change is vital. This requires time spent on the ground building trust and buy-in. Then you will see front line staff changing behaviours and hence delivering system reform.”

Lis Nixon, Expert Peer Review Member and former National Emergency lead for A&E, NHS

2. Introduction



2. Introduction

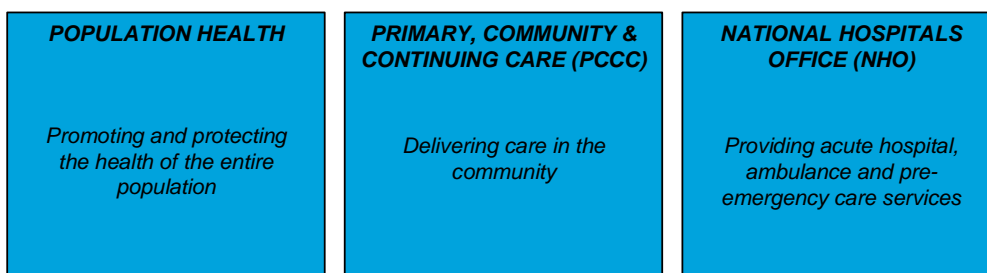
The Health Service Executive (HSE) commissioned PA Consulting Group to complete an independent review of acute bed capacity requirements for Ireland until the year 2020. This document is the Final Report of that Review, detailing the approach, analysis and key findings.

2.1 Background

The HSE was established in 2005 to provide Health and Personal Social Services for everyone living in the Republic of Ireland. The establishment of the HSE brought together eleven regional and a variety of other health delivery organisations. The HSE replaces all of these organisations to become the single body responsible for ensuring that health and personal social services are fully accessible, affordable and to an appropriate quality.

The delivery of these services is channelled via three directorates;

Figure 1: Acute Beds Per Inpatient Discharge by Country (Source – OECD Health Data 2006)



The establishment of the HSE is one of the largest programmes of change ever undertaken in the Irish public service. This change now continues within the HSE Transformation Programme seeking to deliver a health system where *“everybody will have easy access to high quality care and services that they have confidence in and staff are proud to provide”*⁹. The Transformation Programme seeks to improve health delivery both within and across each of the three health delivery directorates. In some cases, this will mean fully uprooting specific services from one directorate to another. In others, it will require new networks of health professionals from all three directorates working together to deliver the best service to citizens.

The Transformation Plan seeks to have a significant impact on the role of Irish hospitals. The National Hospitals Office (NHO) is responsible for the delivery of acute hospital services in 50 hospitals nationally. This includes a range of assessment, diagnosis, treatment and rehabilitation services. Designated specialist services, such as complex cancer treatments, cardiac surgery and bone marrow transplants, are also available at specific regional or national centres of excellence. Acute health services are also available through a number of private hospitals predominately in Dublin, Cork, Limerick and Galway.

⁹ HSE Transformation Plan 2007 – 2010.

2. Introduction

The NHO is working with Irish hospitals to address a number of much highlighted issues related to acute capacity, eg patients are waiting on trolleys in the Emergency Department (ED) as there is no available inpatient bed, long waiting lists for specific acute hospital procedures, etc. There are many who state that this clearly shows the need for more hospital beds today.

Ireland has also experienced significant change over the last twelve years. The population has grown in numbers and age. The economy has boomed and with it the lifestyles and expectations of our citizens. These have all contributed to change the demand for health services. Similarly, the last twelve years have also seen huge developments in medical innovation. Specific technological advances have led to greater efficiencies, service effectiveness, quality of care and patient satisfaction. For example, telemedicine links now enable remote consultations with peers and patients across numerous key specialties. The only certainty going forward is that this change will continue and with it the demands on our health system and how it is serviced.

Within this context, the HSE seek to better understand the true demand for acute health services today and the associated bed requirement today and for the next twelve years. This will inform the wider Transformation Programme and specific NHO capacity planning.

2.2 Acute bed capacity review terms of reference

The objective of the Review is to assess the acute bed capacity requirements until the year 2020 to enable the HSE to plan for future needs based on evidence. It builds upon previous reports, most recently “Review of Acute Bed Capacity” (DoHC, 2002) using the most up to date Census information and makes recommendations based on international best practice.

The key deliverables and where they are addressed in this document are detailed below.

Table 1: Review key deliverables

Deliverables	Section
Identify the acute bed capacity needs to the year 2020	Section 5.6, Section 6.5
Identify nationally, to HSE Hospital Administrative Area level, the number and type (adult / paediatric / medical / surgical / critical care split) of acute beds that are required	Section 5.6, Section 6.5, Appendix J:
Identify capital and revenue cost implications	Section 5.6, Section 6.5
Advise on how to meet the identified need, including timing and feasibility	Section 5.6, Section 6.5, Section 6.6

2.3 Scope of the review

The Review includes all acute day case and inpatient beds excluding psychiatry across public and private hospitals in Ireland. Existing non-acute beds are not considered. However, any additional non-acute beds required to facilitate change in the acute hospitals are included.

2.4 Definitions

The below table details the definitions applied in this document. This includes the NHO's definitions of beds by type¹⁰ as detailed below.

Table 2: Definitions

Name	Definition
HIPE	Hospital In-Patient Enquiry Scheme (HIPE) is a computer-based discharge abstracting system designed to collect demographic, clinical and administrative data on discharges and deaths from acute general hospitals nationally. It is administered by ESRI and is the principal source of national data on discharges from acute hospitals in Ireland.
Inpatient Bed	Allocated for inpatient use, staffed and resourced 24hrs per day and may be used on a seven day (Mon – Sun) or five day (Mon – Fri) basis, may be used for emergency, urgent or routine admissions who are expected to stay one or more nights. Cots are excluded.
Day Bed	Includes Day Beds (A bed available for a planned attendance to a specialty for clinical care staffed and resourced for a set period each day, where the patient is not expected to stay overnight) and Day Places
Day Place	A day place is a designated area where HIPE codeable treatments are carried out. These should include any recliners; chairs etc where HIPE codeable treatments occur. Designated Renal Dialysis areas (eg recliners or chairs) should be counted as Day Places as they are batch codeable.
Public/ Private Designated Bed	This refers to what type of patient this bed is intended to be utilised by- Public/ Private/ Non designated.
Critical Care Bed	These are beds (Intensive Care Unit, Coronary Care Unit, High Dependency Unit, Paediatric Intensive Care Unit and Neonatal Intensive Care Unit, Burns Intensive Care Unit and Liver Intensive Care Unit) where the patient requires a more complex level of care.
Acute Bed	Collective term for Inpatient Beds, Day Beds, Day Places and Critical Care beds.
Medical Assessment Unit (MAU) Bed	Beds within a medically led unit where the patient can access assessment and diagnostics without being admitted to a hospital bed.
Sub-Acute Bed	Inpatient bed used for the continuing care of a patient requiring rehabilitation or other semi-acute services.
Non-Acute Bed	Inpatient bed used for the continuing care of a patient who no longer has a specific need for acute services, eg Long-term Care
Inpatient	Patient admitted to an inpatient bed in an acute hospital for a HIPE codeable treatment
Day Case patient	Patient admitted to a day bed or day place in an acute hospital for a HIPE codeable treatment
Hospital Patient	Patient admitted to an inpatient bed, day bed or day place in an acute hospital for a HIPE codeable treatment

¹⁰ NHO Performance Management Unit "Guidelines Regarding Treatment Capacity Information"

2.5 Final report structure

This report aims to:

- Explain the Review approach (Section 2)
- Show how many acute beds there currently are in Ireland and how they are used (Section 3)
- Review this current bed usage against a number of performance statistics (Section 3)
- Project how many beds Ireland will need for each year to 2020 based on current usage (Section 4)
- Present future changes in the delivery of health services in Ireland as set out in the HSE Transformation Plan and related Irish health reform strategy documents (Section 5)
- Project how many beds Ireland will need for each year to 2020 based on this new delivery approach (Section 5).

3. Review approach



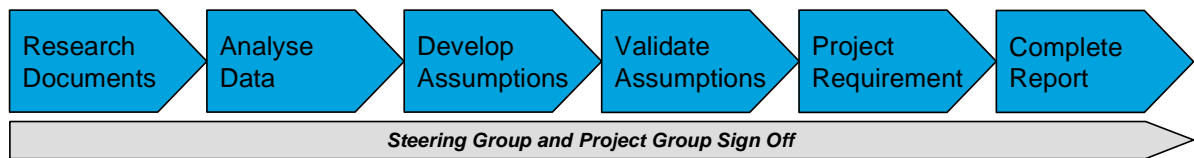
3. Review approach

This section details the approach undertaken by the Review.

The approach included six key stages shown below. In addition, the Review was subject to rigorous project management controls. This included a Project Group made up of representatives from across the HSE, the Department of Health and Children and other key stakeholders signing off the approach, reviewing progress on a weekly basis and inputting to interim deliverables. Monthly updates were provided to an extended Steering Group for input. The Project Group and Steering Group members are detailed in Appendix A: Steering Group and Project Group.

A detailed technical methodology is available in Appendix B. Furthermore, this report is supported by a detailed Technical Report.

Figure 2: Review Approach



3.1 Research documents

The first stage of the Review completed an extensive desktop research exercise, starting with Irish Health publications detailing the future strategy of health delivery, eg *“Primary Care: A New Direction”* (Department of Health & Children, 2001), *“Transformation Programme 2007-2010”* (HSE, 2007). This provided an understanding of the planned changes and Preferred Health System Ireland plans to move towards.

The desktop research also included:

- Health system reform documents from a selection of other countries
- Academic papers informing future health innovation per specialty
- Professional journals detailing improvements in managing hospital capacity.

This informed on similar reform in other countries. It also explained potential future developments in medical innovation as well as good practice bed management.

This stage also incorporated work already undertaken in Ireland related to bed capacity, such as:

- “Review of Acute Bed Capacity” (DoHC, 2002)
- “Assessment and Projection of Bed Capacity in the Eastern Region” (ERHA, 2001)
- “Review of Critical Care Services in the Eastern Region” (2004)
- The Review of Long Stay Needs Assessment
- “Children’s Health First: International Best Practice in tertiary paediatric services: implications for the strategic organisation of tertiary paediatric services in Ireland”
- “Improving safety and achieving better standards. An Action Plan for Health Services in the North East”
- “Ex-ante Evaluation of the Investment Priorities for the National Development Plan (2007-2013)” prepared for the Department of Finance (ESRI, 2006).

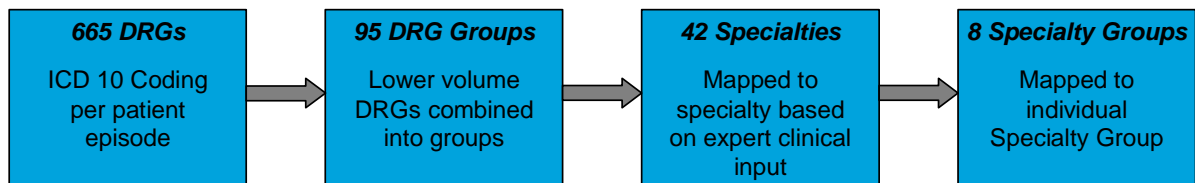
3.2 Analyse data

The second stage of the Review completed a detailed analysis of the available Irish health data and benchmarked it against health statistics recognised as key performance indicators by the OECD, the WHO and a variety of health systems across the world. This informed analysis of the existing demand and performance of Irish hospitals and how both may change going forward.

HIPE is the principal source of national data on discharges from HSE National Hospitals Office (NHO) acute hospitals in Ireland and was extensively used by the Review. This was supplemented by information on acute patient activity in Irish private hospitals supplied by VHI and the Independent Hospitals Association of Ireland (IHAI) member group.

The Australian Refined Diagnosis Related Groups (DRGs) v5.1 was used as the primary method of categorising each patient episode. It is the standard classification method applied in Ireland. A team of medically trained clinicians who were part of the PA Project Team mapped each DRG as shown below. This mapping and approach was then subjected to an extensive validation exercise with HSE and international clinicians. The mapping is summarised below.

Figure 3: DRG to Specialty Group Mapping



A detailed analysis of this data considered the relative performance for a variety of health statistics across Irish hospitals. It was completed at DRG and DRG Group level and summarised at Specialty and Specialty Group level. Patients were categorised using international epidemiologic standards, including age, sex, hospital location, emergency / elective, public / private and DRG. The data mining exercise used established health industry measures to analyse usage and performance. This included for each DRG day case rates, inpatient average length of stay (ALOS) and days from admission to first procedure. Further, there was a detailed analysis of the patient and DRG types which typically stay longer than 18 and 30 days in a hospital. A summary of the output of this analysis is detailed in Section 3. The full 300 page detailed output was handed over to the HSE.

3. Review approach

A detailed analysis using established health indices was also completed on health performance data provided by a variety of sources. This included:

- Hospital delayed discharge information from the NHO
- ED attendance and wait time information from the NHO
- Medical Assessment Unit (MAU)¹¹ throughput from Mullingar Midland Regional Hospital
- Hospital waiting list information from the NTPF
- DRG-level Case Mix Data from the NHO
- Detailed individual hospital data throughput data and performance monitoring reports from many different NHO hospitals
- Hospital capital and operating cost information provided by HSE Estates and HSE Finance
- Bed utilisation statistics from the NHO and Department of Health & Children.

This stage also included working directly with the Acute Hospital Bed Review¹² to fully understand who are currently in Irish hospital beds and why¹³. The basis of the Bed Review was a survey that assessed whether patients in adult medical and surgical acute beds had been inappropriately admitted and if these patients could have been treated in a more appropriate setting. The review also identified the alternatives to acute hospital bed stays for these patients eg home-based care, non-acute beds. The approach included developing regression analysis models to identify inpatient and geographical characteristics which are related to the chance of that patient potentially being more suited to be treated in an alternative environment.

Irish hospital performance was benchmarked against other countries using:

- OECD Health Data 2006 and WHO Statistical Information System to provide a population wide comparison against many countries
- Specific data sets from Canada, Australia and the United Kingdom to compare the actual hospital performance for specific population groups.

¹¹ Medical Assessment Unit – medically led unit where the patient can access assessment and diagnostics without being admitted to a hospital bed.

¹² Acute Hospital Bed Review: A review of acute hospital bed use in hospitals in the Republic of Ireland with an Emergency Department, Health Service Executive June 2007.

¹³ The Acute Hospital Bed Review surveyed 36% of the medical and surgical inpatients across Irish hospitals between November 2006 and March 2007.

3. Review approach

Irish population information and projections for each year to 2020 were provided by the Central Statistics Office (CSO). The projection was detailed by age, sex and area of residence. Residency information was then mapped to the Hospital Administration Areas using a specialist geographic tool within the HSE known as the Health Atlas.

Irish epidemiology projections were also obtained from a number of established Irish sources, including HSE Population Health, the Irish Diabetes Prevalence Working Group, the Institute of Public Health in Ireland and National Cancer Register Ireland. Further, this was supplemented with international epidemiology information from the WHO.

3.3 Develop assumptions

The third stage built on the previous understanding of Irish health reform and detailed statistical analysis of Irish hospital performance to develop a series of draft assumptions related to future bed requirements. There are four categories of assumptions.

Table 3: Assumption Categories

Category	Description	Assumption areas
Health Need	The number of acute health events within the population	<ul style="list-style-type: none"> • Changes in the size and demographics of the Irish population • Resulting impact on epidemiology projections.
Health Demand	The number of health events that result in the individual engaging with the health system	<ul style="list-style-type: none"> • Ongoing uplift in health need, eg from medical innovation, unmet demand (eg Outpatient waiting lists) and improved access to the health system.
Health Supply	The delivery systems and interventions taken by the health system to service this demand	<ul style="list-style-type: none"> • Percentage of patients who can be treated in an alternative care setting • Percentage of patients who can be treated as day case • ALOS for inpatients.
Bed Requirement	The resulting bed numbers by type required to deliver this service.	<ul style="list-style-type: none"> • Percentage of inpatient bed days that can be provided in a non-acute environment • Occupancy rates by bed type • Closure rates by bed type.

Two key future options were considered:

1. Continue with the current approach
2. Implement all the planned changes across the health system.

The same Health Need and Demand were applied to both options. In particular for Health Demand, this is because both options reduce the barriers to accessing the health system – the first by adding beds and the second by improving operational performance.

3. Review approach

Option one assumed no change in the configuration of health services or the performance of hospitals. That is, the above Health Supply assumptions remain constant to 2020.

Option two considered the implications on hospitals if the planned changes are implemented across the Irish health system detailed in a variety of health reform documents¹⁴ and summarised by the HSE Transformation Programme Priorities:

1. *“Develop integrated services across all stages of the care journey*
2. *Configure PCCC services to deliver optimal and cost effective results*
3. *Configure hospital services to deliver optimal and cost effective results*
4. *Implement model for prevention and management of chronic illness*
5. *Implement standards based performance measurement*
6. *Ensure all staff engage in transforming health and social care”¹⁵.*

This is called the Preferred Health System. It was supplemented by an extensive expert stakeholder engagement approach and information from other countries who have delivered similar models. The draft detailed assumptions of the impact of this change in service delivery are informed by actual current Irish and international experience. For example, projected reductions in acute ALOS per DRG are achieved in three main stages:

1. Ireland attains the ALOS for a top half performing OECD country
2. Ireland attains the ALOS for the best performing Irish hospital
3. Ireland attains the ALOS for a top quarter performing OECD country.

¹⁴ Including the HSE Transformation Plan, Department of Health and Children Primary Care Strategy, HSE National Chronic Disease Management Programme, the HSE Paediatric Services Review and the HSE North East Action Plan.

¹⁵ HSE Transformation Programme 2007 – 2011.

3. Review approach

The draft assumptions were also informed by an extensive stakeholder consultation exercise. There are three categories of consulted stakeholders;

1. Irish Health Specialty and Delivery Experts
2. Irish Health Wider Stakeholders
3. International Health Experts.

The Professional Body representing the relevant Irish Health Specialties nominated suitable experts to provide input to the Review. Similarly, a full list of health delivery and associated experts was agreed with the HSE. One to one interviews were completed with each to:

- Understand existing issues
- Discuss potential future developments impacting the acute delivery per specialty and pathway point
- Inform the timeframe and implications of implementing the planned changes across the Irish health system.

In total, over 130 Irish health specialists were consulted.

Submissions were sought from the Irish Hospital Consultants Association, Irish Medical Organisation, Irish Nurses Organisation, CORI, Vivas Health, VHI and BUPA Ireland. There was also a public request for submissions from interested individuals and stakeholders. Written responses were received from 23 stakeholders and stakeholder groups and their views incorporated.

Further, the Review agreed a list of 20 external international health experts with the Project Group. This included Health Policy Advisors, Health System Directors, Hospital CEOs, Health Economists and Clinicians. One to one interviews were completed with each focusing on:

- Current views of international best practice health delivery
- Future health innovation and the impact it will have on health delivery
- The key enablers for delivering health reform.

3. Review approach

A detailed list of all stakeholders is provided in the Appendix. PA Consulting Group would like to thank all stakeholders for their considerable input and support to this Review.

Example stakeholders

- Royal College of Surgeons in Ireland
- Royal College of Paediatrics
- Irish Institute for Trauma and Orthopaedics
- HSE Nursing Directorate
- Irish Society of Emergency Medicine
- Irish College of General Practitioners
- Institute of Obstetricians & Gynaecologists
- Irish Association of Internal Medicine
- Intensive Care Society of Ireland
- HSE Population Health
- Institute of Public Health in Ireland
- National Cancer Register of Ireland
- NHO Network Managers
- HSE Winter Initiative
- NHO Performance Management Unit
- HSE Primary Community and Continuing Care
- HSE Senior Finance Team
- St James's Hospital Dublin, Cork University Hospital, Mullingar Midland Regional Hospital, Nenagh General Hospital, University College Hospital Galway
- National Chronic Disease Management Project Steering Committee
- HSE A&E Task Force
- Independent Hospitals Association of Ireland and member group
- National Treatment Purchase Fund
- National Council on Ageing and Older People
- MRSA and Families Network
- Neurological Alliance of Ireland
- The Irish Hospice Foundation.

3.4 Validate assumptions with stakeholders

This stage validated each set of assumptions by having them reviewed by a select group of Irish health experts and signed off by an expert Peer Group.

Detailed packs per Specialty Group were issued to a select group of Irish clinicians and health delivery experts which:

- Explained the project methodology
- Projected future demand
- Presented the planned changes in the Irish health system
- Proposed the implications and timeframe for implementing this plan
- Requested their input on each of the above.

Further input was gathered via select meetings and specific Specialty Group and Expert Group workshops (eg NHO Network Managers, HSE Winter Initiative, HSE Senior Finance Team, etc) as appropriate. Additional validation was received through an extensive internal review process with expert input from across PA's International and Irish Health Practice.

Finally, an independent Peer Group of international health experts signed off the Review methodology and detailed assumptions. The Peer Group included a:

- Professor of International Health Systems and WHO advisor
- Senior Lecturer in Operational Research specialising in modelling the delivery of acute health services
- NHS expert in health system delivery improvement
- Former Deputy Director General of Health for New Zealand.

3.5 Project requirement

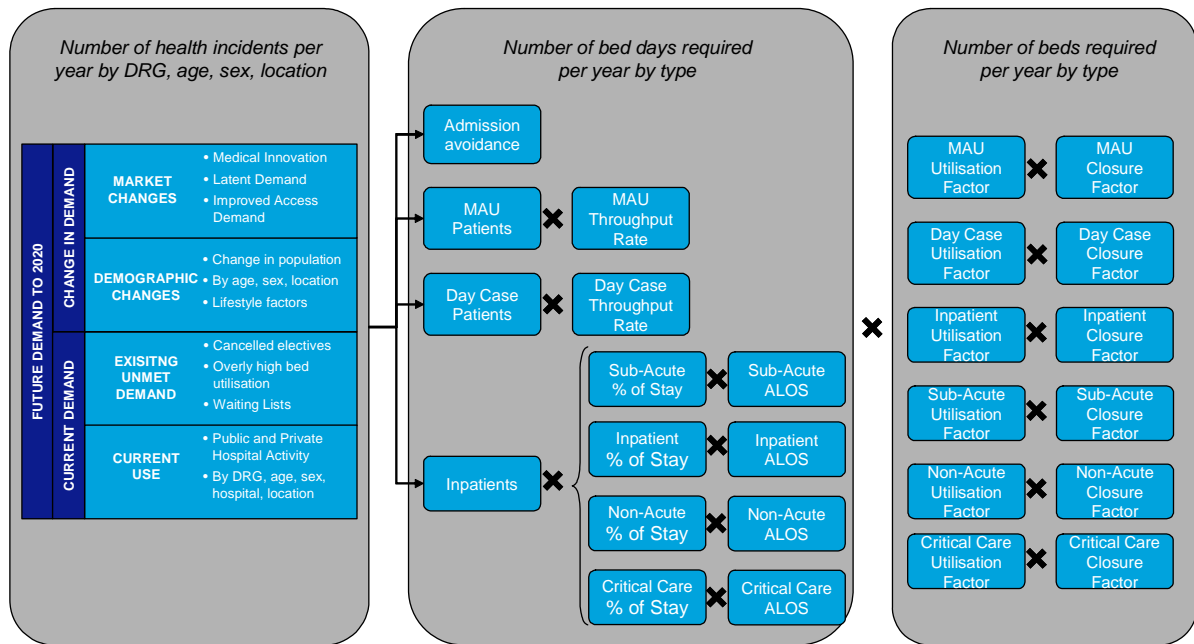
This stage incorporated the validated assumptions into a detailed model for both options that for each year to 2020:

- Projects the number of people with a health need
- Uplifts this to incorporate additional health demand
- Calculates the bed day requirement by type to meet this demand
- Incorporates bed utilisation and closure rates to show the required number of beds by type.

This model and all detailed assumptions have been handed over to the HSE National Hospital Office Performance Management Unit to be updated and reviewed on an annual basis as part of their capacity planning process.

A graphical representation of the model is provided below.

Figure 4: Graphical representation of Bed Capacity Model



3.6 Complete report

This stage delivered the Final Report detailing the approach, findings and bed requirement projection. The Final Report went through an extensive review process. This included an initial detailed internal review with experts from PA's International and Irish Health Practices. The Final Report was then confirmed by the Project Group and expert independent Peer Group.

In addition, each detailed Specialty Group pack and associated documentation was handed over to the HSE.

3.7 Review limitations

There is a myriad of factors influencing Ireland's ongoing acute hospital bed requirement, including population size, lifestyle factors, the economy, health innovation, etc. This Review worked with the available data and received input from 120 health experts to make a series of assumptions around how these factors will change going forward. However, and as with any such projection, it must be seen as a best estimate based on a series of future predicted events. To reduce the associated risk, a number of potential future scenarios and their impact on bed requirements were considered.

Further, the detailed model has been fully handed over to the HSE and will be used as an operational planning tool going forward, with an annual review of assumptions. This will help the HSE understand the potential impact future societal changes will have on bed requirements. It will enable the HSE to develop better operational strategies by quantifying the impact of specific changes in healthcare delivery, eg the acute bed implications of implementing (or arguably more importantly not implementing) their chronic disease management strategy.

As with any such project, the Review has been required to work within a number of assumptions. The table below details these limitations and proposes future actions to address them.

3. Review approach

Table 4: Review Assumptions

	Assumption	Proposed action
General	HIPE is an accurate representation of each patient episode	ESRI and HSE to continue to work with hospitals and improve the quality of the data within HIPE.
Health Need	There is a relatively small amount of available Irish epidemiology research. As a result, specific health need projections have been required to be created using a combination of available Irish data and international data and Irish expert input	HSE to update Health Need projection accordingly as further Irish epidemiology projections are completed. Specifically, HSE to work with The Institute for Public Health in Ireland and similar organisations to formalise the process of incorporating further projections going forward
Health Need	Acute hospital discharge volumes are used as a proxy for health need. That is, it treats each acute episode independently. A preferred approach would be to assess the overall health need for each patient. However, this is currently extremely difficult due to limitations in the available Irish health data, in particular the absence of a unique patient identifier	HSE to update Health Need projection accordingly as improved patient level data becomes available.
Health Need	Assumes that all existing acute health procedures are appropriate. This may not be the case	HSE to update Health Need projection accordingly as improved patient level data becomes available.
Health Demand	The short-term up-lift in demand resulting from improved access to health services is not based on Irish experience	HSE to update Health Demand projection with actual observed demand as health service access improves in Ireland.
Public Private Mix	The percentage of citizens and patients with private medical health insurance and/or access the private health system maintains to 2020	HSE to monitor and update projections for any changes.
Critical Care Beds	HIPE does not further separate critical care bed stays by sub-type (ICU, HDU, CCU, NICU, PICU). As a result, neither can the bed projection	Future HSE Critical Care Review to calculate future bed requirement by sub-type. ICSI to work with ESRI to address within HIPE as long-term solution.
Inpatient Waiting Lists	Additional bed capacity is required to service those on an inpatient waiting list for between three and fifteen months. That is, the unmet demand for a single year. This includes those previously serviced by the National Purchase Treatment Fund. Additional capacity is not required for patients on a waiting list for less than three months	No action required.

4. Hospital beds in Ireland and how they are used



4. Hospital beds in Ireland and how they are used

This section:

- Details the existing and planned number of hospital beds in Ireland by type
- Compares this number with that in other countries
- Profiles and reviews the current use of these beds in Ireland.

4.1 Current and planned hospital beds

Table 5 shows the existing acute hospital bed numbers by type in Ireland. There are currently 11,660 public patient beds and 2,461 private patient beds in public hospitals. There are also a further 1,926 private patient hospital beds (in private hospitals) that fall within the scope of this Review.

Table 5: Existing Hospital Bed Stock, May 2007 (Source – HSE National Hospitals Office, VHI Healthcare)

SPECIALTY GROUP	INPATIENT		DAY BED/PLACE		SUB ACUTE		MAU	CRITICAL CARE	PUBLIC BEDS	PRIVATE BEDS	TOTAL
	PUBLIC & NON DES	PRIVATE	PUBLIC & NON DES	PRIVATE	PUBLIC & NON DES	PRIVATE					
Gynaecology	270	107	34	13					304	120	424
Medical	3,569	639	738	68			25		4,332	707	5,039
Medical/Surgical	97	70	20	0					117	70	187
Obstetrics	853	308	31	0					884	308	1,192
Paediatrics	883	204	98	26					981	230	1,211
Surgical	2,809	746	419	75					3,228	821	4,049
Miscellaneous	273	153	175	47	646	5		720	1,814	205	2,020
TOTAL PUBLIC HOSPITAL	8,754	2,227	1,515	229	646	5	25	720	11,660	2,461	14,121
TOTAL PRIVATE HOSPITAL		1,654		272				0		1,926	1,926
TOTAL	8,754	3,881	1,515	501	646	5	25	720	11,660	4,387	16,047

Note the following points:

- Inpatient beds closed during the weekend are counted as five sevenths of a bed for consistency
- Sub-acute beds are included only where they are used for patients with HIPE treatable conditions
- Around 200 private hospital beds in small clinics were excluded as no information was available on the activities within these beds
- Critical Care is both a type of patient episode based on DRG and a bed type. Critical Care patients may spend time outside of a critical care bed. Similarly, patients within other Specialty Groups may spend time in a Critical Care bed
- Private hospital critical care beds are included as inpatient beds as no further breakdown was provided for this bed type.

4. Hospital beds in Ireland and how they are used

Table 6 shows the planned hospital beds by type and source. The planned public patient beds are from the HSE Capital Plan 2007 – 2011. The planned private hospital beds are provided by VHI. They include:

- Beds VHI have recently approved to cover
- New facilities scheduled to be delivered in 2007 / 2008
- New facilities where planning permission has been granted.

There are currently 458 public patient and 770 private patient new beds in plan. This is detailed below in Table 6. Note that it excludes the additional public patient beds being delivered by the Co-Location Project as these beds numbers are yet to be finalised. The Co-Location Project is Government policy and a major HSE initiative aiming to change the status of between 800 and 1,000 beds in public hospitals from private to public. It seeks to achieve this by transferring the private patient activities currently taking place in these beds to a new nearby private hospital. That is, the private patient now goes to a private hospital and their bed is made available for public patients.

Table 6: Planned Additional Hospital Bed Stock, May 2007 (Source – HSE National Hospitals Office, VHI Healthcare)

TYPE BED	PUBLIC	PRIVATE	TOTAL
Inpatient	342	602	944
Day Bed/Place	92	168	260
Sub Acute	4		4
MAU	0		0
Additional Non Acute	0		0
TOTAL (EXC CRITICAL CARE)	438	770	1,208
Critical Care	20		20
TOTAL (INC CRITICAL CARE)	458	770	1,228

4.2 Comparison with bed numbers in other countries

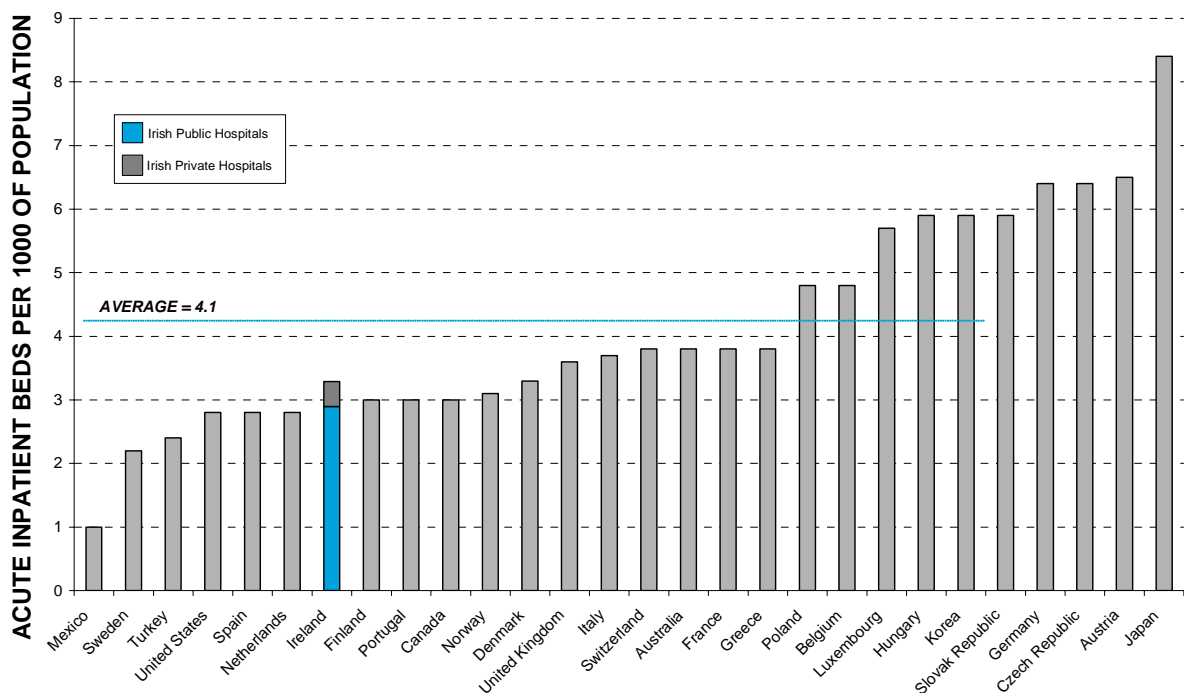
This section completes a high-level comparison of the number of hospital beds in Ireland and other OECD countries. It uses OECD Health Data 2006 which provides a comprehensive and comparable set of health and health system statistics sourced and validated by each individual OECD country. Ireland’s information is provided directly by the Department of Health and Children. OECD enables a comparative analysis across countries and diverse healthcare systems.

OECD data shows that Ireland has 30% fewer hospital beds per capita, but that does not include private hospital beds...

Figure 5 shows the number of acute beds per capita for OECD countries. Ireland has 2.9 acute beds per thousand of population. This is 30% fewer beds than the OECD average, 19% less than the United Kingdom and less than half that of Austria. Ireland has over 30% more beds per capita than Sweden.

However, care must be taken with this comparison. There are significant differences between the methods each country applies in calculating acute bed numbers. For example, Ireland and Hungary are the only two OECD countries who exclude inpatient beds in private hospitals from their OECD submission. Private hospital beds accounts for almost 12% of the total Irish inpatient bed stock. Incorporating private hospital beds into the above means that Ireland in fact has 20% fewer beds per capita.

Figure 5: Acute Beds Per Capita for OECD Countries (Source – OECD Health Data 2006)



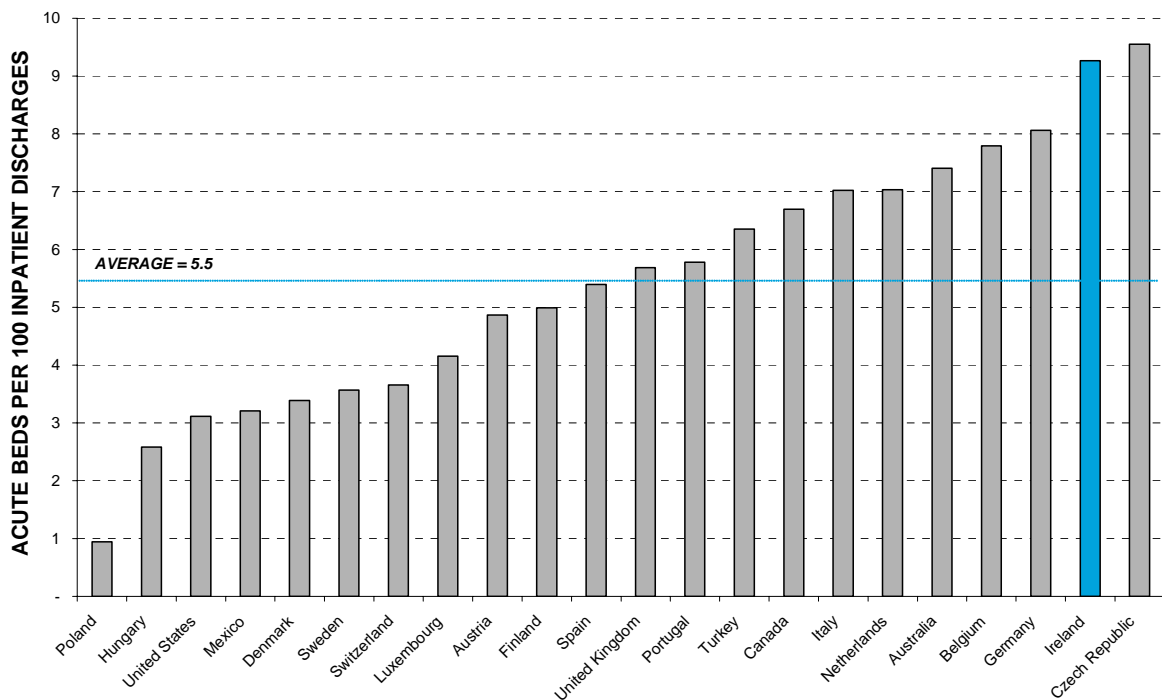
4. Hospital beds in Ireland and how they are used

Further, this ratio does not take into account the varying health demand within each country. For example, OECD also shows Ireland having 59% fewer procedures per capita¹⁶. This is consistent with the fact that Ireland’s population is generally younger than other countries, and that an older population requires more hospital bed days¹⁷. Only 11% of Irish citizens are 65 years old or older. This is the fourth lowest in the OECD with the United Kingdom and France having 16%, Belgium and Sweden having 17% and Germany having 19%. That is, our population is generally younger and therefore requires fewer acute health procedures. This may mean that Ireland requires relatively fewer beds per capita.

...and equally Ireland has 60% more beds per inpatient

An alternative measure of health need that incorporates these differences may be the number of inpatients. The number of acute beds per 100 inpatients for different OECD countries is shown below. Ireland has 9.3 beds per 100 inpatients. This is the second highest of OECD countries and over 60% above the OECD average. Ireland has 15% more beds per inpatient than Germany, 32% more than the Netherlands, 63% more than the UK and 159% more than Sweden. This would indicate that that Ireland has more beds than other countries relative to our demand.

Figure 6: Acute Beds Per Inpatient Discharge by Country (Source – OECD Health Data 2006)



¹⁶ Although, note that this procedure rate excludes private hospital activity.

¹⁷ Trends in the use of hospital beds by older people in Australia – Medical Journal of Australia. Also, **Error! Reference source not found.** shows that Irish citizens over 84 years old are eight times more likely than average to be in a hospital bed

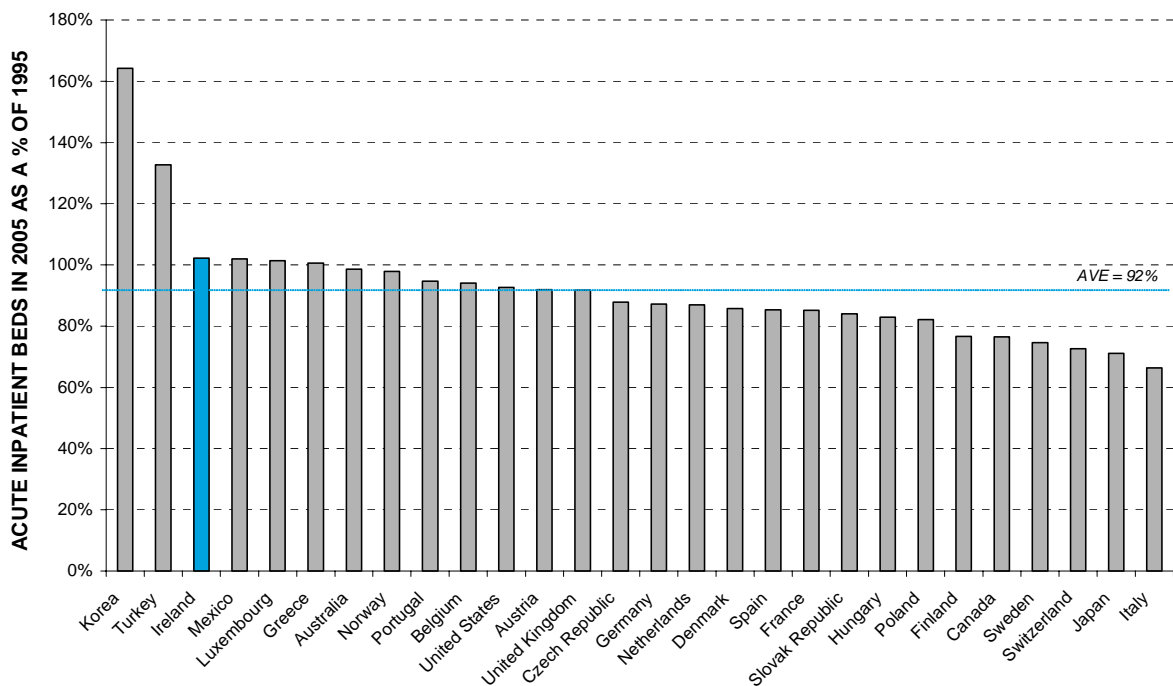
4. Hospital beds in Ireland and how they are used

Both of these statistics paint a different view of the relative number of beds in Ireland when compared to other OECD countries. However, they are also overly simplistic assessments. The first ignores the differences in health need for each country's population. The second does not consider the relationship between bed numbers and inpatient numbers. They must therefore be considered in context and analysed in conjunction with other statistics as those detailed below.

The number of hospital beds in other countries is steadily decreasing...

The Figure below shows the number of acute inpatient hospital beds in 2005 as a percentage of the number in 1995 for OECD countries. The total number of inpatient beds in the OECD has decreased by 11% since 1995. Each OECD country has reduced their number of beds by on average 8%. For example, France and Spain have both reduced inpatient beds by 15%, Sweden by 25% and Germany by 13%. The number of acute beds in Ireland has increased by 2% since 1995.

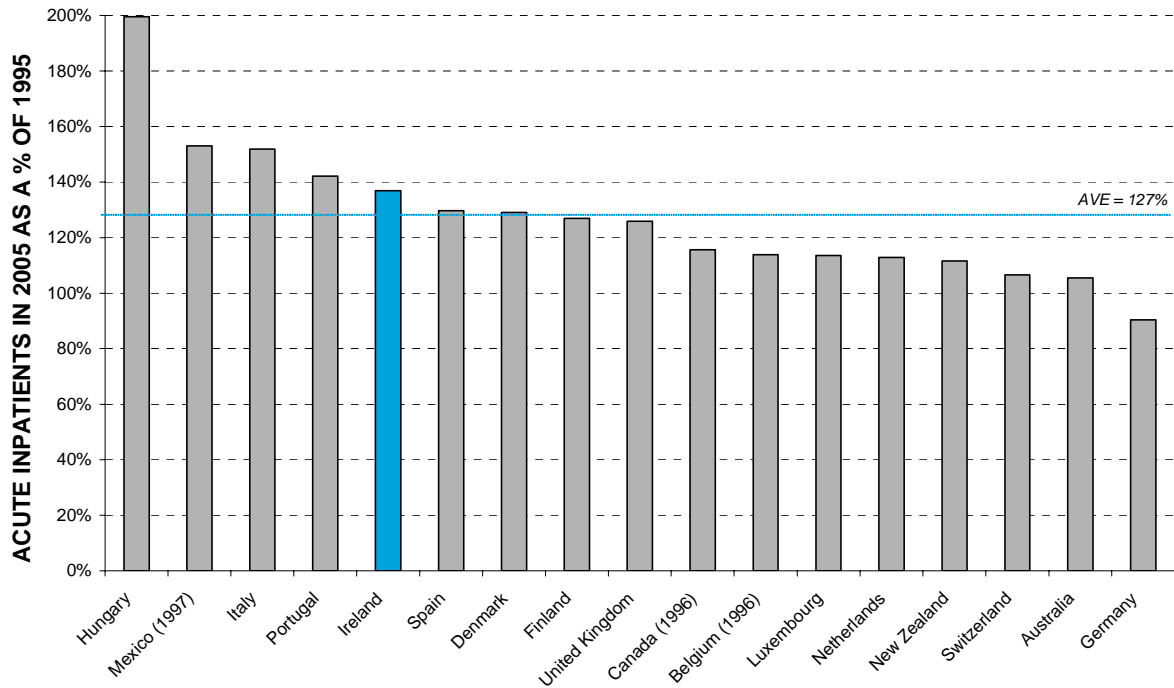
Figure 7: Acute Inpatient Beds in 2005 as a % of Acute Beds in 1995 (Source – OECD Health Data 2006)



...as they have been increasing their inpatient activity

During this same period, countries have delivered on average increase of 27% in inpatient activity. For example, the UK has increased inpatient activity by 26% and Spain by 40%. Ireland has also seen an increase in inpatient activity of 37% since 1995. This is shown below.

Figure 8: Acute Inpatients in 2005 as a % of Acute Inpatients in 1995 (Source – OECD Health Data 2006)



The rising demand for care has acted as one of many catalysts to drive efficient use of acute beds. Some countries, such as the Netherlands, used efficiency improvements to reduce bed numbers while also significantly reducing the occupancy of their existing bed stock. (In the Netherlands, bed occupancy has reduced from 73% in 1995 to 66% in 2005. During this period, they have reduced their acute bed stock by 13% to 45,000).

The increase in the throughput of hospital beds has been achieved primarily through changes in patient management such as:

- Increasing community and home-based care
- Decreasing the average length of stay
- Increasing day case rates
- Substituting of outpatient treatment for day case and inpatient treatment.

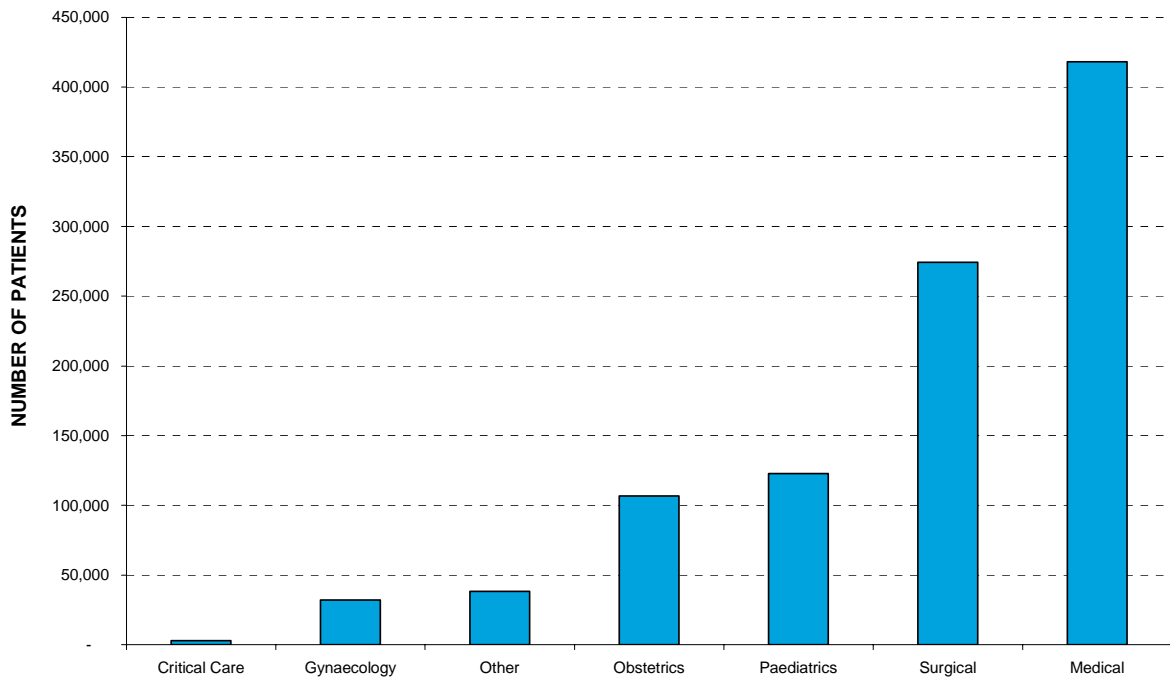
4.3 Profile of current bed usage

This section explains how Ireland currently uses its beds. It is derived from HIPE and so only includes NHO hospitals.

70% of patients are medical or surgical

Figure 9 shows patients by Specialty Group. There were 995,000 patients in 2005, of which 42% were medical and 28% surgical. This is consistent with the message from the 2002 report which showed the growing importance of medical beds. Paediatrics and obstetrics account for 12% and 11% of total patients respectively.

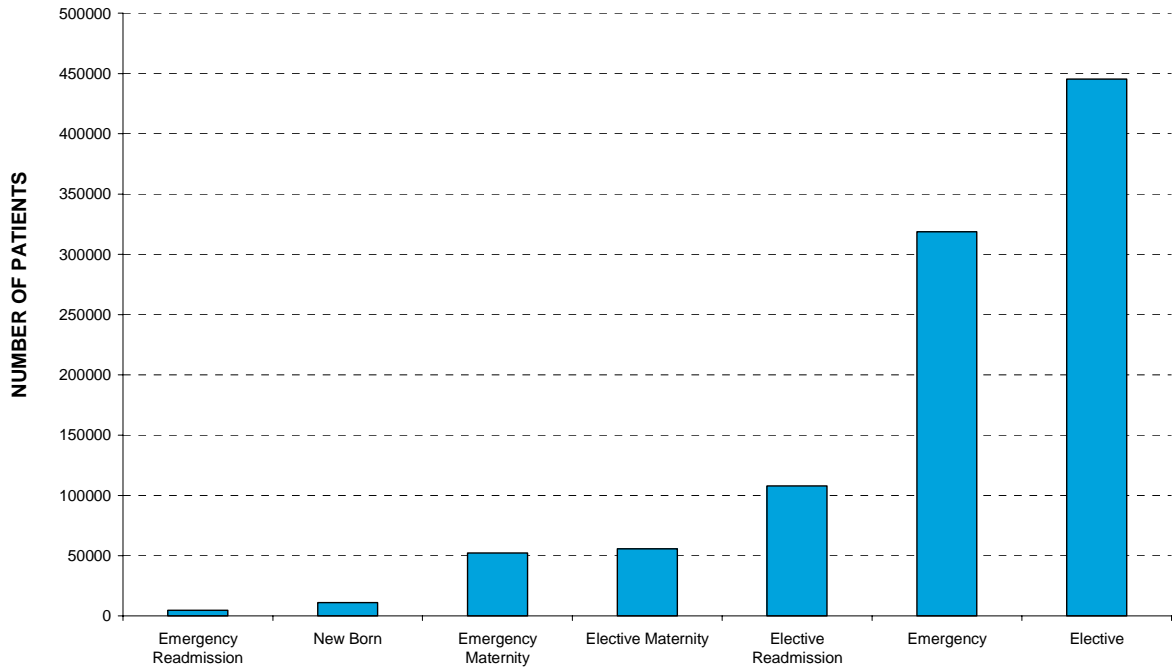
Figure 9: Patient Numbers by Specialty Group (Source – HIPE 2005)



31% of inpatients and 61% of all patients are elective

The figure below shows patients by their type of admission. The majority of admissions to acute hospitals are elective. Although, it should be noted that only 31% of inpatients are elective.

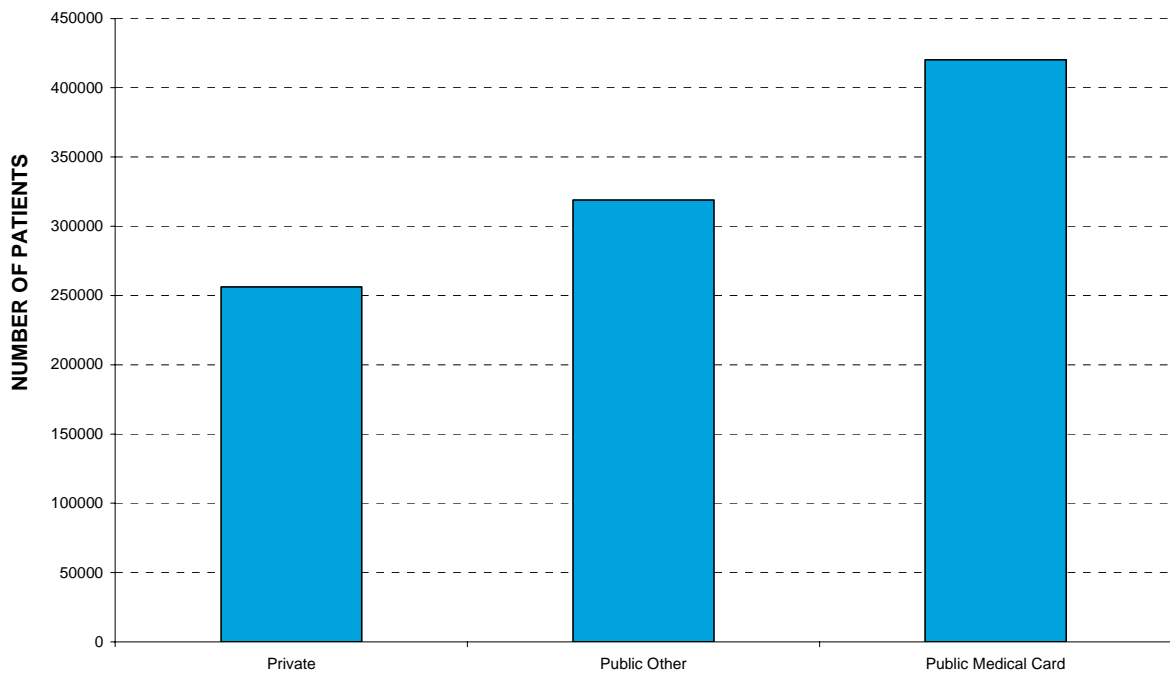
Figure 10: Patient Discharges by Admission Type (Source – HIPE 2005)



26% of public hospital patients are private

The figure below shows the number of patients by type. Private patients account for 26% of the total patients and 24% of total bed days in public hospitals. Medical card patients are 32% of patients and 52% of total bed days. That is, medical card patients typically use more bed days. This is in part because they are generally older (47% of Medical Card inpatients are greater than 64 years old). It may also be due to health inequalities across different socio-economic groups¹⁸.

Figure 11: Patients by Patient Type (Source – HIPE 2005)

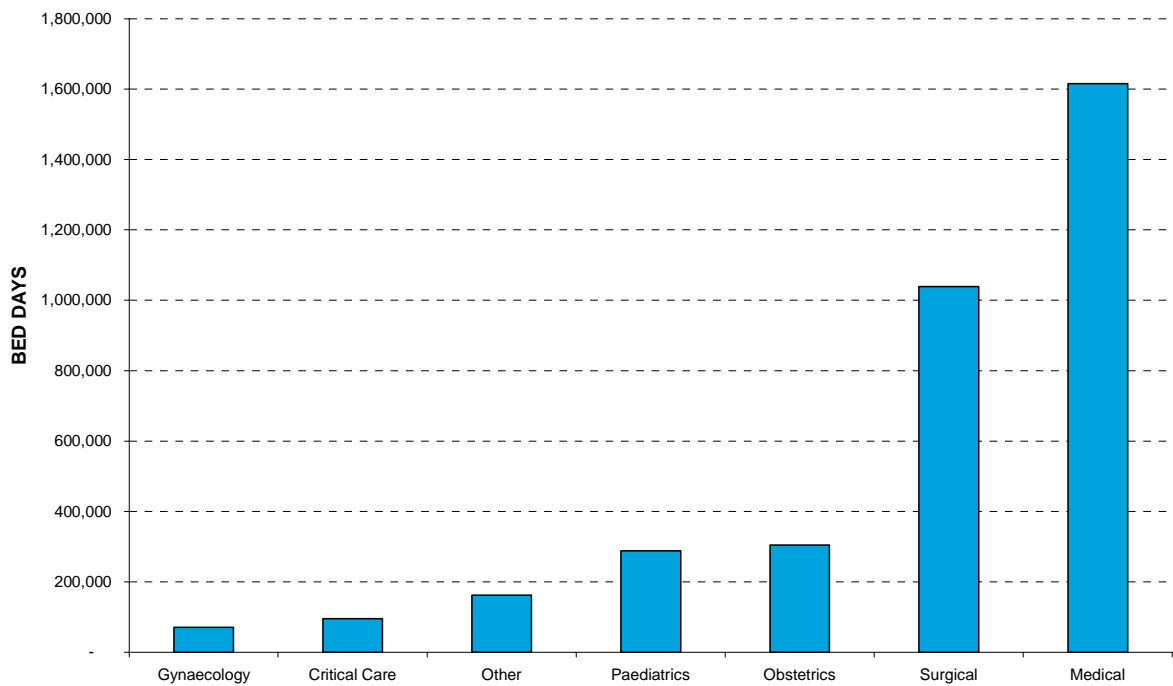


¹⁸ Health Inequalities and Irish general Practice in areas of deprivation, Irish College of General Practitioners, November 2005. It shows that both mortality and morbidity/illness is much higher in Social Class 4 / 5 compared to Social Class 1 / 2. This indicates that these patients are more likely to be admitted and, once admitted, typically have a longer length of stay.

Medical inpatients use 45% of total bed days

Figure 12 shows the inpatient bed days by Specialty Group. There were 3,575,000 inpatient bed days in 2005. 45% and 29% of total bed days are for medical and surgical patients respectively. This is slightly higher than their proportion of discharges due to both having higher than average ALOS). Obstetrics and Paediatrics each account for around 8% of total bed days. Less than 2% of total bed days are for gynaecology inpatients.

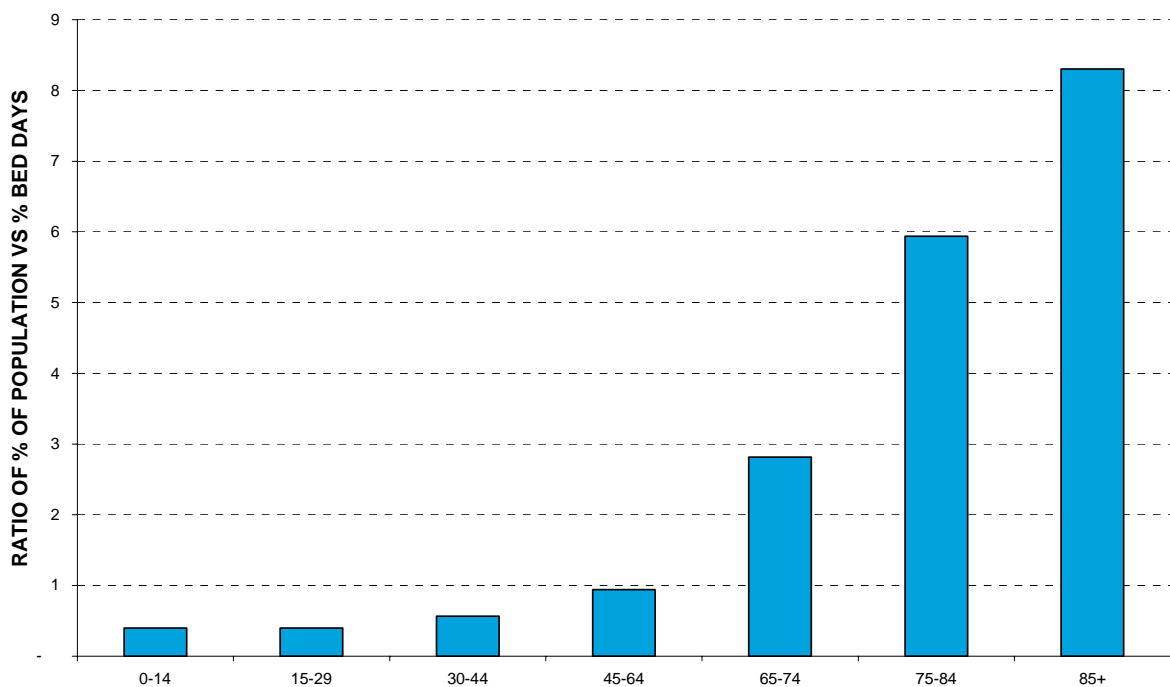
Figure 12: Inpatient Bed Days by Specialty Group (Source – HIPE 2005)



Older people use significantly more bed days

Figure 13 shows by age category the ratio of the proportion of bed days used versus the proportion of the total population by age. For example, 24% of Irish citizens are between 15 and 29 years old. However, they account for only 9.5% of the total used bed days. They are therefore 60% less likely than average to be in a hospital bed. This rate significantly increases with 45 to 64 year olds 6% less likely than average to be in a hospital bed. Further, citizens over 85 years old are over 8 times more likely to be in hospital. This is for two reasons; they are between 3 and 4 times more likely to be admitted and once admitted typically stay more than twice as long. This has huge potential implications for Ireland as our population ages.

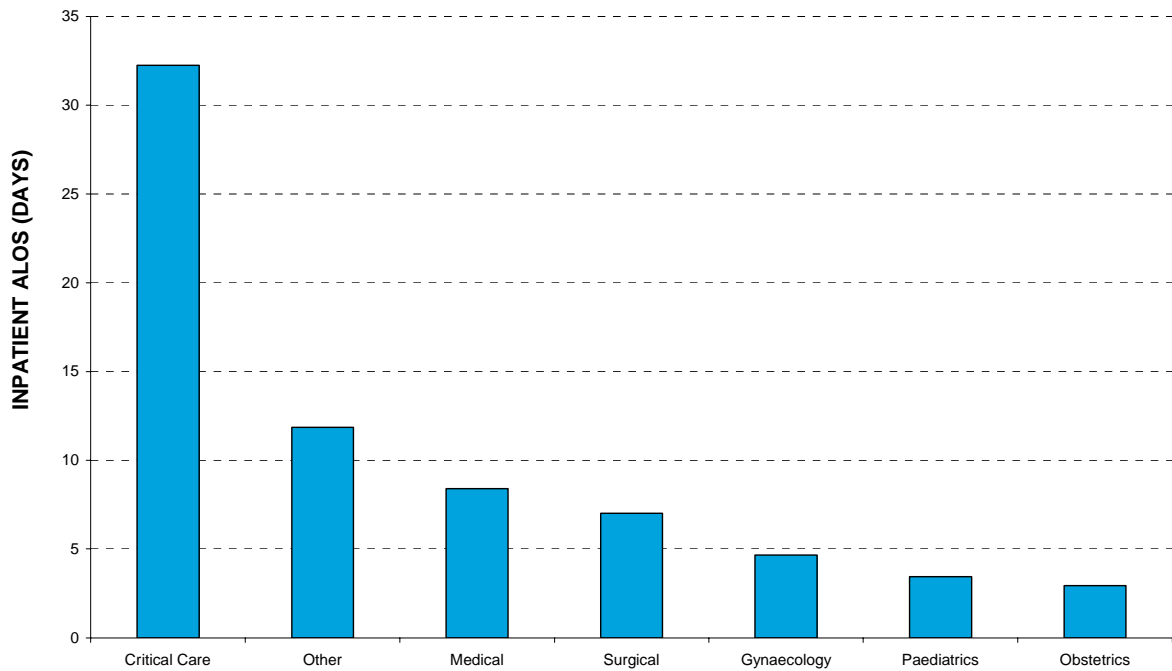
Figure 13: Ratio of Population Vs Bed Day Usage By Age (Source – HIPE 2005, CSO Census 2006)



Medical and surgical inpatients have a relatively higher ALOS

The figure below shows the ALOS by Specialty Group. Medical and surgical inpatients also have relatively higher ALOS than other Specialty Groups of 8.4 and 7 days respectively. This is in part because their patients are typically older (48% of medical and 34% of surgical inpatients are 65 years old or older), but the difference remains when this is factored in. Obstetrics inpatients have the lowest ALOS of just less than 3 days.

Figure 14: Acute ALOS By Specialty Group (Source – HIPE 2005)



4.4 Review of current bed usage

This section benchmarks Irish hospitals against hospitals in other countries for a number of related performance statistics. The statistics are consistent with key performance indicators used in other countries to assess and improve hospital capacity. For example, increasing day case rates is positioned as the number one high impact change for UK hospitals¹⁹. Note that, unless stated otherwise, the inter-country comparisons are not age adjusted.

Ireland has delivered the second lowest reduction in length of stay of any OECD country. Our average length of stay (ALOS) is also amongst the longest

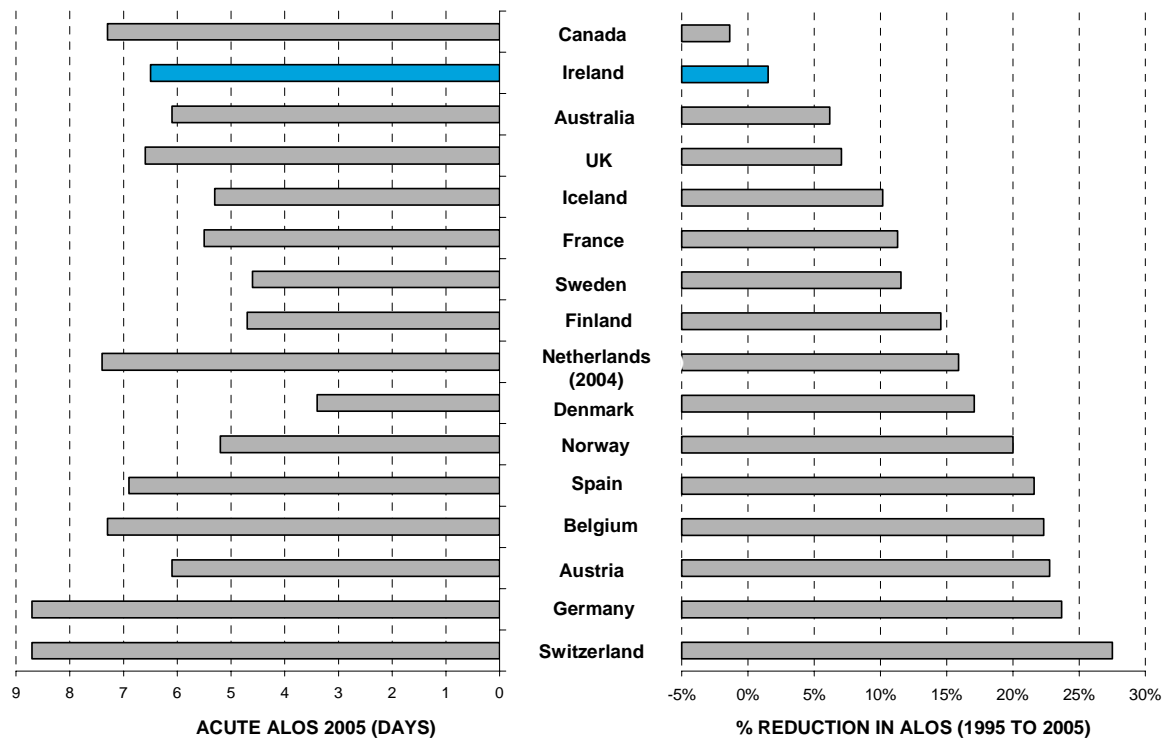
Figure 15 shows both the 2005 acute inpatient ALOS and the reduction achieved in ALOS since 1995 for a selection of OECD countries.

As detailed previously, OECD countries have delivered significant improvements in capacity through reducing inpatient ALOS on average by 14% over the last ten years. For example, ALOS reduced in Spain by 22%, Denmark 17% and France 11%. During this same period Ireland reduced ALOS by 2%. This is the second lowest reduction for all OECD countries. Further, Ireland currently has a relatively high ALOS. This is despite the fact that Ireland has one of the youngest populations in the OECD.

Canada is the only country that has delivered a lower reduction in ALOS than Ireland. However, this must be put into context with Canada's health reform agenda of shifting to ambulatory and community services as well as having world leading day case surgery rates. Thus, the acuity of their hospital inpatients has increased significantly with this approach (as healthier patients are transferred to alternate care settings) and it is therefore arguably understandable they have not also delivered length of stay reductions alongside this change.

¹⁹ NHS Modernisation Agency "10 High Impact Changes for Service Improvement and Delivery".

Figure 15: Acute ALOS Versus Reduction in ALOS Since 1995 (Source – OECD Health Data 2006)



Ireland’s day case rate is 12% below OECD average and less than half that of Canada

Many countries have delivered improved capacity in their health system by moving inpatient activities to be performed as day cases as standard. This is also popular with patients keen not to stay overnight in a hospital.

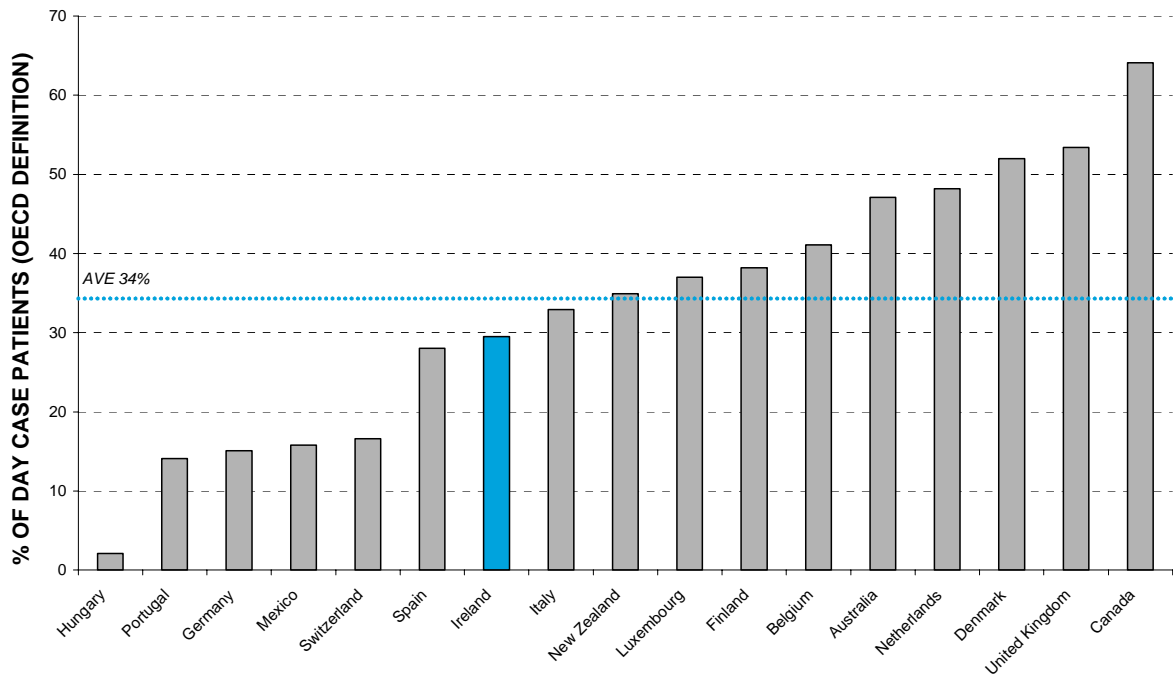
However, this is not the current practice with less than 30% of Irish patients being treated as day cases based on the OECD definition. This is in comparison with an OECD average of 34% and rates of 53% in the UK and 64% in Canada. That is, 338,000 more Irish patients could be treated as day case if Ireland performed as Canada.

<p>“There is clear evidence to show that patients who have day surgery have an overall better experience, improved clinical outcomes and less risk of hospital acquired infections.”</p>	<p>NHS Modernisation Agency - 10 High Impact Changes</p>
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The actual day case rate varies significantly across Irish hospitals. Some hospitals attain day case rates as low as 15%. Other hospitals exceed even Canada’s average with 69% of all patients as day case. This demonstrates the potential for improvement in specific Irish hospitals.

4. Hospital beds in Ireland and how they are used

Figure 16: International Day Case Rates (Source – OECD Health Data 2006)



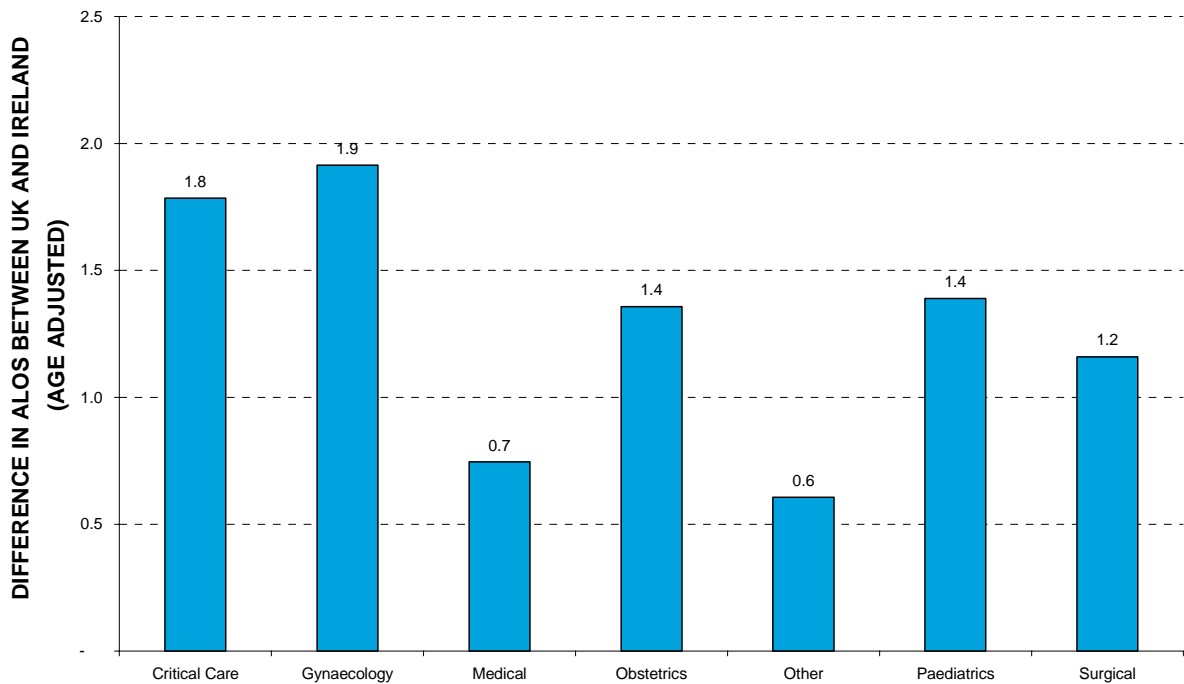
Irish inpatients spend between 0.6 and 1.9 days longer in hospital than in the UK

Ireland has a slightly higher overall ALOS than the United Kingdom. However, the Irish population is significantly younger and therefore should generally spend less time in hospital. A detailed analysis which incorporates the age difference in hospital population for both countries shows the same inpatient typically stays between 0.6 and 1.9 more days in an Irish hospital. Medical inpatients typically spend an additional 0.7 days and surgical 1.2 additional days.

That is, the ALOS performance for Irish hospitals is significantly worse than the United Kingdom for patients with the same condition and of the same age. This alone costs Ireland an additional 900 inpatient beds – 8% of the total NHO hospital bed stock.

4. Hospital beds in Ireland and how they are used

Figure 17: Comparison in Length of Stay for Irish and UK Hospitals (Adjusted for Ireland's Younger Population)²⁰



Irish hospitals still predominantly operate from Monday to Friday

Admission and discharge rates for medical and surgical patients are shown below. Acute hospitals typically admit and discharge 3 times more patients during a weekday than a Saturday or Sunday. The admission and discharge rate is over 4 times higher for medical and around 3.2 times higher for surgical patients. Also, Friday typically has 18% less admissions and 28% less discharges than other weekdays. It should be noted that this pattern is common across many countries.

²⁰ This analysis compared the ALOS for UK and Irish inpatients of the same age and with the same conditions. UK information was sourced from www.hesonline.nhs.uk for inpatient episodes in 2005-2006 and Irish information from HIPE for patient episodes (known as finished consultant episodes) in 2005. It showed that for most conditions Irish inpatients remained in hospital longer. This was then aggregated by Specialty Group as shown above.

4. Hospital beds in Ireland and how they are used

This reduction in capacity on a Friday and Saturday alone amounts to over 135,000 fewer discharges.

Figure 18: Medical Admissions and Discharges by Day of the Week (Source – HIPE 2005)

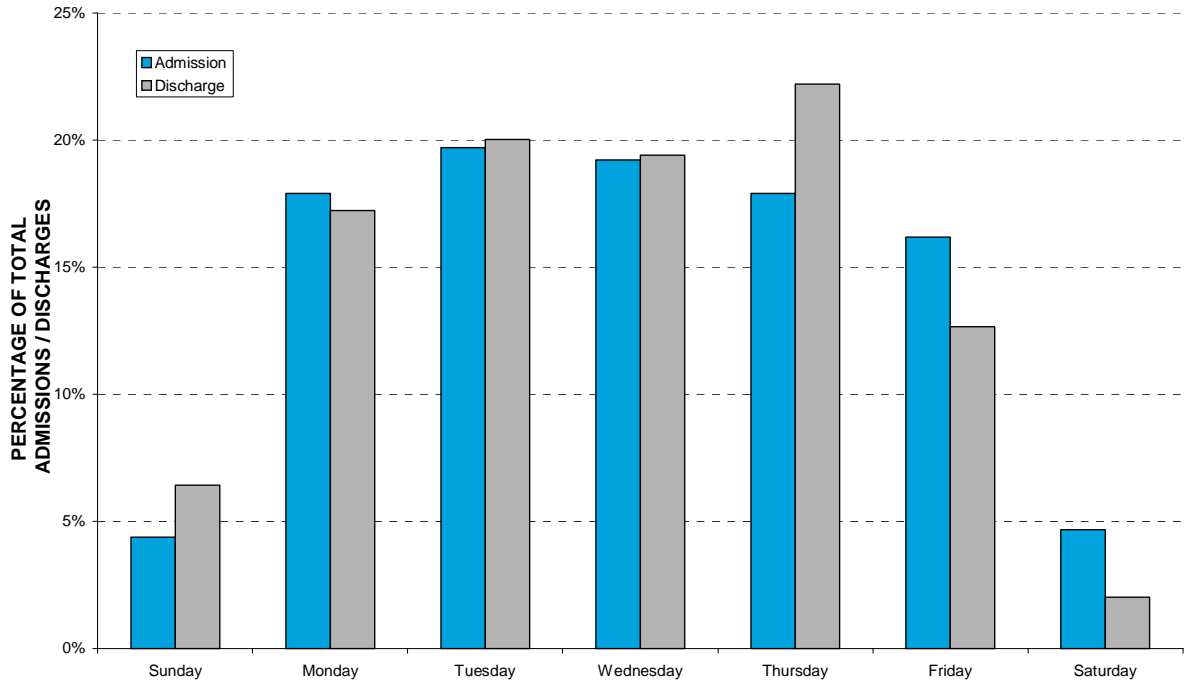
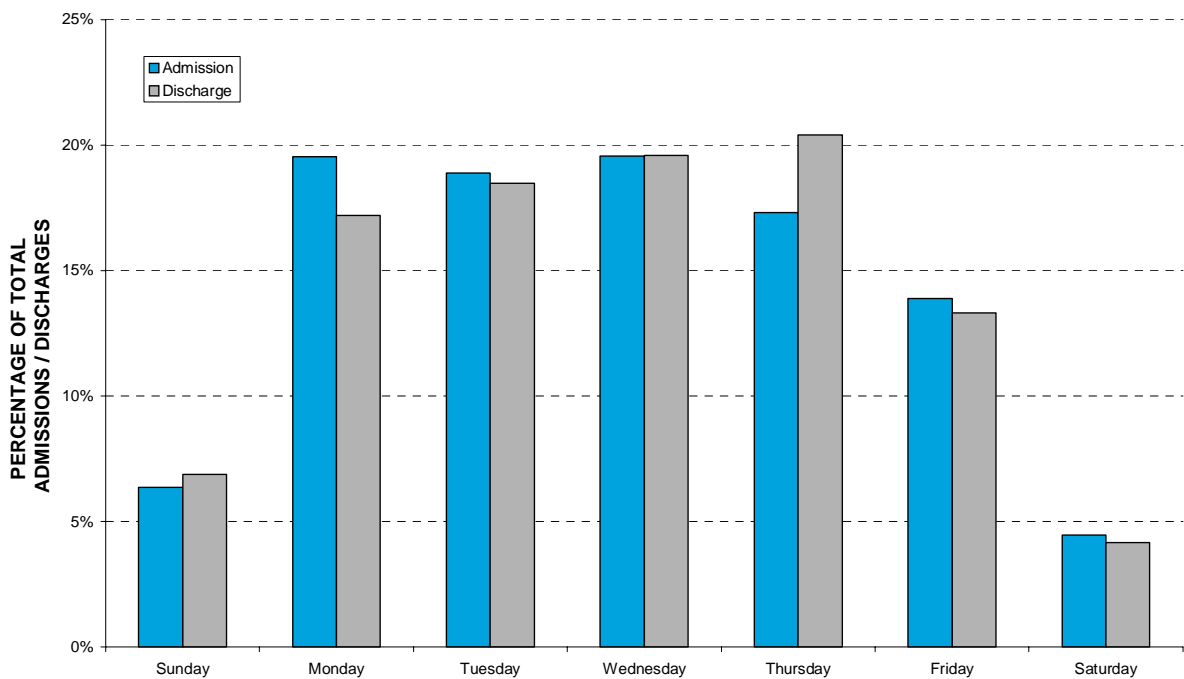


Figure 19: Surgical Admissions and Discharges by Day of the Week (Source – HIPE 2005)



54% of surgical patients are admitted before their day of surgery

36% of Irish surgical inpatients are admitted the day before they undertake surgery. This practice alone requires an additional 180 inpatient beds.

“....patients can get on with their own lives. A patient’s time is not free. We should not keep them in hospitals just because this suits the way that hospitals have historically functioned....Being treated at home also saves on individual expenses such as parking costs for friends and family. It also limits the risk of being exposed to hospital acquired infection.”

Why We Need Fewer Hospital Beds, NHS Confederation

Figure 20 shows the days to first procedure for surgery inpatients in Ireland. It shows that only 46% of all surgical inpatients are admitted on their day of surgery. That is, over half are admitted at least the day before surgery. Further, almost one in five surgery inpatients are admitted two or more days prior to surgery. In comparison in the UK more than 60% of inpatients are admitted on the day of surgery for better performing NHS Hospitals²¹.

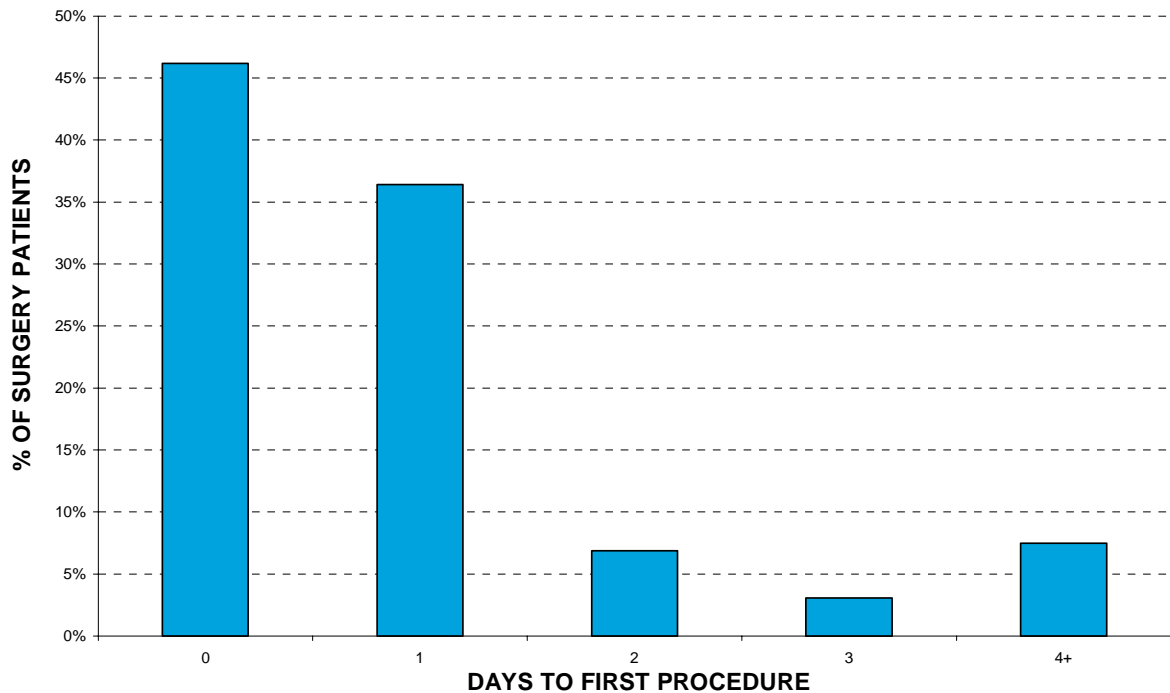
Day of surgery admission offers better service to many patients. There are a number of ways it can be facilitated, such as improved pre-operative assessment delivered in the patient’s home.

Similarly, Cork University Hospital (CUH) use B&B type accomodation so that patients who have far to travel need not be admitted the night before.

36% of Irish surgical inpatients are admitted the day before they undertake surgery. This practice alone requires an additional 180 inpatient beds.

²¹ Source – Reducing Pre-Operative Bed Days, NHS, 2006

Figure 20: Days to First Procedure for Surgery Inpatients (Source – HIPE 2005)



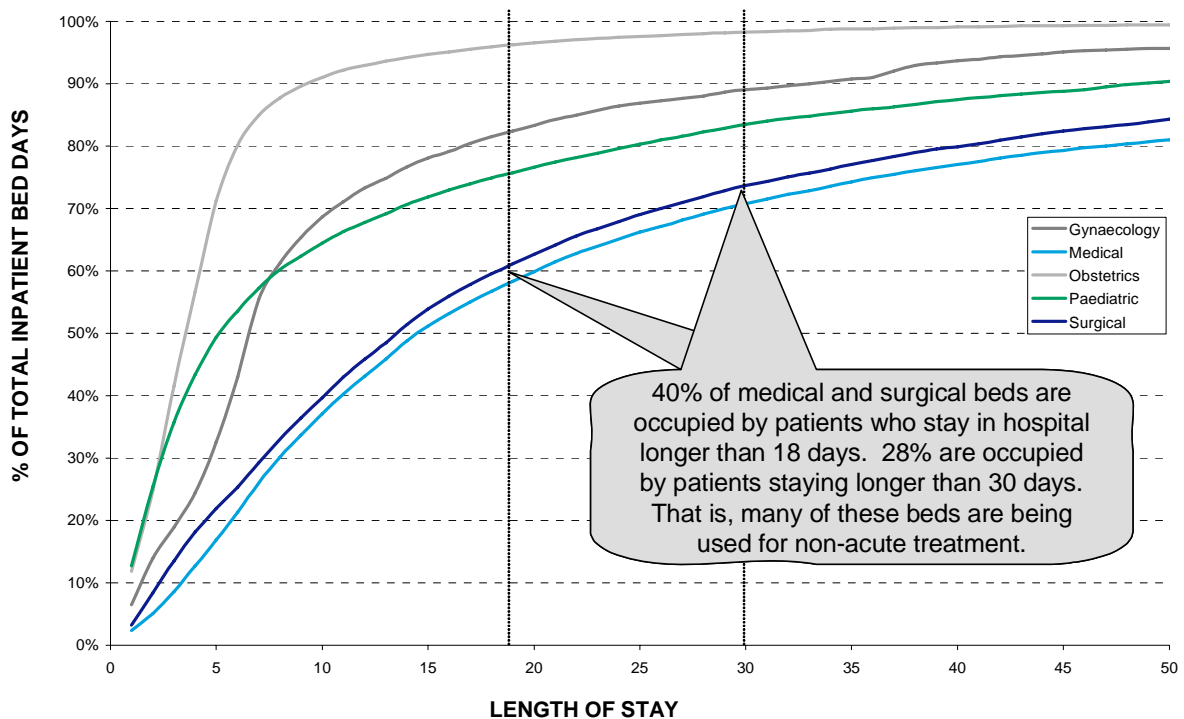
1.3m inpatient bed days are non-acute

By definition, acute (as opposed to chronic) care is specifically focused on the short-term (on average 18 days or less for specific episodes). However, this is not the observed trend for a significant number of inpatients in Ireland.

Figure 21 shows the cumulative distribution of inpatients by their length of stay for each Specialty Group. That is, it in effect shows the expected length of stay for the people occupying hospital beds. Over 40% of medical and surgical beds are occupied by patients who will remain in hospital for at least 18 days. Further, over 28% of medical and surgical beds are occupied by patients who will remain in hospital by at least 30 days.

This indicates that these patients are likely to be non-acute patients and no longer need to be in an acute setting. A detailed breakdown of the cumulative length of stay per Specialty Group is provided in the accompanying Technical Report.

Figure 21: Cumulative Distribution of Acute Length of Stay by Specialty Group (Source – HIPE 2005)



Ireland’s poor performance for inpatient ALOS is confirmed when compared with Australian acute hospital trim points. Trim points are defined as “the point after which a length of stay (LOS) is determined to be abnormally long, and any additional days are classified as outlier days”²². That is, trim point defines the maximum expected length of stay for Australian patients per DRG. For example, it may state that for a specific DRG the required length of stay is 15 days and therefore if the patient stays for 17 days then two of these days are deemed outside of the trim point

A DRG-level comparison of Irish length of stay with Australian trim points shows that 37% of total Irish inpatient bed days are outside of the trim point. This accounts for 1.3m inpatient bed days or more than twice as many beds as the biggest hospital in Ireland.

That is, 37% of Ireland’s total inpatient bed stock is used by patients who in Australia would be expected to no longer be in hospital.

39% of medical and surgical inpatients could be treated in an alternative care setting on their day of care

The Acute Hospital Bed Review surveyed 36% of the medical and surgical inpatients across Irish hospitals between November 2006 and March 2007. It found that 39% of all inpatients could potentially be treated in a more fitting (alternative to acute hospital) environment on that day of care if those alternatives were available. The principal alternatives to acute admission identified for these patients at the point of admission are shown in Figure 22.

²² Manitoba Centre for Health Policy. Australian Dept of Health also provides definitions for Trim Points – ‘Outlier cases are those which do not fit the normal pattern and, in terms of distribution, lie outside so called “trim points”.’

4. Hospital beds in Ireland and how they are used

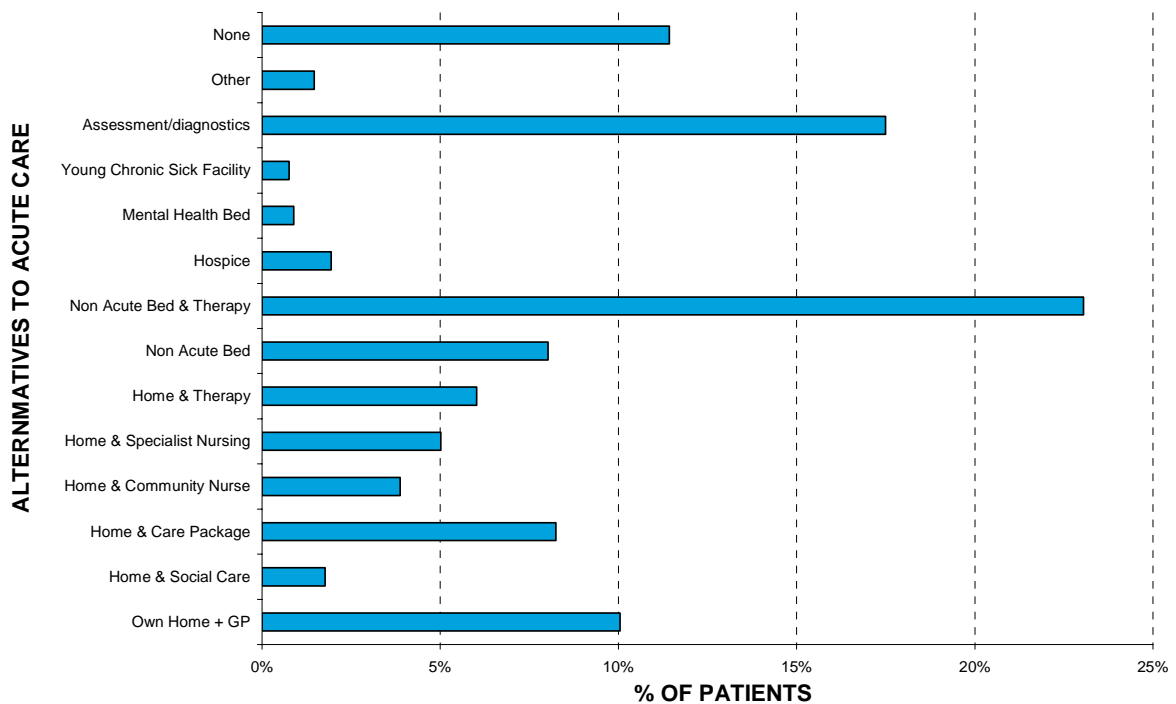
In order of priority, they are:

- Access to assessment / diagnostics without acute admission
- Home-based patient care including GP support, therapy, specialist nursing, community nursing and home care packages
- Access to a non-acute bed with therapy support eg physiotherapy.

“...a framework for older people to remain in their own homes and communities with a better quality of life in a safe environment, rather than admissions to an acute hospital bed, in many instances for social and therapeutic reasons only. Older people’s first choice is to be maintained in their own home and service provision has to take cognisance of this fact”

Submission to this Review, WISE (Social Workers from the Western Seaboard Working with Older People)

Figure 22: Alternatives Identified to Acute Care (Day of Care)



Of these inpatients, 50% remained in hospital at least a week later. Further, 50% of those inpatients who could potentially be treated in a non-acute bed remained in hospital at least two weeks later.

Formal discharge planning is not standard for the majority of Irish inpatients

The same survey also found that 60% of patients in Irish hospitals did not have a discharge plan and 83% did not have an estimated date of discharge.

Access to diagnostics is a key issue in the Irish health system

The Acute Hospital Bed Review confirms there is limited availability of diagnostics outside of acute hospitals. This means in Ireland you become an inpatient for diagnostic tests that in Denmark or Sweden would be fully available from your GP.

Also, there are significant diagnostic backlogs within acute hospitals. This causes delays and therefore extends inpatient stay. A discrete event simulation of an Irish hospital was developed to assess this impact of reducing this bottleneck. It showed that a 25% increase in diagnostic capacity resulted in a 6% increase in total hospital inpatient discharges.

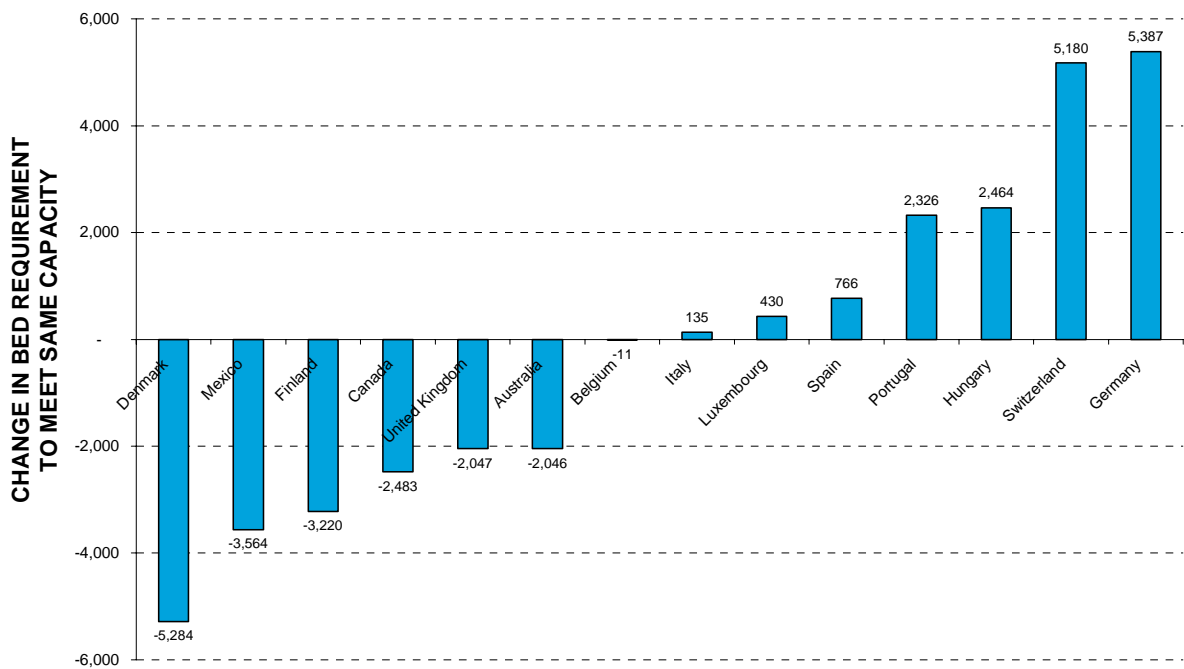
“We don’t even have access to diagnostics such as CT, MRI throughout the full weekday, let alone 24/7. If I have any doubts about a patient after 10am on a Friday I admit them and then get the results on the Monday”

ED Consultant in Major Teaching Hospital

Australia, the United Kingdom, Finland, Denmark and Canada deliver the same capacity in their health system with between 2,000 and 5,000 less hospital beds

There are a number of ways to deliver additional acute capacity within a health system. This often includes a combination of increasing day case rates to minimise inpatient admissions as well as improving hospital bed management and extending the capacity in community services to minimise acute inpatient ALOS. To illustrate this point, below is shown the difference in acute hospital beds required in a variety of countries to meet Ireland's current acute hospital throughput. This is achieved simply by applying each country's acute hospital day case rates and inpatient ALOS to Ireland's acute hospital patient throughput. Differences across countries are due to a combination of the relative efficiency of their hospitals and how their health system is configured to deliver acute services. A detailed breakdown of these figures is provided in the accompanying Technical Report.

Figure 23: Difference in Acute Hospital Bed Requirement to Deliver Irelands Health System Activity Applied to Health Systems in Other Countries



4. Hospital beds in Ireland and how they are used

Denmark, Finland, Australia, Canada and the United Kingdom all deliver the same capacity in their health system with at least 2,000 less acute hospital beds. Denmark achieves this in part because of the extended services available within the community.

Patients are transferred more quickly out of the acute hospital to finish their treatment in an alternative care setting. The United Kingdom has extended capacity with an initial significant investment in long term care beds in the 1980s and 1990s and then large centrally coordinated programmes particularly in the last seven years to improve the internal processes within hospitals. Canada's hospital capacity is extended through setting day case surgery rate as the standard. Some Australian hospitals have delivered significant capacity improvements through applying standard manufacturing process improvement techniques (such as Lean) to optimise the flow of patients within a hospital.

The unification of Germany brought many acute hospital beds into their health system (East Germany, like many former Eastern Block countries, had a large number of acute hospital beds). This has increased the health system's reliance on these hospital resources to deliver acute capacity. Therefore, Germany needs over 5,000 more hospital beds than Ireland to deliver the same acute capacity.

4.5 Changes in configuration of bed stock

The configuration of beds within acute hospitals in other countries is also changing, with a greater emphasis on:

- Flexibility: the concept of the acuity-adjusted bed, which supports the patient remaining in the same bed for all stages of their care, supported by flexibility in resource as appropriate
- Infection control: reducing some preventable diseases and supporting hospitals in managing infection
- Dignity, privacy and confidentiality: safe-guarding the dignity of patient, particularly at end of life care
- The patient environment and patient choice: responding to the increasingly consumerist attitudes of the patient

Single rooms also play a major enabling role in the delivery of these aims²³. This is reflected by a number of new hospital builds having a 50% single room ratio. This is a problem for the existing stock of Irish hospitals as there are currently very few single rooms. Further, a significant proportion of the existing single rooms in public hospitals are private patient beds.

This often means that hospitals are increasing their specialised bed stock to deliver more efficient or effective health services. This includes:

- Medical Assessment Units (MAU), which provide priority access to diagnostics for patients referred by their GP or other health professional
- Stroke Units, which deliver significantly improved health outcomes by offering specialist care for stroke patients²⁴
- Hotel type beds, which provide a more suitable level of accommodation to enable travelling patients to be treated as day cases
- Acute Rehabilitation Beds, which can expedite patient recovery and reduce their overall (hospital and community) length of stay
- Intermediate care beds, which enable inpatients to be transferred out of the acute setting to a more suitable (and mostly less costly) alternative.

However, this trend has been less prominent in Ireland where there are relatively few such specialist beds.

²³ A Report for NHS Estates, England by the EU Health Property Network Authors: Barrie Dowdeswell, EUHPN Executive Director; Jonathan Erskine, Research Associate; Michael Heasman, Research Associate; November, 2004.

²⁴ A 2007 study led by Livia Candelise, MD, in Milan suggests that Stroke Units reduces the risk of death or disability two years after discharge by 20%.

4.6 Implications for the Irish health system

Irish hospitals have relatively low day case rates. Further, Irish inpatients typically have longer hospital stays than many other countries. Our hospitals have also delivered the second lowest reduction in ALOS over the last ten years. These are despite the fact that Ireland’s population is generally younger and so there should be more opportunity to deliver efficient services.

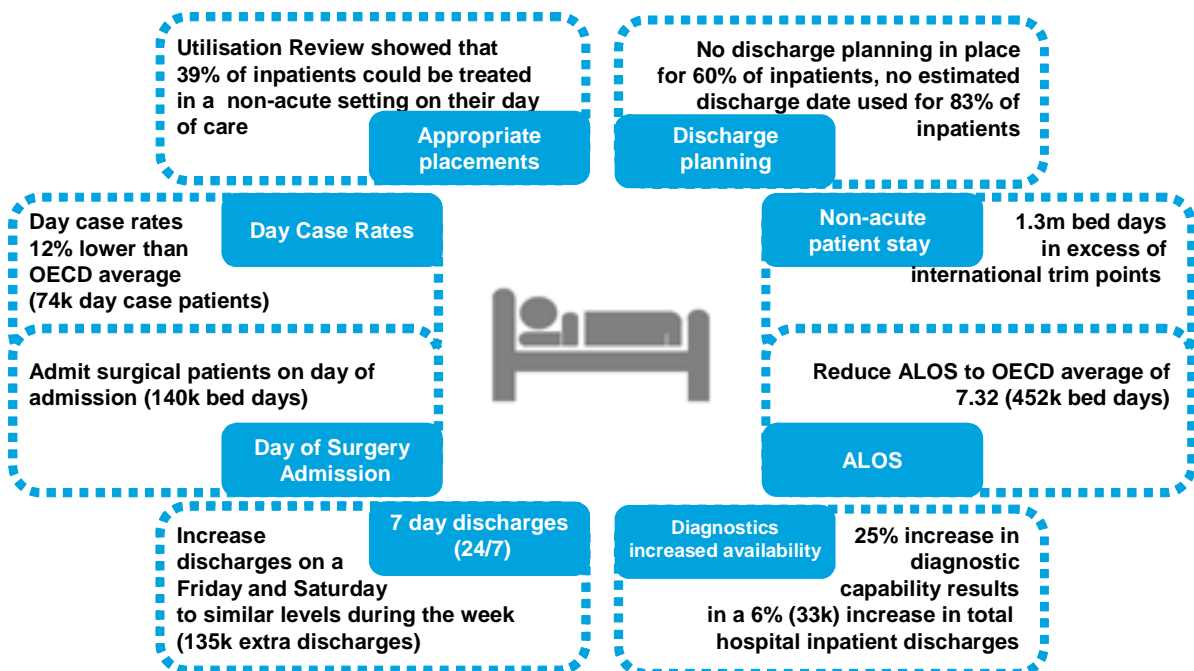
There is scope for improving the efficiency of Irish hospitals...

This analysis points to a number of factors that contribute to lower capacity within Irish hospitals, including:

- Many patients are treated as inpatients in Ireland when they would be treated as a day case in other countries
- Over half of inpatients are admitted at least the day before their surgery
- Many inpatient stays are extended due to delays in accessing diagnostics
- Most Irish inpatients have no formal discharge plan.

This is illustrated by the below statistics.

Figure 24: Summary of Irish Performance Statistics



There is significant opportunity to use beds more efficiently through better management within the hospital. Maximising the use of existing beds would release capacity in the current bed stock and reduce the need to invest in expansion. The way acute beds are currently used reduces capacity and therefore requires more beds to deliver the same service.

... however, this is also due to wider issues in the health system

This performance is not solely the result of inefficiencies within Irish hospitals. It is also as a result of the way the Irish health system is configured;

- Many patients are admitted to Irish hospitals for services they would receive in an alternative setting in other countries, eg GP diagnostics, minor surgery, etc. This is because these services are not accessible elsewhere
- The lack of alternative care options also extends inpatient stay. This is when the acute component of their treatment has concluded, but the patient still has a real health need, eg rehabilitation, long term care, change bandages, etc. Therefore, the hospital has no choice but to retain the inpatient.

Countries have been most successful at delivering change when it has been done across the whole health system

As mentioned previously, many OECD countries have reduced the number of hospital beds while increasing both the capacity of hospitals and the wider health system. They have achieved this by seeking to develop a new model of care which seeks to optimise across the whole health system. In many cases, this means both shifting services to be delivered in the community and delivering efficiencies within hospitals²⁵.

For example, a substantial part of the acute bed reductions in Finland and Sweden can be attributed to decisions to transfer parts of the healthcare system to the Primary and Community sector. Similarly, the United Kingdom, coincided reductions in acute beds during the 1980s and 1990s with almost trebling the number of nursing home beds (from 78,000 in 1986 to 220,000 in 1996). A comparable investment in care for older people over coming years has now been identified for Ireland.²⁶

Further, service planning across the full patient pathway also delivers improvements in hospital capacity (eg orthopaedic length of stay could be decreased if the requisite pre-operative assessment and post-operative therapy support were available to patients). For many countries, this also includes a dedicated chronic disease management strategy implemented within the community. It is commonly stated that 5% of inpatients account for 40% of total hospital inpatient bed days. Identifying and working with these citizens in the community to better manage their condition gives both a more effective and efficient health outcome. For example, the UK NHS initiative to “Supporting People With Long Term Conditions” delivered its target two years early. This target is detailed below.

²⁵ Hensher M, Edwards N, Stokes R. International trends in the provision and utilisation of hospital care. *BMJ*, 1999, 319:845–848.

²⁶ The 2006 HSE Report title “Assessment of Need for Residential Care for Older People” published in 2006 estimates that Ireland will require an additional 10,021 long term care beds in 2021. The Department of Health and Children’s policy is to significantly expand community services to reduce this long term care bed requirement and allow citizens to remain at home. This is in the citizen’s interest and consistent with the Preferred Health System.

4. Hospital beds in Ireland and how they are used

“improving outcomes for people with long term conditions by offering a personalised care plan for vulnerable people most at risk, and reducing emergency bed days by five per cent by 2008 through improved care in primary and community settings”²⁷

Evidence from other countries also indicates the improved hospital performance is delivered via dedicated programmes. Such programmes organise experienced teams working with local hospitals to help them deliver national health objectives, such as improving wait times. This approach recognises that hospitals need support in delivering change on the ground and also ensures that at a national level progress can be tracked and issues resolved. These programmes provide a structure for the reform as well as allowing the quick adoption of successes across the network. Further, they often offer specific and specialist resources not always available within individual hospitals. This approach is consistent with the HSE Transformation Programme.

²⁷ <http://www.networks.nhs.uk/3.php>

5. Future demand for acute beds



5. Future demand for acute beds

This section calculates how many hospital beds Ireland requires today and for each year to 2020 based on current practice. It achieves this by considering the number of beds required:

- Today to address existing stresses in the system and unmet demand
- Tomorrow to address changes in the Irish population and health market.

5.1 Existing demand for existing beds

There are currently 11,660 acute public patient beds in the Irish health system. These are detailed in Section 3.1. An analysis of the utilisation of the activities (Section 3.3) and utilisation (Section 4.2) of these beds shows that they are mostly fully in use. There were over 995,000 acute hospital patients in 2005. They used in total 3,575,000 inpatient bed days.

There are small number of bed types in specific acute hospitals that are under-used, although this can often be explained by the lack of available other resources.

It is therefore assumed that all of the existing bed numbers are required.

5.2 Existing demand for additional beds

There are a number of indications that the existing acute public patient beds are under stress. Further, long waiting lists show unmet current demand.

Ireland has high bed occupancy rates

Acute hospital bed occupancy rates consider the percentage of available inpatient bed days used by patients in the system. It is a measure of how many additional beds are available within the system to service new patients. Overly high utilisation can mean that some new patients cannot be serviced and so can result in cancelled elective operations or delays and refusals to admissions requiring acute services. Equally, it can result in hospital overcrowding or inappropriate bed designations (eg designating general ED admissions to wards with intensive chemotherapy patients with lower immune systems after their treatment and so require isolation). This can increase the risk of hospital acquired infections. Alternatively, overly low utilisation may indicate that there are too many beds within the system.

“There is no single desirable level of bed occupancy across a hospital. Instead an acceptable occupancy with its corresponding refusal rate is a complex function of case mix, size of bed compliment and variability in patient LOS”

PR Harper and AK Shahani, Journal of the Operational Research Society

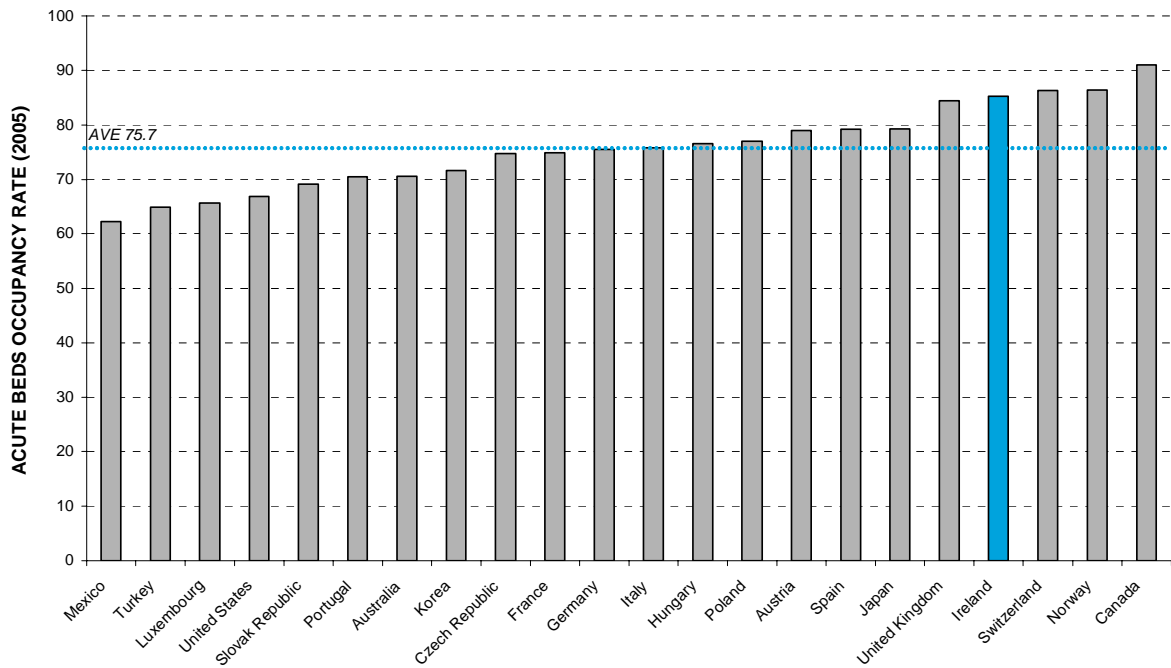
However, it is important to acknowledge that appropriate utilisation depends on the bed type, size of the bed pool and the pattern of admissions. For example, high utilisation without significant delays is possible for elective surgical beds with good planning and operational management. Alternatively, critical care admissions are predominantly unplanned and serviced by a small and restricted (not possible to transfer to another type of bed) bed pool. Their utilisation should therefore be ideally kept at a low level²⁸.

²⁸ Nathan Proudlove – Senior Lecturer in Operational Research, Manchester Business School.

5. Future demand for acute beds

Figure 25 shows Ireland having the fourth highest bed occupancy rate among OECD countries. It is particularly high for specific hospitals around Dublin and Cork as well as for medical, surgical and intensive care beds (where utilisation can be well over 98%). For some countries, high utilisation demonstrates good demand planning and bed management particularly for elective surgery beds. However, formal discharge planning is not the norm in Irish hospitals²⁹ and so more beds are required at least in the short-term, as well as better management of available stock.

Figure 25: International Bed Occupancy Rates



²⁹ As demonstrated by the Acute Hospital Bed Review finding that only 40% of inpatients having a discharge plan and 17% a discharge date.

5. Future demand for acute beds

Table 7: Optimal Utilisation Rates shows the optimal occupancy rate by bed derived from an extensive expert stakeholder consultation and medical journal research. Additional beds are required to reduce existing utilisation to these rates.

Table 7: Optimal Utilisation Rates

Bed type	2007 target utilisation	Future target utilisation	Comment
Medical	85%	85%	-
Surgical Elective	85%	95%	Increase in surgical elective bed utilisation with improved bed management, eg scheduling and predictive planning
Surgical Emergency	85%	85%	-
Obstetrics	65%	65%	-
Gynaecology	85%	85%	-
Paediatrics	70%	70%	Lower utilisation reflective of smaller bed pool and lower predictability of paediatric demand.
Critical Care	75%	75%	As recommended by the European Society of Intensive Care Medicine

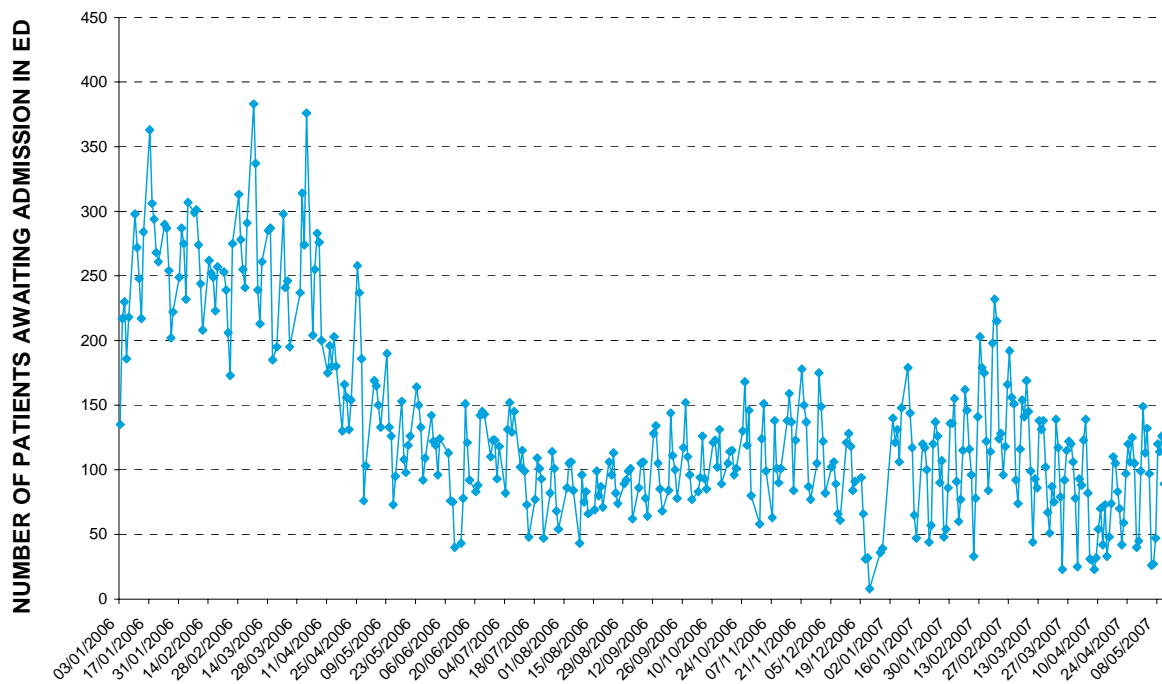
High bed occupancy impacts each stage of the patient pathway

The lack of available beds has a variety of impacts on patients. Over 200 elective surgery treatments are cancelled per week. Emergency Department (ED) patients await acute admission on hospital trolleys. Patients within hospitals are also refused access to specialised beds. For example, the ICSI Study of 2002 showed that 6% of intensive care referrals were refused access due to lack of an available bed.

To illustrate this point, a point count of patients waiting in ED for inpatient admission from 2006 to date is shown below. The number peaked at over 350 patients in the first quarter of 2006. It then generally reduced for the rest of 2006 and maintained to date. It should be noted that ED waits are also due to the flow of patients within a hospital. They are a bottleneck waiting for capacity to become available at the next stage of the patient pathway and can be significantly reduced by aligning the activities across the pathway eg Consultant discharge rounds occurring immediately before ED admission peaks.

5. Future demand for acute beds

Figure 26: Daily Count of Patients in ED at 2pm Awaiting Admission after the decision to admit has been made 2006 - 2007³⁰



Additional capacity is required to service specific unmet demand, such as cancelled elective surgery and unsuccessful intensive care referrals. Further, reducing bed utilisation to acceptable levels makes the flow of patients less problematic and reduces hospital bottlenecks, such as ED admission waits.

Patients are waiting overly long for hospital procedures

Acute waiting lists are in effect additional demand that the system is not servicing. This indicates a need for further capacity where patients are waiting longer than deemed acceptable and/or when the waiting list is increasing. The National Treatment Purchase Fund currently offers an alternative source of public health delivery for all patients waiting three months or more for an operation. Three months should therefore be interpreted as the target wait time public hospitals should seek to attain with beds added accordingly.

Patients waiting three months or more (including those subsequently serviced by the National Treatment Purchase Fund) are considered as unmet demand for the existing health system. In particular, additional hospital capacity is required to meet a years' worth of patients (that is, those waiting between three and fifteen months). It is assumed that any backlog of patients waiting longer than a year will be serviced via the National Treatment Purchase Fund.

³⁰ Source: Performance Management Unit, NHO.

5.3 Demographic changes

Changes in the size and profile of our population will have an impact on health need.

Ireland’s population is growing and getting older

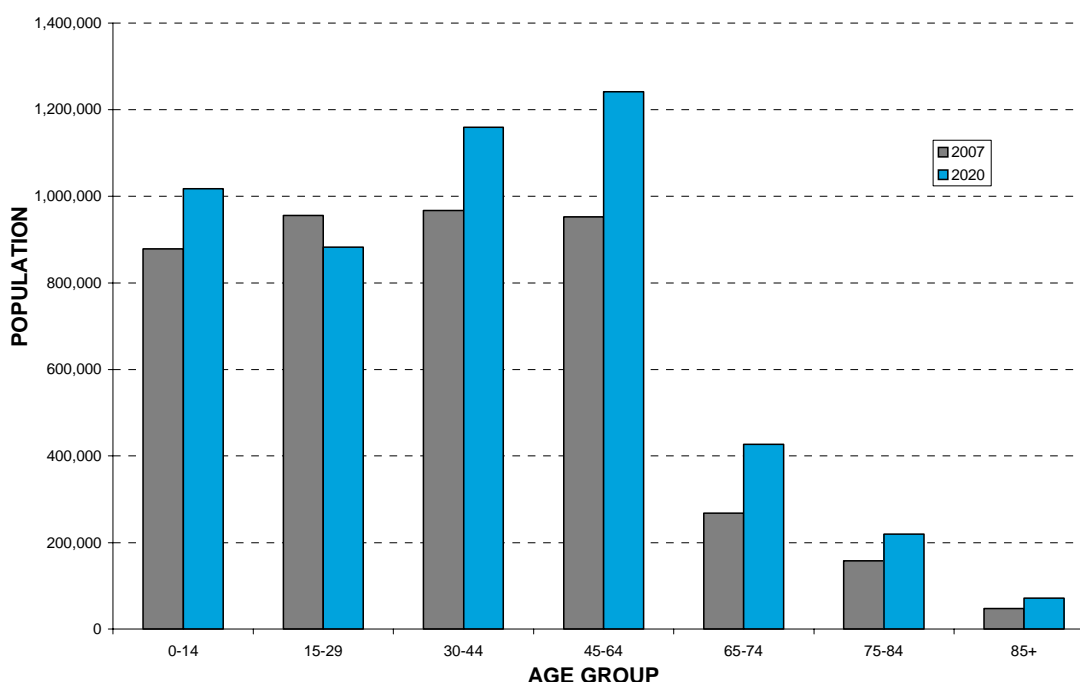
The Central Statistics Office (CSO) projects that Ireland’s population will grow by 19% to over 5m people by 2020. This increase in population will be spread across Ireland although rates will vary by location. The Mid-East will experience the highest growth of 30% as population disperses from Dublin. The West will also increase by 23%. Dublin will increase by 19% to over 1.4m people. The smallest increase of 13% will be experienced in the Mid-West. This means that the number of people the health system is servicing on a national level will increase.

Table 8: CSO Population Projections by Regional Authority, 2007 – 2020

REGIONAL AUTHORITY	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Border	463,042	469,046	475,133	481,296	487,521	493,801	500,110	506,459	512,825	519,195	524,738	530,234	535,590	540,783
Dublin	1,204,849	1,223,814	1,242,811	1,261,794	1,280,704	1,299,512	1,318,258	1,336,949	1,355,509	1,373,864	1,388,279	1,402,357	1,415,660	1,428,127
Midland	246,494	250,297	254,086	257,855	261,618	265,356	269,088	272,810	276,512	280,195	283,495	286,754	289,935	293,025
Mid-East	470,035	481,396	492,763	504,113	515,441	526,728	538,044	549,379	560,716	572,026	582,427	592,770	602,930	612,901
Mid-West	359,068	363,077	367,096	371,112	375,123	379,119	383,102	387,071	391,010	394,897	398,131	401,277	404,270	407,099
South-East	456,968	463,186	469,382	475,548	481,676	487,772	493,839	499,882	505,896	511,858	517,160	522,393	527,479	532,402
South-West	616,005	623,009	630,043	637,095	644,134	651,159	658,148	665,112	672,020	678,833	684,463	689,952	695,153	700,103
West	413,057	419,899	426,918	434,090	441,402	448,856	456,428	464,106	471,857	479,658	486,538	493,404	500,114	506,623
TOTAL	4,229,518	4,293,724	4,358,232	4,422,903	4,487,619	4,552,303	4,617,017	4,681,768	4,746,345	4,810,526	4,865,231	4,919,141	4,971,131	5,021,063

During this time the CSO also predicts a gradual ageing of our population, as shown in Figure 27. In particular, it shows the movement of the median age of the population from 15-29 years old to 30-44 years old. The number of people over 64 years old will increase in the Mid-East by 133% and in Dublin by 75%. As shown previously, the gradual ageing of our population will result in an ongoing increase in Health Need.

Figure 27: CSO Projected Population By Age in 2007 and 2020



Our lifestyles are also changing

Like many western countries, Ireland's lifestyle is changing. The increase of adverse health indicators such as the growth in obesity and alcohol consumption as well as an increase in stress related diseases will all impact Ireland's health need.

For example and like many other Western countries, the BMI of the Irish population is increasing. The WHO projected obesity rates in Ireland are likely to increase by around 13% in ten years. Experience in Ireland and other countries shows that this will result in an increase in the health services our population will require. In particular, it will result in chronic diseases, such as diabetes, becoming more prevalent.

“The burden of treating chronic disease for the health services is enormous and is increasing. Our existing model of care for these diseases is now inadequate to the challenge, as it has an over-reliance on episodic treatment in the acute hospital”

Dr. Marie Laffoy,
Chairperson of the
National Chronic
Disease Management
Project Steering
Committee

Further, Ireland continues to be amongst the highest consumers of alcohol in the world, being twice as likely to be regular drinkers compared with the European average³¹. Alcohol has been shown to be the third most detrimental risk factor for European ill health and premature death - higher than high cholesterol and being overweight, and three times more important than physical inactivity³².

Although on the general decrease, around one in four Irish citizens continue to smoke cigarettes³³. This is still a significant amount. Cigarette smokers have more acute and chronic illness, more restricted activity and disability days and more absenteeism from work than those who do not smoke. Smoking-related diseases place an enormous burden on the health system and it is estimated that it may cost the exchequer €1 billion per year to provide health services for smokers.³⁴

These all contribute to higher ongoing health need

The size, age and BMI of our population are likely to increase to 2020. These all contribute to a higher overall health need in the Irish population across a variety of conditions. To illustrate this point, Figure 28 shows the National Cancer Register of Ireland's cancer projections. They show a stark increase in lung, breast and prostate cancers.

³¹ Eurostat Health Statistics 2002.

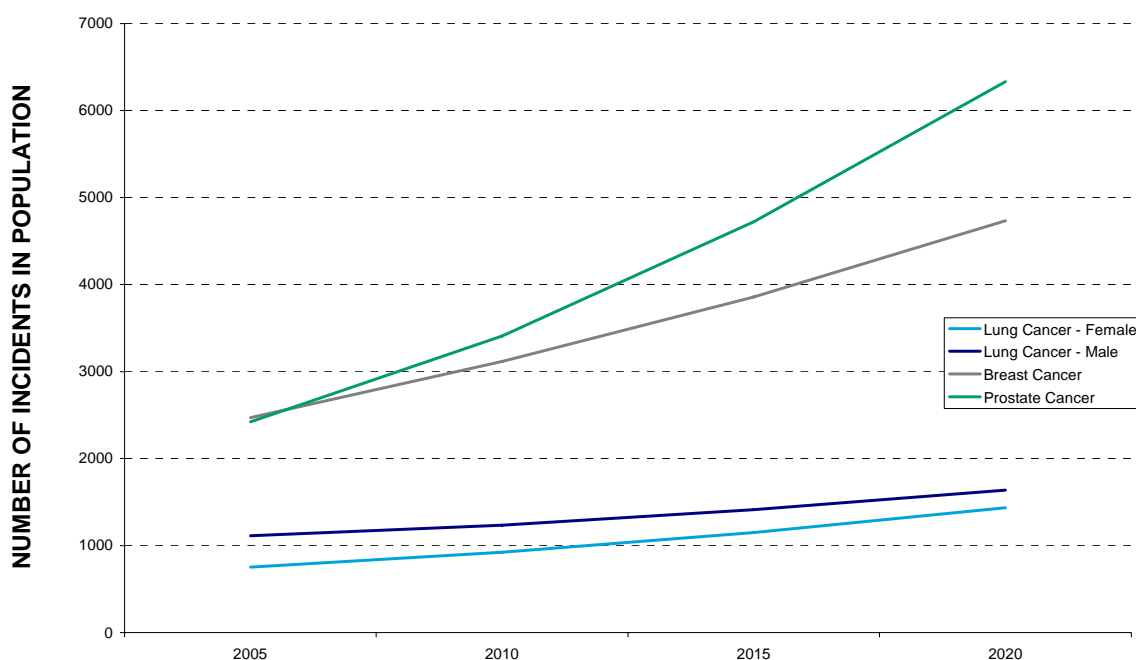
³² WHO Global Burden of Disease Study.

³³ Annual Report 2005, Office of Tobacco Control.

³⁴ Annual Report Chief Medical Officer, 2005.

5. Future demand for acute beds

Figure 28: NCRI Select Cancer Projections



Population propensity rates were calculated for each DRG Group by age and sex using HIPE 2005 and population information from the CSO. That is, 1% of males over 84 years old are likely to have a health episode for lung cancer (say). An estimate of future propensity rates to 2020 was estimated per DRG Group using the best available Irish and international information. That is, in 2020 this rate will have increased to 2% (say). Each propensity rate was then applied by age and sex to the CSO population projections for each year to 2020. This provided an estimate of the number of hospital episodes for each year by DRG Group, age and sex.

A summary of the resulting health episode projections is shown below. Further detail is provided in the accompanying Technical document.

Table 9: Health Need 2007 - 2020

SPECIALTY GROUP	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Critical Care	2,902	2,970	3,041	3,115	3,195	3,279	3,365	3,454	3,545	3,637	3,728	3,826	3,922	4,022
Gynaecology	33,873	34,593	35,326	36,082	36,864	37,650	38,430	39,188	39,923	40,680	41,359	42,038	42,691	43,328
Medical	449,310	465,347	481,148	497,687	516,380	535,783	555,833	576,453	597,833	621,510	645,139	670,296	695,451	721,592
Obstetrics	105,111	106,707	107,655	108,599	109,667	110,784	111,894	112,995	113,909	114,656	114,898	115,255	115,548	115,754
Other	37,182	37,930	38,699	39,501	40,342	41,212	42,093	42,981	43,883	44,783	45,640	46,563	47,463	48,384
Paediatrics	127,662	131,070	133,541	135,966	138,563	140,527	142,354	143,995	145,545	147,840	149,188	149,690	149,870	149,858
Surgical	295,263	303,476	309,823	315,798	322,818	329,728	336,848	344,117	351,624	359,669	366,919	374,920	382,728	390,864
TOTAL	1,051,303	1,082,092	1,109,232	1,136,749	1,167,829	1,198,961	1,230,817	1,263,183	1,296,261	1,332,774	1,366,871	1,402,588	1,437,674	1,473,802

5.4 Changes in the health market

Like any other, the health industry is subject to changes in the market. This includes:

- Health and technology innovation, which change the available treatments
- Unmet demand, such as existing outpatient waiting lists
- Patient expectations, which change how consumers access the health system.

5.4.1 Health Innovation

There is increasing health technology innovation. Much of its impact over the last twenty years has been a move towards less intensive and invasive care often completed as outpatients. It is likely that this general trend will continue to 2020 with changes in diagnostic and treatment technologies, rather than policy interventions, allowing conditions to be managed in settings other than inpatient beds.

Innovation in clinical care can of course increase and decrease utilisation of health services. New technologies, procedures and medicines all contribute to increasing the number of conditions that are treatable. They also contribute to improved health outcomes meaning the patients are more likely to survive and therefore subsequently re-engage with the health system. Equally, in many areas there has been a general shift to less invasive surgical procedures or medical treatments. This can significantly reduce recovery times and are therefore less resource intensive.

Further, how they are adopted across Ireland depends on a multitude of factors including funding, regulation and clinical practice patterns. VHI Healthcare now pays a number of procedures on the assumption they are done as day case. This has contributed to the day case rates for these procedures increase in private hospitals.

The primary purpose of such innovation is generally to result in a better patient outcome. The method for which each health system regulates practitioners for good practice also therefore impacts innovation adoption. The newly established Health Information & Quality Authority is responsible for “working on behalf of the public to make sure you get the quality and safe standards of care you deserve”³⁵ How they deliver this in the Irish health system may impact how quickly new procedures are adopted.

Like any other professionals, health clinicians also look to their peer group. Early adopters of new approaches within specific hospitals or professional bodies provide a clear reference point for others. If the change is seen as successful others will be more likely to follow.

³⁵ Source – www.hiqa.ie

5. Future demand for acute beds

The key innovations likely to impact Irish acute bed requirements between now and 2020 highlighted by Irish stakeholders and international peer review are summarised here and discussed in more detail in Appendix H.

Table 10: Overview of Key Innovations

Innovation	Impact on acute provision	Overview
Minimally Invasive Approaches to Diagnosis and Treatment	Could reduce demand for acute beds	Less invasive procedures require a shorter recovery time. Continuing development of “minimally” and/or less invasive approaches to surgical procedures (lap chole, hip replacement, thoracic surgery, open-heart surgery) and diagnosis (Fast CT, PET) will support reductions in length of stay and the shift of care from inpatient to outpatient setting.
Replacement of Surgery with Medical Therapy	Could reduce demand for acute beds	Medical and pharmaceutical treatments have replaced some surgical interventions. Within cardiovascular care, for example, the widespread use of statin drugs together with the use of angioplasty and drug-eluting stents may eventually replace a substantial portion of open heart surgery. Advances in treatments now enable administration of some chemotherapy drugs, intravenous antibiotics or long-acting drugs for long-term conditions, outside of the hospital.
New Inpatient Surgical Procedures – Proliferation of Devices	Could cause both reduction and increase in demand for acute beds	There are many new implantable devices that may boost intervention rates (such as ventricular assist devices, artificial hearts, insulin pumps, bio-artificial livers) and support care outside the hospital (monitoring devices).
New Imaging Technologies	Could cause increase in demand for acute beds	New imaging technologies such as virtual colonoscopy and CT heart scans, may dramatically increase the number of people screened and the volume of abnormalities identified and treated.
Advances in telemedicine	Could reduce demand for acute beds	Developments in information technology now mean that monitoring patients at home is now a practical alternative to keeping people in hospitals. Remote consultation and monitoring, combined with the emergence of the expert patient could reduce dependence on acute care.

5.4.2 Patient expectations and unmet demand

Health demand is also impacted by the decisions each of us make as consumers. Individuals compare their health need against the cost and effort to engage with the health system to address these needs. This is particularly the case for example with sports injuries where the person believes it doesn't merit waiting for hours in ED. It therefore also follows that as barriers to accessing the health system reduces more people make the decision to access it. That is, the person with the sports injury now goes to ED as they expect to be treated quickly.

Similarly, improving access can result in some citizens choosing to seek remedy for conditions they had previously just lived with. This is particularly the case for young men who can be particularly reluctant to contact the health system. For example, the UK NHS has around 72 Walk-In Centres across the country that seek to offer fast access to health advice and treatments from early morning to late evening every day of the year. They have been found to be especially popular with young men and this has therefore unlocked health demand within the population that previously may have gone untreated.

Further, additional acute health demand can be triggered by unlocking unmet demand in other parts of the system. For example, a proportion of patients currently on outpatient waiting lists will require acute care. There are large outpatient waiting lists in Ireland. There are a number of initiatives, including those proposed by the National Treatment Purchase Funding, seeking to address this. If successful, these will also generate additional acute demand.

5.4.3 Incorporating health demand

Predicting the changes in health demand due to market influences is extremely difficult. It is the composite of dozens of health innovations and changes in how each individual chooses to access health services.

It is therefore more appropriate to use a high-level approach based on trends seen in Ireland and other countries. Changes in health demand due to market influences are therefore incorporated in two ways;

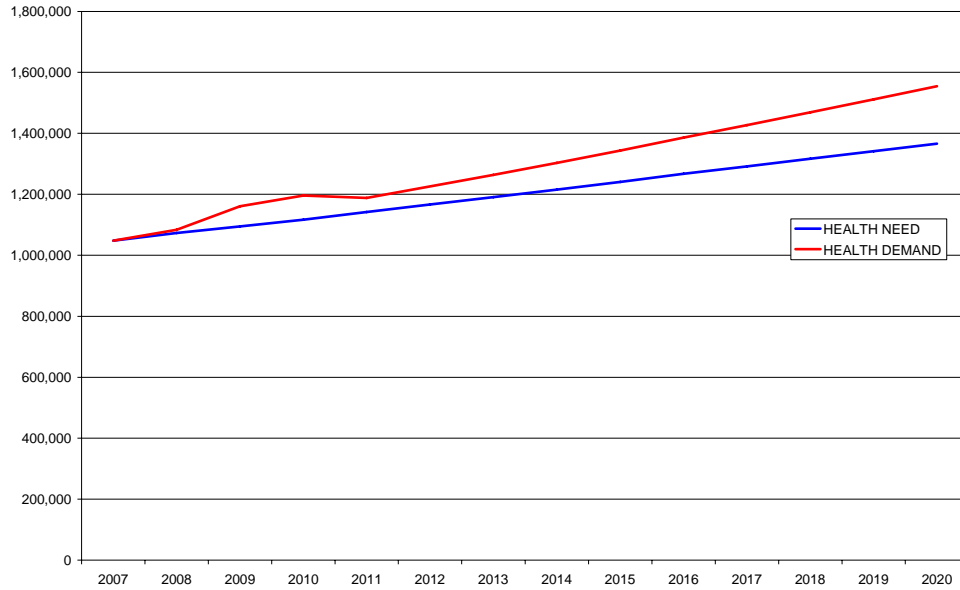
- A cumulative increase of 1% per year on top of health need. This is broadly consistent with the observed increase seen in Ireland and other countries and is at least partly due to medical innovation making new procedures available. It is also consistent with the 2002 Review.
- A short-term increase of 5% on health need applied only for two years as access to acute services in Ireland improves, whether the improvement is an increase in the number of beds or a change in the provision of services. This reflects the latent demand within the system and is broadly consistent with the increases seen in other countries that have addressed such issues, eg in the United Kingdom as ED wait times have decreased over the last five years. Note this is applied independently to each health need year and so the 5% is not carried forward thereafter.

5. Future demand for acute beds

5.5 Health demand

The impact of this uplift from Health Need to Health Demand is show below. As stated above, the 1% increase is applied cumulatively throughout, but the 5% increase should be seen as a short term “blip” that causes a slight decrease in Health Demand the subsequent year once this latent demand has been met.

Figure 29: Health Demand Uplift



The table below shows the projected health demand by Specialty Group for each year to 2020. It shows a 60% increase in health demand from 2007 to 2020 with 1.6m acute health episodes. A detailed sensitivity analysis which considered changes in a variety of the health demand statistics was also completed. A selection of these outputs is provided in Appendix I:

Table 11: Health demand

SPECIALTY GROUP	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Critical Care	2,902	3,000	3,225	3,337	3,324	3,446	3,572	3,703	3,839	3,977	4,118	4,269	4,420	4,577
Gynaecology	33,873	34,939	37,463	38,648	38,360	39,571	40,794	42,015	43,231	44,491	45,686	46,901	48,105	49,311
Medical	449,310	470,000	510,257	533,075	537,347	563,113	590,028	618,036	647,367	679,736	712,634	747,828	783,652	821,239
Obstetrics	105,111	107,774	114,169	116,321	114,120	116,435	118,778	121,146	123,347	125,397	126,919	128,586	130,203	131,739
Other	37,182	38,309	41,040	42,310	41,980	43,314	44,682	46,082	47,519	48,978	50,415	51,948	53,483	55,066
Paediatrics	127,662	132,380	141,620	145,634	144,190	147,695	151,112	154,382	157,604	161,690	164,796	167,005	168,877	170,552
Surgical	295,263	306,510	328,567	338,253	335,926	346,547	357,571	368,940	380,758	393,364	405,307	418,286	431,267	444,840
TOTAL	1,051,303	1,092,913	1,176,341	1,217,578	1,215,247	1,260,120	1,306,538	1,354,303	1,403,664	1,457,635	1,509,876	1,564,823	1,620,007	1,677,324

5.6 Bed requirement to meet this demand

This section quantifies the number of beds required to meet the demand from the health system today and for each year to 2020 based on current practice.

5.6.1 Current demand for beds

Additional demand for hospital beds is incorporated in two ways;

- Adding further health episodes that should have happened in acute hospitals, eg hospital waiting lists and cancelled electives. The associated bed requirement is calculated using existing hospital throughput rates
- Decreasing the utilisation of specific bed types to ensure that specific outcomes don't occur, eg trolley waits and intensive care bed refusals.

Based on this calculation, Ireland requires 12,778 public patient beds to meet existing demand. This is in comparison with an actual figure of 11,660. This is a short-fall of 1,118 beds. The HSE currently has a further 458 beds in their capital plan for 2007 to 2011, which leaves the overall deficit at 660 beds.

The Co-Location Project is a major HSE initiative aiming to change the status of between 800 and 1,000 beds in public hospitals from private to public. It seeks to achieve this by transferring the private patient activities currently taking place in these beds to a new nearby private hospital. That is, the private patient now goes to a private hospital and their existing private patient hospital bed is made available for public patients. The Co-Location Project will therefore deliver more than the required additional 611 public patient beds and therefore no further beds are required.

This comparison by bed type is detailed below. It shows the HSE planning to deliver fewer inpatient beds, but more day case, sub-acute and MAU beds than are required based on current practice. Ireland currently has relatively low day case rates. Further, Section 4.4 shows 39% of medical and surgical inpatients could potentially be treated in an alternative to acute admission environment, eg within an MAU, sub-acute or long term care bed. It is therefore fully appropriate for the HSE to seek to meet this inpatient demand through the delivery of other bed types, including the long term care facilities identified in the HSE Report "Assessment of Needs for Residential Care for Older People".

The only clear exception to this is critical care beds. The utilisation of intensive care beds is around 99%. The European Society of Intensive Care Medicine recommends a utilisation rate of 75% for such beds. Intensive care beds are specialist and designating patients to an alternative bed type is usually not appropriate. This, and the fact that they are generally a smaller pool of beds within each hospital, mean that they require lower utilisation.

5. Future demand for acute beds

A proportion of the very high utilisation of critical care beds is due to bed management issues within the wider hospital³⁶. However, it is also due to there not being enough critical care beds. This is illustrated by the fact that 6% of adult intensive care referrals not being admitted due to a lack of an available bed³⁷. In such cases, all efforts would be made to free up a bed if at all possible. Additional critical care beds are therefore required.

Critical care beds can be broadly separated into seven sub-categories; neonatal, paediatric, coronary care, high dependency, intensive treatment, burns intensive care and liver intensive care. These bed types are within small and highly specialised pools and generally not interchangeable. It is therefore recommended that the above estimate be validated and detailed per sub-category in the Critical Care Review currently in plan. As part of this, the Critical Care Review should also consider in detail current practice within Critical Care units and their configuration across many sites in Ireland.

Table 12: Public Patient Bed Requirement 2007 (Current Practice)

TYPE BED	2007				
	ACTUAL	PLANNED	TOTAL	REQUIRED	DIFFERENCE
PUBLIC PATIENT BEDS					
Inpatient	8,754	342	9,096	9,823	727
Sub Acute	646	4	650	368	-282
MAU	25	0	25	0	-25
Day Bed/Place	1,515	92	1,607	1,598	-9
Additional Non Acute	0	0	0	0	0
Critical Care Beds	10,940	438	11,378	11,789	411
Critical Care	720	20	740	989	249
TOTAL PUBLIC (INC CRITICAL CAR	11,660	458	12,118	12,778	660

Private patient beds are currently in both in private and public acute hospitals. It is conservatively estimated that there is a surplus of 130 private patient beds in Ireland. This increases to 900 with those currently in plan. This provides an opportunity to the HSE in meeting the short-term deficit in bed demand before the additional Co-Location beds are delivered in the next two to three years. (Although, this would only be suitable for a specific sub-set of acute health services.)

Table 13: Private Patient Bed Requirement 2007 (Current Practice)

TYPE BED	2007				
	ACTUAL	PLANNED	TOTAL	REQUIRED	DIFFERENCE
PRIVATE PATIENT BEDS					
Inpatient	3,881	602	4,483	3,779	-704
Day Bed/Place	501	168	669	475	-194
MAU				0	
Sub Acute	5	0	5	3	-2
TOTAL PRIVATE	4,387	770	5,157	4,257	-900

³⁶ Source: ICSI Accessibility of Intensive Care Facilities in Ireland to Critically Ill Patients 2002. It shows 114 of 309 planned adult intensive care discharges within the Eastern Regional Health Authority not effected

³⁷ Source: ICSI Accessibility of Intensive Care Facilities in Ireland to Critically Ill Patients 2002. It shows 29 of 473 adult intensive care referrals within the Eastern Regional Health Authority not effected due to the lack an available intensive care bed

5.6.2 Projected capacity requirements based on current practice

Based on current practice, the number of hospital beds Ireland requires is going to steadily increase to 19,822 in 2020. This means Ireland would require 7,044 more public patient beds than are required in 2007 and 8,162 more beds than are currently in the system. This requires an ongoing increase in hospital beds of around 4% per year to 2020. It is to be delivered over a period where most other Western countries continue to reduce their acute inpatient bed numbers.

Table 14: Public Patient Bed Requirement to 2020 (Current Practice)

TYPE BED	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PUBLIC PATIENT BEDS														
Inpatient	9,823	10,147	10,845	11,146	11,101	11,492	11,895	12,313	12,747	13,209	13,659	14,143	14,629	15,137
Day Bed/Place	1,598	1,628	1,725	1,764	1,774	1,854	1,936	2,021	2,110	2,208	2,306	2,408	2,512	2,620
Additional Non Acute	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub Acute	368	380	407	418	418	434	451	468	486	506	525	547	568	591
MAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL PUBLIC	11,789	12,155	12,976	13,328	13,293	13,779	14,282	14,802	15,343	15,923	16,491	17,098	17,710	18,348
Critical Care	989	1,019	1,094	1,129	1,122	1,158	1,195	1,233	1,273	1,312	1,353	1,393	1,433	1,474
TOTAL PUBLIC (INC CRITICAL CARE)	12,778	13,174	14,070	14,457	14,415	14,937	15,477	16,036	16,615	17,236	17,843	18,492	19,143	19,822

Extending current practice also results in an increase in the private patient requirement of 1,587 beds in 2020. This is a 37% increase in private patient beds – less than the increase in public patient beds due to both demographic differences and lifestyle factors.

Table 15: Private Patient Bed Requirement to 2020 (Current Practice)

TYPE BED	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PRIVATE PATIENT BEDS														
Inpatient	3,779	3,605	3,629	3,676	3,642	3,750	3,871	3,997	4,128	4,279	4,431	4,592	4,753	4,934
Day Bed/Place	475	546	599	618	620	646	672	699	728	758	788	820	851	887
MAU	0	0	13	14	14	14	15	15	16	16	17	17	18	18
Sub Acute	3	3	3	3	3	3	3	4	4	4	4	4	4	5
TOTAL PRIVATE	4,257	4,154	4,245	4,311	4,278	4,413	4,562	4,715	4,875	5,058	5,240	5,433	5,626	5,844

The huge increase is reflective of how our population and health demand will change over the coming years. It will also require a massive investment across Ireland's hospital network to deliver the additional beds as well as the associated staff and technology. These are estimated below. Delivering this additional number of hospital beds will require a total capital investment of almost €4billion and total revenue costs of over €25billion over 14 years. (Detailed cost assumptions are provided in Appendix M:)

Table 16: Capital and Revenue Cost Implications for Additional Beds

CURRENT PRACTICE	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOTAL
Capital Costs (€m)	476	189	433	171	19	237	271	283	297	299	338	341	346	365	4,066
Operating Costs (€m)	470	626	988	1,059	1,147	1,368	1,600	1,845	2,102	2,239	2,659	2,959	3,265	3,589	25,915

5. Future demand for acute beds

If not delivered and current practice is maintained, the result is likely to be a significant deterioration in the accessibility and quality of health services in Ireland. Hospital waiting lists may increase unless this demand is met by the National Treatment Purchase Fund. ED admission-delay times may extend as there are less available inpatient beds. Day surgery cancellations may increase as such resources are channelled to address immediate emergency inpatient demands. A lack of beds may result in an increase in refused referrals between and within hospitals. Hospital bed utilisation may increase or maintain potentially negatively impacting the patient experience and hospital acquired infection rates.

6. Future demand for acute beds if Ireland implements the planned changes across the health system



6. Future demand for acute beds if Ireland implements the planned changes across the health system

This section calculates the number of hospital beds Ireland requires for each year to 2020 based on implementing the planned changes across the Irish health system. A more detailed breakdown of the bed requirement by Hospital Network, Specialty Group and for Critical Care can be found in Appendix L:.

The planned changes are based on those detailed in a variety of health reform documents, including the Department of Health and Children Primary Care Strategy, HSE National Chronic Disease Management Programme, the HSE Paediatric Services Review and the HSE North East Action Plan.

It is the Preferred Health System the HSE Transformation Plan seeks to deliver. The links between the Preferred Health System and HSE Transformation Programmes are provided in Appendix N:.

This section also summarises the key characteristics and attributes of this Preferred Health System informed by these documents. These were detailed in part to facilitate a discussion with Irish and international health experts that defined the impact of these changes on acute care delivery.

6.1 Overview of preferred health system

Healthcare delivery will shift further out of large institutions and into ambulatory, community, and home-based settings. Hospitals and nursing homes will serve increasingly acutely-ill patients while an evolving continuum of care will meet the needs of others.³⁸ Care integration across primary and secondary care enables patients to move easily between hospitals and the community. The role of the acute hospital evolves to become more specialised as the more ambulant and less sick are managed elsewhere. For example, people living longer with long-term conditions might require more long-term home care, rather than inpatient hospital stays. This is likely to provide a better outcome for the patient:

- Inappropriate admissions and overly extended hospital stays cause unnecessary inconvenience and generally offer poorer quality of life
- Less invasive surgery (such as those applied as day case) often has a better health outcome and reduced recovery time for patients
- Extended hospital stays increases the risk of infection
- For vulnerable patients unnecessarily long stays in hospital run the risk of their social networks breaking down.³⁹

The Preferred Health System is summarised by the following characteristics;

- There is an emphasis on illness prevention, early detection and early intervention
- Patients are involved in their own care of minor, acute and long term conditions – with professionals providing a supportive, advisory, educational and skills training role
- The nature, capacity and availability of responsive community based services is configured to avoid unnecessary admissions to acute care and to facilitate earlier discharge and a return to independence
- Internal hospital processes are optimised to support high quality care, reduce patient delay and maximise use of the bed capacity.

³⁸ Capacity Needs in a Changing Healthcare System, Commission on Health Care Facilities in the 21st Century, New York, February 2006

³⁹ Why we need fewer hospital beds NHS Confederation 2006

6. Future demand for acute beds if Ireland implements the planned changes across the health system

The Irish health system currently relies heavily on acute hospitals. Many see them as the focus of the health system with service provision centred on the hospital. The Preferred Health System seeks to fundamentally change this.

Increasing the provision of care in PCCC, the ability of patients to self-care and enhancing the health and well-being of the population all shift the focus of the healthcare model from the hospital to the patient.

This is consistent with the HSE vision of patient centred care that delivers the right treatment to the patient in the right place at the right time. Achieving this requires all elements of the health system to work together in an integrated way.

“Primary care is the appropriate setting to meet 90-95% of all health and personal social service needs”

Primary Care: A New Direction, Dept of Health and Children

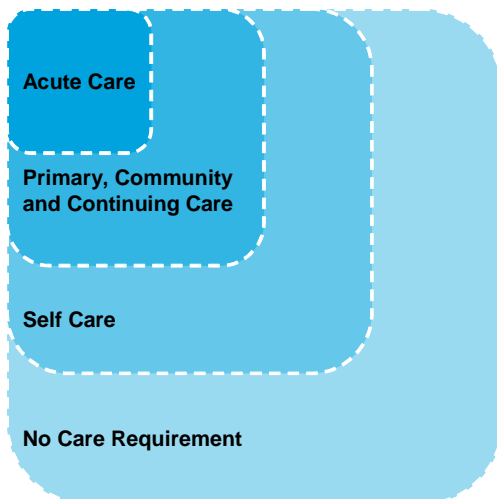
The impacts of the above changes are incorporated in the model at DRG Group-level for different patient types.

6.2 Preferred health system characteristics and attributes

This section summarises the characteristics and attributes of the Preferred Health System to be delivered by the HSE Transformation Plan and related initiatives. Each attribute also references Irish and International case studies demonstrating where it has been delivered successfully. These case studies are detailed in Appendix O:. It should be noted that in particular the characteristics for Primary, Community and Continuing Care are focused on acute care as they are most relevant to the scope of this project. Each attribute is also explained in more detail with illustrative patient stories. These are detailed in Appendix P:.

There are four key care components of this Preferred Health System as shown in Figure 30.

Figure 30: Overview of the Components of the Preferred Health System⁴⁰



No Care Requirement can be characterised by the following statement;

“There is an emphasis on illness prevention, early detection and early intervention”

⁴⁰ Adapted from “Primary Care: A New Direction”, Department of Health and Children

6. Future demand for acute beds if Ireland implements the planned changes across the health system

The attributes and case studies supporting this characteristic are as follows;

Table 17: No Care Requirement Attributes

Attribute	Example
<ul style="list-style-type: none"> • The health system prioritises informing and changing the personal health behaviours of the population long before clinical disease develops. • Healthy lifestyle behaviours are actively promoted • There is a focus on educating the population as to high-risk behaviours 	Case Study 1: The North Karelia Project, Finland
<ul style="list-style-type: none"> • Preventive medical care facilitates early detection and treatment of illness. • Preventive services are in place to enable the early detection of disease • There is routine screening of a range of diseases defined by the HSE 	Case Study 2: Stroke Reduction through Hypertension Detection, US
<ul style="list-style-type: none"> • Surveillance informed by good data and patient screening supports preventative measures targeted at the highest risk and informs decision-making on health issues • Surveillance to identify 'at-risk' population cohorts eg the frail elderly • Independence is promoted 	Case Study 3: Health Needs Mapping, England

Patient Self Care can be characterised by the following statement;

“Patients are involved in their own care of minor, acute and long term conditions – with professionals providing a supportive, advisory, educational and skills training role.”

6. Future demand for acute beds if Ireland implements the planned changes across the health system

The attributes and case studies supporting this characteristic are as follows;

Table 18: Patient Self Care Attributes

Attribute	Example
<ul style="list-style-type: none"> • A model for prevention and management of chronic disease and long-term conditions is implemented. • Case management to prevent acute episodes from occurring • The expertise of patients in managing their own illness is developed • People with long term conditions are supported in self care through an integrated package which includes information, self monitoring devices, self care skills education and training and self care support networks 	<p>Case Study 4, Kaiser Permanente, California</p>
<ul style="list-style-type: none"> • At-risk patients are identified to avoid the occurrence of acute episodes. • Information and resources targeted towards at- risk patient cohorts 	<p>Case Study 5, Falls Prevention, Australia and New Zealand</p>
<ul style="list-style-type: none"> • Patients are informed how to contribute to this management by changing behaviour. • Self-care support resources and information are available to patients • Self management is supported by the provision of information and patient education programmes, and information technology such as telemedicine 	<p>Case Study 6, NHS Expert Patient Programme, UK</p>

Primary, Community and Continuing Care can be characterised by the following statement;

“The nature, capacity and availability of responsive community based services is configured to avoid unnecessary admissions to acute care and to facilitate earlier discharge and a return to independence.”

6. Future demand for acute beds if Ireland implements the planned changes across the health system

The attributes and case studies supporting this characteristic are as follows;

Table 19: Primary, Community and Continuing Care Attributes

Attribute	Example
<ul style="list-style-type: none"> • The burden of chronic disease is recognised and actively managed in the community. • Chronic diseases are tackled by stratifying the population according to risk and adopting a population management approach that combines an emphasis on prevention, self management support, disease management, and case management for highly complex members. • Multidisciplinary teams provide high-quality, evidence-based care, to support disease management, including the use of pathways and protocols. 	<p>Case Study 7, COPD Management Study, New Zealand</p>
<ul style="list-style-type: none"> • Patients at risk of illness or acute episodes are identified and managed. • There is proactive identification of at-risk groups within the population, carry out needs assessments, understand resource and activity levels and identify trends. • High-risk people with complex needs are actively managed with case managers taking responsibility for caseloads working in an integrated care system. A key worker (often a nurse) actively managing and joining up care for these people • Dedicated assessment and care of the elderly management programmes and protocols are in place 	<p>Case Study 8, Identification and Management of the At-Risk Elderly, Australia, South West Sydney</p>
<ul style="list-style-type: none"> • A broad spectrum of home-based care, tailored to patient specific needs, is available. <ul style="list-style-type: none"> – Hospital at Home – Home care packages – Community nursing support – Specialist nursing support – Pharmacy / Allied Health Professional support – Therapy provision. 	<p>Case Study 9, Community Intervention Teams, Ireland</p>
<ul style="list-style-type: none"> – There are appropriate alternatives to acute admission and facilities that reduce inappropriate and preventable admissions and support timely discharge. – There is timely patient access to non-acute beds with therapy or nursing support, nursing home care, and long-term non-acute care in the community – Intermediate care strategies are developed to facilitate acute care step-up and step-down care – There is access to diagnostics (either community or acute hospital based) without acute admission – There is multi-disciplinary triage of elective patients to identify treatment alternatives in PCCC – The ambulance is a provider of healthcare that can support patients staying at home and avoiding admission 	<p>Case Study 10, MAU, Ireland</p>

6. Future demand for acute beds if Ireland implements the planned changes across the health system

Acute Care can be characterised by the following statement;

“Internal hospital processes are optimised to support high quality care, reduce patient delay and maximise use of the bed stock.”

The attributes and case studies supporting this characteristic are as follows;

Table 20: Acute Care

Attribute	Example
<ul style="list-style-type: none"> • Bed capacity is planned and managed to match demand • Bed capacity allocated to specialties and sub-specialties is based on true demand rather than historic activity • Capacity is matched to demand by day of week and hour of day: patient inflow and outflow is managed on an hourly basis and the daily discharge peak is before the daily admissions peak. • Capacity is pitched to cope with predictable events such as winter • Planning ensures that emergency demand does not disrupt elective activity 	<p>Case Study 11, Improving Patient Flow, New South Wales, Australia</p>
<ul style="list-style-type: none"> • Managing the flow of patients through the hospital and daily bed management are clinically led, priority decision-making functions within the hospital • Length of stay is actively reviewed and performance managed by senior clinicians and managers 	<p>Case Study 12, Performance Management of Length of Stay, England, Guy's and St. Thomas'</p>
<ul style="list-style-type: none"> • Patients travelling long distances to Corke University Hospital (CUH) for treatment were often admitted the day before their surgery. These patients did not require acute care, but did need to stay in Cork city to ensure they were available for their surgery without the stress of a long journey on the same day. To promote best use of hospital beds through admission on day of surgery, the CUH Bed Management team introduced a policy of providing patients travelling long distances with B&B beds the night before their surgery. 	<p>Case Study 13, Use of B&B beds to support Day of Surgery Admission - Cork University Hospital, Ireland</p>
<ul style="list-style-type: none"> • The place of care has shifted away from inpatient beds; • Day surgery is the norm for surgical procedures • Increased levels of care and treatment of patients are provided as outpatient • Diagnostics, assessment and results interpretation can be accessed without admission • Chest pain units, stroke units, assessment units facilitate provision of acute care with admission 	<p>Case Study 14, Shifting the Place of Care, NHS</p>

6.3 Configuration of services

6.3.1 The role of re-configuration

Implementing the Preferred Health System requires a shift in the balance of care provision from hospitals to the community. The NHS articulated this change as follows;

“A patient-led service will require new ways of delivering services that are responsive to patients:

- Fast, convenient services, often delivered very locally and shaped around people’s needs and preferences
- High quality, integrated emergency, urgent and specialist services for patients wherever they are in the country”⁴¹

The HSE has also articulated this change as part of their Transformation programme and vision for change:

“Care delivered to the patient at the right time, in the right setting, by the right person”⁴²

This requires the scope of services in the community to increase. Patients have easy and convenient access to the majority of health services locally. More complex procedures are escalated to centralised hubs with increased population coverage. For Regional Hospitals, this is typically between 300,000 and 500,000 people. Similarly, highly specialised procedures are only provided at tertiary hospitals or alternative expert centralised locations.

The number of beds in acute hospitals may reduce as services move to the community. However, this should not be seen as a reduction in the capacity of the health system as additional beds and other facilities move with these services. Further, it may also require an overall increase in health spend. The money is now just being spent closer to the patient.

“We must start judging the NHS by the number of people we make better and keep well, not by the amount of beds which are, after all, only hospital furniture”

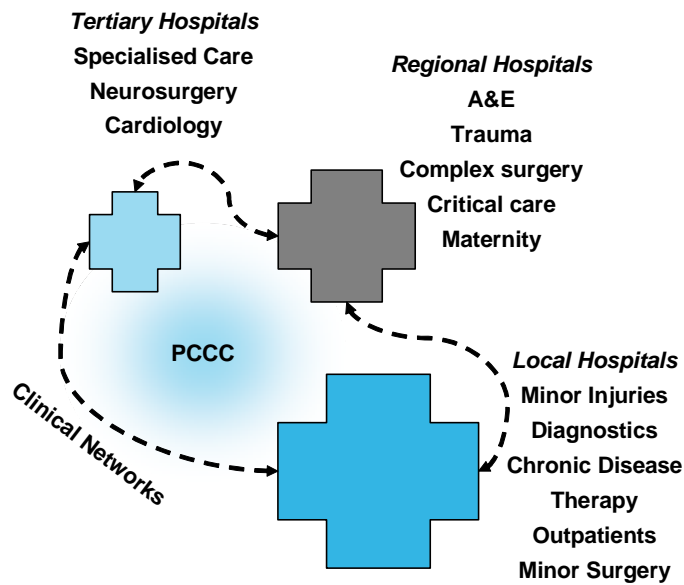
Dr Gill Morgan, Chief Executive Officer NHS Confederation, Nursing Standard, 12th July, 2006

The new configuration of services is summarised below. It requires a fully integrated approach across all directorates of the health system. Such centralisation of staff in specific specialties is also consistent with the European Working Time Directive and changes in medical training.

⁴¹ Creating a patient-led NHS: delivering the NHS improvement plan (Department of Health, 2005a)

⁴² HSE Transformation Programme, 2007-2010

Figure 31: Examples of hospital services in a clinical network



This enables the patient to receive much of their routine and follow-up treatment close to home but for some less common and life-threatening events it may be necessary and safer to travel.

<ul style="list-style-type: none"> ● Most expert Irish stakeholders consulted support this Preferred Health System for Ireland. However, many expressed two specific concerns around how Ireland moves towards it; ● The migration could result in a reduction in acute capacity before the necessary resources are fully up and running within the community ● It may be implemented without the supporting local infrastructures and networks essential to maintain good access across each element of the system. 	<p>“This vision takes too much for granted. It assumes that the provision of community and social care services precede the reduction in acute bed capacity”</p> <p>Irish Nurses Organisation submission</p>
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This reinforces the need for a centrally led yet locally based approach to re-configuration that is:

- Underpinned by common principles across the health service⁴³
- Fully mindful of the needs and strengths within that community and how best to integrate them.

This approach is consistent with that undertaken on the HSE Winter Initiative, where central management groups are supported by local implementation teams made up from staff across each of the HSE areas.

⁴³ Farrington-Douglas, Brooks The Future Hospital: The progressive case for change: Institute for Public Policy Research January 2007

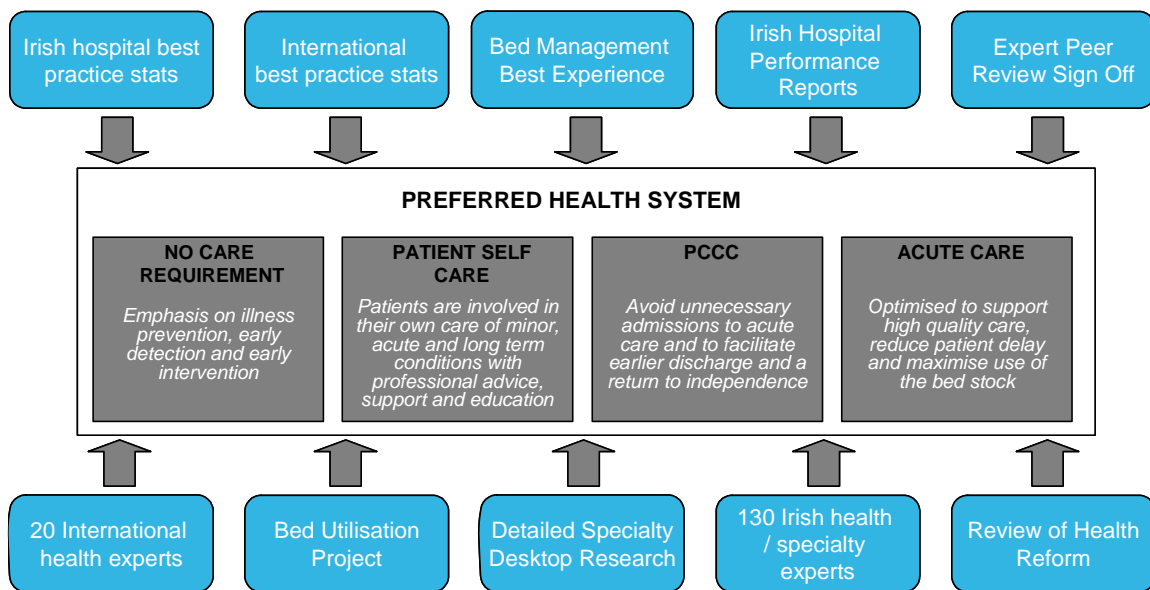
6.4 Preferred health system assumptions

A rigorous approach was applied to define how implementing the planned changes across the health system would impact acute health requirements. This is detailed in Section **Error!**

Reference source not found. and summarised below and assumes:

- Significant investment in and reconfiguration of PCCC services to minimise the number of patients requiring acute hospital services and the time they spend in hospital⁴⁴
- A centrally led programme across Irish hospitals using a data driven approach to deliver increased hospital capacity through better performance.

Figure 32: Summary of Approach to Defining the Assumptions



This provided:

- Detailed assumptions at each stage of the patient pathway quantifying the impact of implementing the Preferred Health System will have on acute health services
- A challenging whilst realistic timeframe to deliver these improvements.

⁴⁴ For example, the HSE Report "Assessment of Need for Residential Care for Older People" estimates that Ireland will require an additional 10,021 long term care beds in 2021. The Department of Health and Children's policy is to significantly expand community services to reduce this long term care bed requirement and allow citizens to remain at home. This is in the citizen's interest and consistent with the Preferred Health System. It equally gives a clear indication of the scale of investment required in community services to enable the acute sector reform.

6. Future demand for acute beds if Ireland implements the planned changes across the health system

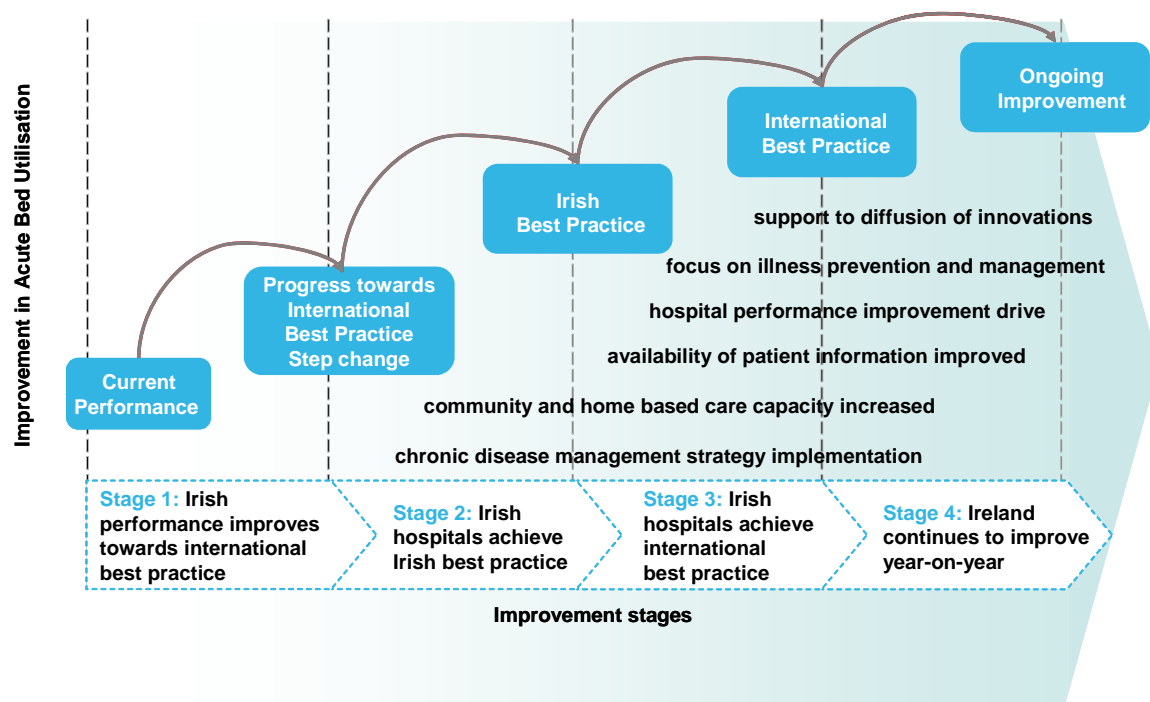
That is, the output of this process is an improvement curve by DRG Group to 2020 showing:

- The number of acute health episodes that can be avoided or managed within the community
- The number of acute health episodes that can be treated within a Medical Assessment Unit
- The number of hospital admissions that can be treated as day cases
- The reductions in acute inpatient ALOS delivered through process improvements
- The proportion of hospital inpatient stays that can be treated in a rehabilitation or long-term care setting.

These detailed assumptions were informed by actual Irish and international experience. For example, projected reductions in acute average length of stay are based on actual current average performance within acute hospitals for similar procedures in other countries, including Sweden, Norway, Denmark, the United Kingdom, Australia, New Zealand and Canada.

Each assumption was reviewed by a variety of Irish health experts and signed off by the expert Peer Review team. An overview of the approach for modelling this improvement curve is provided below.

Figure 33: Modelling the improvement from current performance to international best practice



Each assumption for the model resulted in an improvement curve by DRG Group to 2020. The improvement curve for each assumption had a different number of potential stages, based on expert input from a variety of specialty experts and the available Irish and international data. Further, these assumptions were reviewed by a select group of Irish clinicians and independently validated by the independent Peer Review Group.

6.4.1 Reduction in acute admissions

The number of acute health episodes that can be avoided or managed within the community was illustrated in the Acute Hospital Bed Review. This Review assessed inpatient records against defined medical criteria⁴⁵ and found that 13% of all admissions could potentially be treated outside an acute setting. Further, it found that IV therapy was the only acute hospital criteria for an additional 12% of admissions. This could potentially be delivered outside an acute location, eg IV in the home. That is, there is the potential to treat 25% of all medical and surgical inpatient admissions outside an acute setting if an alternative was available.

Further, in development of this (CDM) programme, the HSE has drawn on international best practice models which have demonstrated clear benefits, including the Evercare and Kaiser models. Evidence shows that systematic, structured care reduces morbidity and mortality in cohorts within these programmes including:

- 50% reduction in unplanned admissions without detriment to health⁴⁶
- 50% reduction in bed-days for cohort of managed patients⁴⁷
-

This clearly demonstrates the potential for reducing hospital presentations by improving and extending care available in the community. This project completed an extensive consultation with Irish and international health experts to define the target acute admission reduction for Ireland. A target reduction of 15% for 2020 was agreed as appropriate and achievable. This is based on the above Irish and international evidence. It should be noted that a number of experts saw this as a particularly conservative target.

“Older people who had access to relevant and timely support services in the community, including 24 hour nursing services on a daily basis, would be a major improvement in provision and would be cost effective in the long term by reducing their reliance on acute admissions”

Submission to this Review, Care Group for Older People, Kerry Community Services, HSE

⁴⁵ The Appropriateness Evaluation Protocol (AEP) is a internationally validated tool commonly used to assess bed utilisation

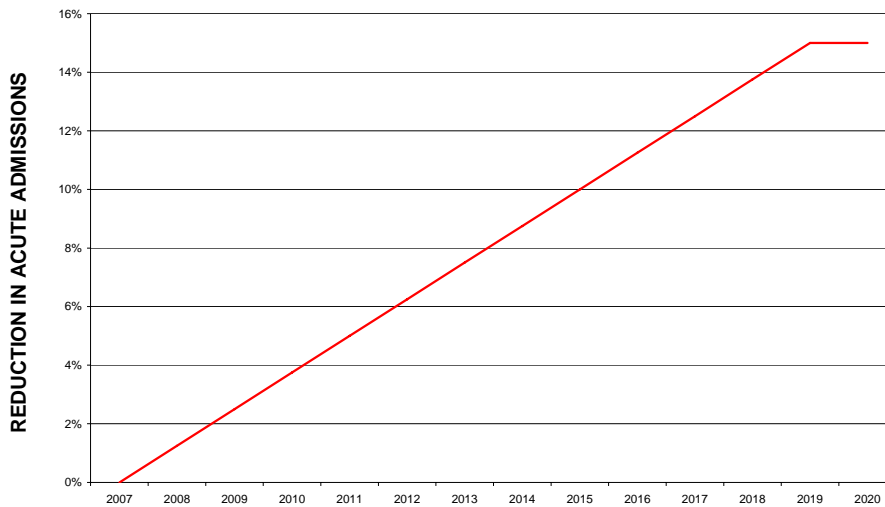
⁴⁶ Evaluation of Evercare model of case-management for elderly in the US

⁴⁷ Veterans Administration (US), focus on improving chronic disease management

6. Future demand for acute beds if Ireland implements the planned changes across the health system

The target reduction was applied linearly by year as shown below.

Figure 34: Reduction in Acute Admissions 2007 – 2020



6.4.2 Acute admissions treated in Medical Assessment Units (MAU)

The number of acute health episodes that can be treated within a MAU was modelled based on actual evidence from the UK and also on data from the MAU in the Midland Regional Hospital at Mullingar.

The observed actual experience from a selection of United Kingdom acute Trusts is that 25% of the total number of emergency admissions can instead be treated in a MAU. This is therefore the adopted assumption for Ireland. However, it must be noted that a number of Irish and UK experts believe this to be a conservative estimate and that MAU rates will continue to increase in coming years.

“100% of all acute medical admissions should be treated in an MAU. This is better for the patient and for the hospital”

Dr Garry Courtney Consultant Physician and Gastroenterologist, St. Luke's General Hospital, Kilkenny

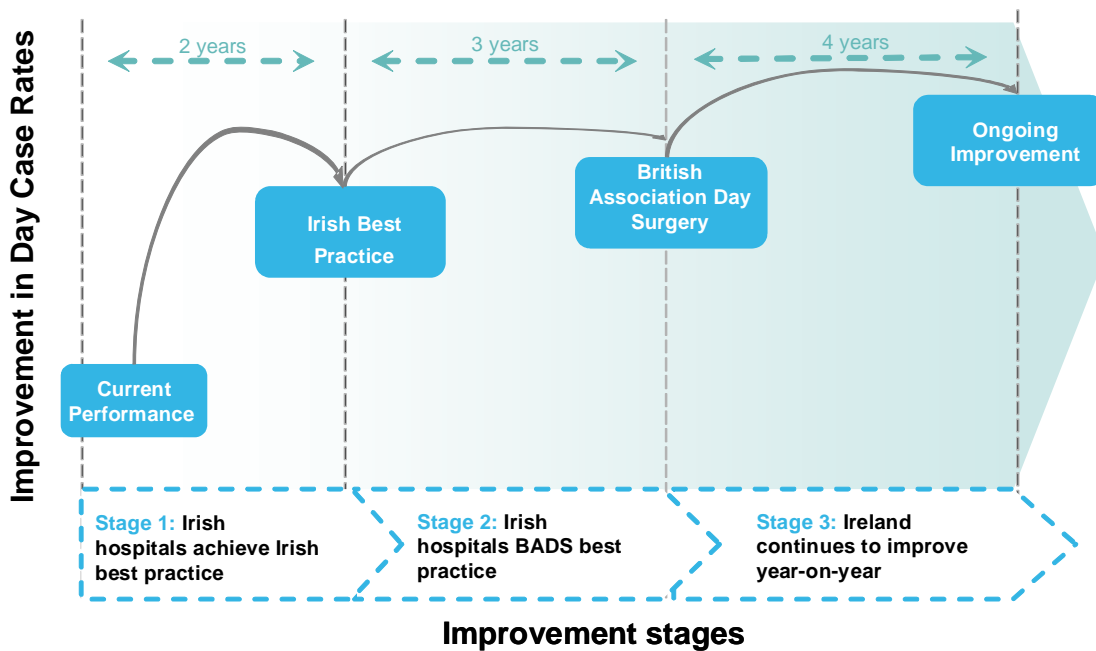
The introduction of MAUs was considered as a one off change into the acute health system, therefore from 2009, 25% of emergency admissions should be treated in an MAU setting. Actual performance data from the MAU in the Midland Regional Hospital at Mullingar was used to determine the throughput rate of an MAU to inform the required volume of beds for the determined need.

6.4.3 Increase in day case rates

As stated previously, Ireland's day case rate is 12% below OECD average and less than half that of Canada. The actual day case rate varies significantly across Irish hospitals. Some hospitals attain day case rates as low as 15%. Other hospitals exceed even Canada's average rate with 69% of all patients treated as day case. This shows the potential for improvement across other Irish hospitals.

The number of hospital admissions that can be treated as day cases was modelled based on data from the best performing Irish hospitals and supplemented by recommended rates for specific surgical procedures from the British Association of Day Surgery. This approach modelled Day Case improvement curves for each DRG Group based on this detailed information. This curve was set at zero for a variety of DRG Groups where they are not suited to day surgery. This is shown in more detail in Figure 35. Note that as there are a number of high performing hospitals in Ireland for day case rates. As a result, a significant proportion of the improvements are attained in Stage 1 below.

Figure 35: Day Case Improvement Curve

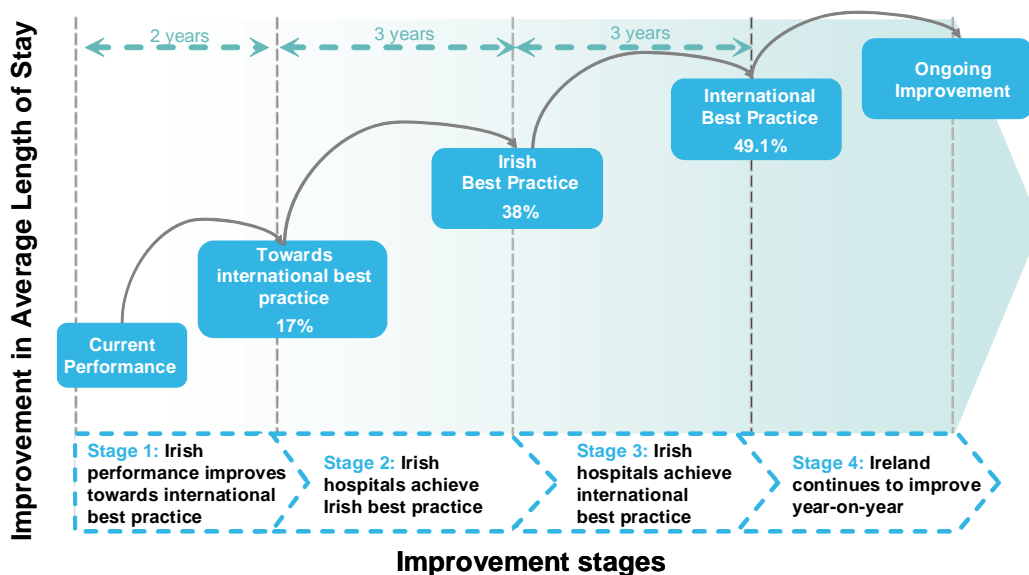


6.4.4 Reductions In ALOS

The reductions in acute inpatient ALOS were determined by an extensive comparison of Irish and International data primarily using OECD data. The targets chosen were those that were achievable given the starting point for each specialty group. That is, Ireland’s international targets per specialty group were selected based on current relative standing. Where Ireland currently performs well, the target countries are high-performers. Where Ireland currently performs relatively poorly, the target countries are mid- to high-performers.

Figure 36 shows the improvement curve as defined for Medicine. Detail for the other Specialty Groups is provided in the associated Technical Report.

Figure 36: ALOS Improvement Curve - Medicine



6.4.5 Transfer to Sub- or Non-Acute Settings

The proportion of hospital inpatient stays that can be treated in rehabilitation or long-term care settings was determined through analysis of data from the Acute Hospital Bed Review and from consultation with a number of experts. Both are applied to medical and surgical patients only.

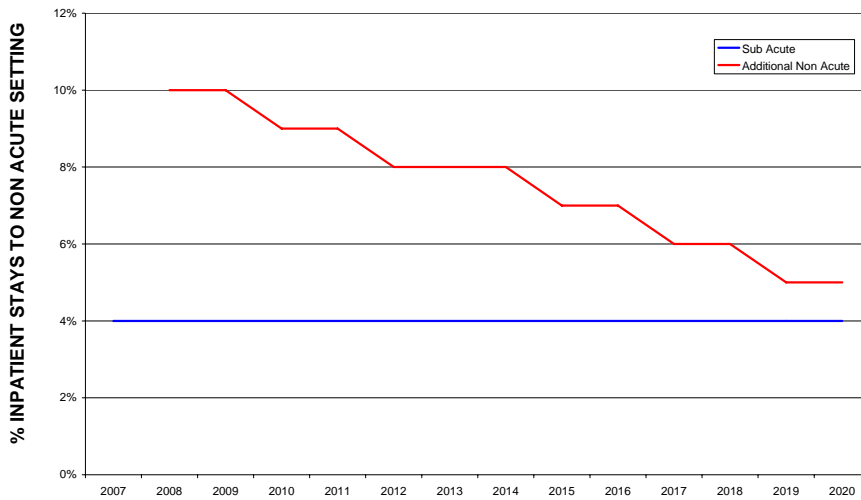
Some inpatients remain in Irish acute hospitals for rehabilitation. This is in part because of the lack of available sub-acute facilities. For example, it is common in a number of countries for the rehabilitation to patients who have recently had an amputation to happen in a sub-acute environment. It was agreed with a number of health experts to set the percentage of surgical and medical inpatients that could be treated in a rehabilitation setting (defined as “sub acute” in all tables) was set at 4% for all years.

The Acute Hospital Bed Review identified a number of inpatient groups requiring a non-acute bed if one was available. 23% of inpatients could be treated in a non-acute bed with therapy. 7% of patients could be treated in a non acute bed. 2% of inpatients could be treated in a hospice.

6. Future demand for acute beds if Ireland implements the planned changes across the health system

The percentage of patients who could be treated in a long-term care setting (defined as additional non-acute in all tables) was therefore set at an initial level of 10%. It then reduces for each year to 5% in 2020. This is assumed as a direct result of improvements in service configuration and a general increase in the availability of long-term care beds. That is, fewer non-acute beds are required to service hospitals as fewer patients are being inappropriately admitted or have their stays extended in hospital. Note that this does not mean a reduction in the need for non-acute beds. It means that more patients are going directly to these beds rather than going via the hospital.

Figure 37: Percentage of Inpatient Stays to a Non Acute Setting



It should be noted that the above represents a transfer of hospital inpatients to an alternative setting once they have completed the acute part of their treatment. It is therefore fully dependant on that alternative setting being available to accept the transfer. If not, the need for the inpatient bed remains.

6.5 Future bed requirement

The implementation of the Preferred Health System will result in a reduction in acute bed demand. More patients will be treated in the community. Patients will be only sent to an acute hospital where absolutely necessary. The standard in acute hospitals will be day case treatment. When admitted to an acute hospital as an inpatient, their length of stay will be reduced due to better management of patient flows and effective transfer to resources in the community once the acute component of their treatment is completed.

This will result in reductions in the demand for hospital beds. As with the current practice option, Ireland requires 12,778 public patient beds in 2007. This is 660 more than currently planned. However, implementing the Preferred Health System reduces this requirement to 8,008 by the end of 2008 and onto 8,834 in 2020.

However, a reduction in acute bed numbers in this context should not be interpreted as a cut in services.⁴⁸ It represents a transfer in the delivery of care to settings more appropriate and convenient for the patient. Implementing the Preferred Health System necessitates an increase of capacity in the community.

If this is not delivered then neither will the reduction in acute beds.

"Many countries have acknowledged that primary care should be the cornerstone of modern health services and the gatekeeper of specialist services"

Michael Martin, former Minister of Health and Children

For example, it is estimated that Ireland will require an additional 10,021 long term care beds in 2021⁴⁹. The Department of Health and Children's policy is to significantly expand community services to reduce this long term care bed requirement and allow citizens to remain at home. This is in the citizen's interest and consistent with the Preferred Health System. It equally gives a clear indication of the scale of investment required in community services to enable the acute sector reform.

48 Farrington-Douglas, Brooks The Future Hospital: The progressive case for change: Institute for Public Policy Research January 2007

49 HSE Assessment of Need for Residential Care for Older People, 2006

6. Future demand for acute beds if Ireland implements the planned changes across the health system

The detailed projection of required public patient beds by type is shown below. It projects a significant reduction in acute inpatient beds. However, this is offset with increases in day case beds as this becomes the standard. Similarly, increased capacity is delivered via injections of MAU and non-acute beds. Although both do diminish as improved community care and day case rates reduce inpatient admissions and so transfers to these bed types. That is, this projection only considers the requirement generated from acute hospitals and excludes the significant increase both will have from an enhanced community health system. It should therefore be seen as additional to the aforementioned long term care bed requirement for the wider Irish population. Further, it is fully possible that the net result is an increase in the total number of beds in the health system.

The requirement for critical care hospital beds continues to increase. This is consistent with the new role of the hospital and increased acuity of hospital inpatient admissions.

Table 21: Public Patient Bed Requirement to 2020 (Preferred Health System)

TYPE BED	2007	2014	2020
PUBLIC PATIENT BEDS			
Inpatient	9,823	3,767	4,025
Day Bed/Place	1,598	2,673	3,160
Additional Non Acute	0	270	196
Sub Acute	368	119	133
MAU	0	55	66
TOTAL PUBLIC	11,789	6,883	7,581
Critical Care	989	1,125	1,253
TOTAL PUBLIC (INC CRITICAL CARE)	12,778	8,008	8,834

The table below compares the total public patient bed requirements for the current practice and Preferred Health System options. It concludes with Ireland requiring almost 11,000 less hospital beds if the Preferred Health System is implemented.

Table 22: Difference In Total Public Patient Bed Requirement (Preferred Health System Vs Current Practice) to 2020

	2007	2014	2020
PUBLIC PATIENT BEDS			
Preferred Health System	12,778	8,008	8,834
Current Practice	12,778	16,036	19,822
DIFFERENCE	-	8,027	10,989

6. Future demand for acute beds if Ireland implements the planned changes across the health system

Table 23 shows the detailed breakdown of this reduction in hospital bed requirements by source. The most significant saving is attained through reductions in inpatient ALOS. Although, note that it is likely that additional non-acute beds than included below will be required to deliver this reduction.

Table 23: Delivery of Preferred Health System – Public Patient Bed Requirement

	2007	2014	2020
PUBLIC PATIENT BED REQUIREMENT			
Current Practice	12,778	16,036	19,822
Reduction in Acute Admissions		762	1,555
Increase in Day Case Rates		1,610	1,803
Increase in MAU		542	620
Reduction in Inpatient Acute ALOS		4,511	6,460
Additional Non-Acute Beds		602	549
Preferred Health System	12,778	8,008	8,834

The table below compares the difference in capital investment requirement between the two systems. Some capital investments for the Preferred Health System are for refurbishment of bed types, eg making inpatient wards into day case surgery wards. The Preferred Health System requires €4billion less capital investment in the acute hospital sector. (Detailed cost assumptions are provided in Appendix M:.)

It is important to note this and subsequent financial estimates only consider the total cost of one specific element of the health system, namely acute hospitals. The Preferred Health System assumes a shift in the place of health service delivery to the community. It is therefore logical that the costs follow. The HSE Transformation Plan includes detailed programmes to deliver this change. Each has completed or is completing robust financial exercises to quantify the cost of these strategic changes. They will require significant capital investments and incur huge ongoing operating costs. This has been the experience in many other countries. Further, there is no guarantee (or necessarily expectation) that the net result is a reduction in total health spend. In fact, most countries who have implemented such health systems continue to increase their annual health budget. However, it results in the delivery of a more effective and efficient service to patients.

“The Department of Finance must fully understand this is not about reducing healthcare spending. In fact, additional budget may be required during the transition”

Lindsay Sales, Expert Peer Review Member and former Deputy Director General of Health for New Zealand

Table 24: Capital Costs Preferred Health System Vs Current Practice (Public Patient Beds)

	2007	2008 - 2014	2015 - 2020	TOTAL
CAPITAL COSTS (€m)				
Preferred Health System	476	40	23	539
Current Practice	476	1,603	1,986	4,066
DIFFERENCE	0	1,563	1,963	3,526

6. Future demand for acute beds if Ireland implements the planned changes across the health system

The table below compares the difference in operating costs between the two systems.

The Preferred Health System reduces the number of total beds and also replaces inpatient beds with more appropriate options in the community. This contributes to it reducing the current operating costs of the NHO by €12billion (over the period 2007 – 2020) and requiring over €38billion less in operating costs than the current practice projection. It is expected that at least the value of this saving will be required for significant investments in the community and related health services.

Table 25: Additional Operating Costs Preferred Health System Vs Current Practice (Public Patient Beds)

	2007	2008 - 2014	2015 - 2020	TOTAL
OPERATING COSTS (€m)				
Preferred Health System	470	-6,787	-5,871	-12,187
Current Practice	470	8,632	16,813	25,915
DIFFERENCE	0	15,419	22,683	38,102

The requirement for private patient hospital beds will also continue to reduce in the Preferred Health System option to 3,399 beds in 2020. However, this will include increases in day case beds and MAUs. It is also broadly consistent with VHI's projection of surplus private patient hospital beds in Ireland.

Table 26: Private Patient Bed Requirement to 2020 (Preferred Health System)

TYPE BED	2007	2014	2020
PRIVATE PATIENT BEDS			
Inpatient	3,779	2,060	2,415
Day Bed/Place	475	793	965
MAU	0	15	18
Sub Acute	3	1	1
TOTAL PRIVATE	4,257	2,868	3,399

The Preferred Health System results in a significant reduction in the acute hospital bed requirement. However, it should not be seen as an overly aggressive target. The improvements Ireland attains to 2020 to deliver this requirement based on existing practice with other countries. It is, however, fully recognised that the Preferred Health System requires significant reform in Ireland. On that basis, the below table considers the impact on bed requirements if Ireland delivers only part of the defined improvements.

6. Future demand for acute beds if Ireland implements the planned changes across the health system

Table 27: Public Patient Bed Requirement to 2020: Sensitivity Analysis

	2007	2014	2020
PUBLIC PATIENT BEDS			
Current Practice	12,778	16,036	19,822
Achieve 25% of improvements	12,778	13,439	16,174
Achieve 50% of improvements	12,778	11,262	13,165
Achieve 75% of improvements	12,778	9,467	10,743
Preferred Health System	12,778	8,008	8,834

If Ireland attains only 75% of the proposed improvements then 10,743 public patient beds are required in 2020. This is 917 less than exist today. If Ireland attains 50% of the proposed improvements then 1,505 additional beds than exist today are required in 2020. More detail by bed type can be found in Appendix I:

6.6 Plan to deliver preferred health system

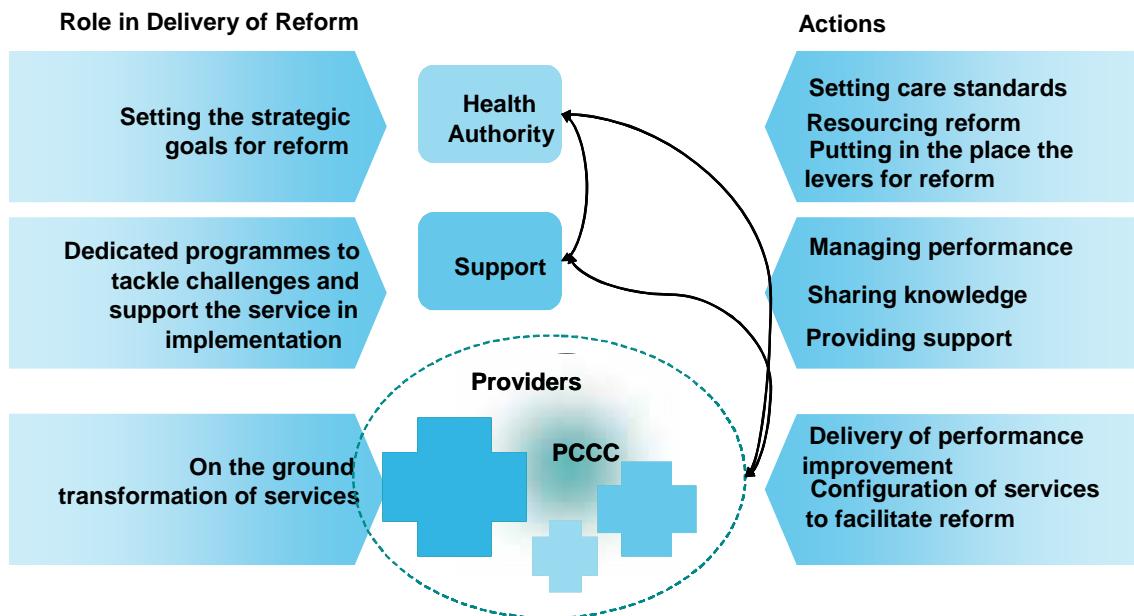
Delivery of the Preferred Health System that sustains performance is a challenge of significant scale; it requires reform across the whole national system and local patient pathways. It must also be underpinned by behavioural change to support and make the new system permanent.

Irish hospitals can deliver a number of local initiatives to become more efficient and effective. However, changing their role within the wider health system requires more to be implemented. The health service in Ireland must be considered as a total system in which a decrease in one area can lead to an increase in another. Implementation not only requires hospitals to do things more efficiently, it also requires services and capacity to be in place in primary and community care that currently do not exist. It requires care integration that enables patients to move easily between hospitals and the community. It relies upon a range of technological and information enablers that are not currently in place.

Review of international health systems delivering such change shows that reform drivers are required at three levels:

- System wide level reform levers to create the right conditions and incentives for change
- Intermediate, dedicated support structures to support change on the ground
- Local health community level activities required to deliver service changes and performance improvement⁵⁰.

Figure 38: Delivering healthcare reform requires a joined up, supportive approach at three levels in health service delivery



⁵⁰ Health-Care Systems: Lessons from the Reform Experience. Elizabeth Docteur and Howard Oxley OECD Directorate for Employment, Labour and Social Affairs SA/ELSA/WD/HEA(2003)9

6.6.1 Health Reform Levers

Creating the right conditions and incentives for health reform at a national level is necessary if real service change is to happen on the ground. Experience in other systems has shown that different levers are effective at different stages of the reform process. Often a tightly performance-managed, target driven approach accompanied by capability building and support is the first step. As systems deliver improvement they start to move from 'top-down' performance management to a system with incentives for reform embedded within it.

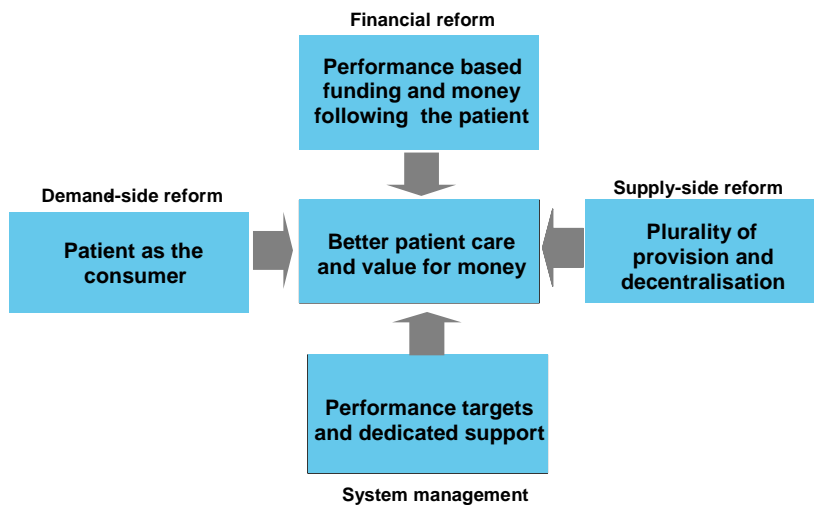
The diagram below shows how levers can be applied from four key areas within the whole system to effect change for better patient care and value for money. These areas are complementary and inter-related. It is often the case that health system reform begins with detailed low level supply and system performance management and then expands to also include a more strategic focus on financial and demand-side levers⁵¹ with embedded performance management incentives. Rather than operating in an economy driven by centrally-set targets, a more locally-driven economy means that providers' ability to prosper will depend on their reputation and their ability to operate cost-efficiently. Patients also demonstrate more influence as their improved access to information and heightened expectations sees them increasingly taking an informed and consumerist approach to the healthcare they receive.

Consideration of other health systems such as the UK, US and Australia shows that health reform involves change in all four areas. How the levers are applied and how quickly depend on the characteristics of the existing health system. For example experience in the UK has shown that moving to a situation where the patient has choice of provider and hospital funding follows the patient can have a de-stabilising effect on some providers in the short-term; a gradual implementation time-scale with support to hospitals is therefore required for these levers to be successfully applied. In tailoring these levers to the Irish context, Ireland has the benefit of drawing on the lessons learnt by other systems.

The Health System Levers are shown in Figure 39. The following sections present examples of how other countries have implemented these levers. These are provided to illustrate potential approaches rather than recommendations of the most suitable solution in Ireland.

⁵¹ The Blair Legacy? Choice and Competition in Public Services Transcript of Public Lecture London School of Economics 21st February 2006 Julian Le Grand

Figure 39: Health System Reform Levers



Financial reform

Changing systems of funding service delivery are a clear lever for patient-centred reform by creating incentives for providers to increase efficiency through payment flows which follow the patient on the basis of disease-related groups or linking funding to achievement of performance and quality targets.

For example, England uses a DRG system to reimburse hospitals. It seeks to drive efficiency by paying hospitals a set amount for each specific patient operation or procedure. This tariff is based on the national average unit cost for that procedure and therefore seeks to force expensive trusts to become more efficient and reduce costs. Northern Ireland is preparing to follow a similar model. Australia has separated purchasing and provision of care and introduced case-mix funding of hospitals. States that are most advanced in applying case-mix have achieved substantial efficiency gains, well beyond the gains in other jurisdictions. With the use of competition and output-based benchmarking, further efficiencies are forecast. Incentive-based funding for state governments, doctors, and relevant population groups also has been used successfully to achieve immunisation and cancer-screening targets.⁵²

⁵² Reforming The Australian Health Care System: A Government Perspective, Andrew Podger (former Australian Commonwealth Department of Health and Aged Care) 1999

Demand-side reform

Empowering patients creates strong levers on the demand-side of the system. As patients take an informed and consumerist approach to healthcare they will increasingly influence the type and quality of services provided. In Ireland this lever is represented in increasing patient choice of provider through the use of the NPTF and the co-location project; this removes the existing provider monopoly, and with the appropriate financial reform (in the form of payment following the patient) levers providers to make changes to attract potential users and make a re-investable surplus. It is equally essential that this demand-side reform has the necessary commissioning controls in place to ensure that it does not generate inappropriate demand from the system or patient⁵³.

As summarised in the table below, countries such as Sweden and the UK are providing the consumer with increased freedom to choose their provider for primary and secondary care. It seeks to give patients more influence and use their decisions both as an indication of the performance of providers and to improve standards.

Table 28: Choice for patients across countries⁵⁴

Country	Choice of GP	Choice of specialist	Self-referral	Points of debate
France	Yes, universal	Yes, universal	Yes, universal	Attempt to introduce a gatekeeper scheme met public resistance
Germany	Yes – choice restricted to doctors contracted with patient's sickness fund	Yes – choice restricted to doctors contracted with patient's sickness fund	No for hospital treatment Yes for private specialists outside hospitals	
United States of America	Yes	Yes – determined by ability to pay and choice of insurance plan	Yes – but determined by ability to pay and insurance plan	Consumer 'backlash' against some HMOs who are attempting to cut costs by restricting choice
Sweden	Yes	Yes	Yes – restricted by a gatekeeper scheme	Choice expanded as part of initiatives to reduce waiting times
Denmark	Yes	Yes	Yes – restricted by a gatekeeper scheme	Choice expanded as part of initiatives to reduce waiting times
United Kingdom	Yes - choice restricted by size of list	Yes	No	Benefits of choice of providers vs one good local provider

⁵³ This is a particularly important point for Ireland where there is still some uncertainty as to what services public patients should expect the HSE to deliver

⁵⁴ Health Strategy Review Analytical Report 2002

Supplier-side reform

Supply-side reforms in Ireland centre on plurality of provision and decentralisation of decision-making. Increased opportunities for a mix of private and public providers create a market for healthcare in Ireland and promote efficiency and patient-centred changes through positive competition. This change is only possible through supporting reforms in financial and demand-side elements of the system. Decentralisation of decision-making enables providers to tailor services to local needs and demand, improving efficiency or resource utilisation by incorporating local preferences into service provision.

The method seeking to deliver supplier-side reform varies significantly across countries. Specific Australian states and territorial governments have contracted out public hospital care to private hospitals and are privatising public hospitals. The Swedish healthcare system is more decentralised and therefore allows some significant regional variations in delivery. For example, in some regional councils more than 50% hospitals are in private ownership, but in others there are almost none. The United Kingdom has sought to create a true market for healthcare by combining reform where funding follows the patient and the patient has increased choice of hospital.

System management

The application of mandatory standards and targets to create managed improvement by providers and commissioners for areas such as use of resources, clinical excellence and patient-focus are important levers within the system to effect the required change. These targets must also be flexible and move with the health system as performance in specific areas improves⁵⁵. Creating a performance culture and ensuring compliance requires an underpinning system of support and monitoring linking national strategy with local implementation.

Since the NHS plan was launched in 2000, the UK has set hospitals stretching patient-centred targets and is now working toward a maximum wait time from GP visit to hospital operation or treatment of 18 weeks by the end of 2008. In Australia, there has been concerted action over recent years to focus more on outcomes and quality, and on patients rather than on providers.

6.6.2 Dedicated support to change delivery

The sheer scale of the challenge requires dedicated support and resources linking national strategy with local implementation if reform is to be delivered.

Experience elsewhere has shown that a health service cannot simply strategically decide reform. It requires a massive reform programme setting standards and objectives and then working with individuals on the ground to change practice and standards. Dedicated programmes, such as Ireland's Winter Initiative or the Emergency Care programme in the UK, are required to:

⁵⁵ For example, the United Kingdom has significantly improved day case surgery rates over the last five years. This is resulting in the focus for performance improvement shifting to other areas, such as transfer of inappropriately placed patients in acute hospitals to long term care, that offer higher potential returns

6. Future demand for acute beds if Ireland implements the planned changes across the health system

<p>Provide a balanced approach between the four system-wide levers: financial reform, demand-side reform, supply-side reform and systems management</p> <p>Detail a consistent target operating model across the health system</p> <p>Put in place the required infrastructure needed to make change happen, eg data-gathering and analysis tools</p> <p>Work with local delivery teams to implement the change on the ground by providing support, training and sharing good practice</p> <p>Act as an escalation point for issues that cannot be resolved locally.</p>	<p>"Good information can help to run things better. However, there is no point in computerising current activity if you don't try to manage the flows and improve operationally. It should be the mindset rather than the technology which drives improvement"</p> <p>Dr Nathan Proudlove, Expert Peer Group</p>
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Further, it is essential that these programmes ensure that local implementations fully consider the organisational elements of change to make the change sustainable.

In particular, changing behaviours and work practices within hospitals can be the most significant challenge. Practitioners have well established processes and viewpoints based on years of actual operational experience. In many occasions, learned behaviours have been the most appropriate for the system they have been working in. However, as the system moves towards change this must coincide with a change by those working it. Such enablers for change in hospitals are explored below.

Figure 40: Enabling Behavioural Change in Hospitals

ENABLERS	CLINICAL INVOLVEMENT	SUPPORTING SYSTEMS	COMPLIANCE	ORGANISATIONAL CULTURE	CHAMPIONS	INCENTIVES
EXPLANATION	<ul style="list-style-type: none"> · Real involvement in all stages and levels of decision-making · Common understanding of need for change and how success will be recognised · Develop clarity of goals, milestones and rewards · Commitment to process for achieving goals and continuing cycle of improvement 	<ul style="list-style-type: none"> · Identification and strengthening of supporting infrastructure necessary for high productivity · Lack of national guidance linking job planning to service provision leads to variable success rates across Network · Reliable information which enables decision-making and continuous cycle of improvement 	<ul style="list-style-type: none"> · Compulsory adherence to mutually agreed goals. · Consultant job plans - clarity of objectives and expectations · Enforcement of relationship between goals and remuneration · Non-compliance is addressed and action taken 	<ul style="list-style-type: none"> · Discretionary effort created through alignment of organisational and Consultants' goals · Culture supports emergent leaders · Clinical leadership should be an integral part of organisational structure · Culture supports adherence to agreed goals and frameworks for operation (Consultant Contract) 	<ul style="list-style-type: none"> · Identify emergent leaders able to inspire change and lead by example · Develop and support leaders, involving in decision-making process and equipping with necessary tools 	<ul style="list-style-type: none"> · Agree rewards at outset – can be financial or resource based, individual, departmental or organisational rewards · Performance culture, with performance-driven behaviours and internal competition stimulated by information

6.6.3 Service transformation

Underpinning all of this reform is the requirement on hospitals to increase capacity by better managing their beds. Good bed management encompasses both ensuring that your bed stock is consistent with your strategic objectives and strong daily operational management.

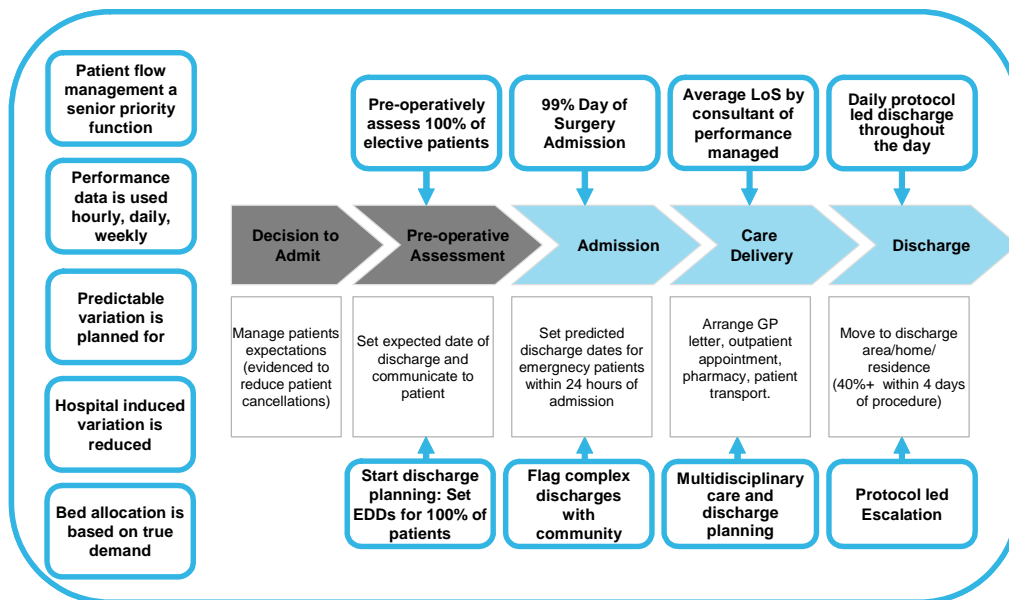
"Replace surgical inpatient beds with day case places. It forces practitioners to change their behaviour"

Senior International Health Reform Advisor

In particular, strong operational bed management procedures must be established within each hospital. Their role includes challenging current inefficient behaviours and improving the overall flow of patients through the hospital. This is illustrated in the below quote. Further, Figure 41 provides an overview of local initiatives to improve bed utilisation.

"Bed Management forms an important part of operational capacity planning and control, a wider activity concerned with the efficient use of resources. Outside the health context, the production/operations function of an organisation is concerned with activities such as scheduling and work flow to enable throughput to meet demand, and minimise work in progress and maximise resource utilisation. Despite the obvious analogies, very few acute hospitals have an operations management function."⁵⁶

Figure 41: Overview of local initiatives to improve bed utilisation

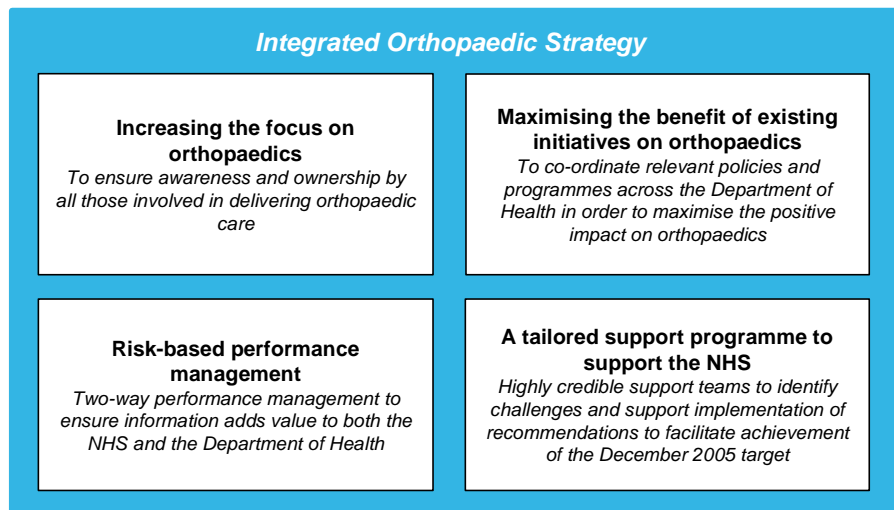


⁵⁶ Can good bed management solve the overcrowding in A&E? N C Proudlove, K Gordon and R Boaden

6.6.4 Dedicated support to change delivery: United Kingdom National Orthopaedic Project case study⁵⁷

The UK government set a care standard that no National Health Service patient requiring orthopaedic surgery would have to wait more than six months for their operation by the end of 2005. A national review highlighted that this target would not be achieved in orthopaedics and a dedicated programme, the National Orthopaedic Project (NOP), was set up to deliver an ‘Integrated Orthopaedics Strategy’ to ensure the NHS achieved the target. The strategy is provided below.

Figure 42: UK integrated orthopaedics strategy



The NOP project team included Department of Health staff, hospital chief executives, respected orthopaedic consultants, orthopaedic nurses, physiotherapists, hospital data analysts and project managers – a multi-disciplinary approach that was key to success.

“It is good to know the Department of Health can work with specialist associations to improve access. It is hoped that continued collaboration will ensure that the quality agenda is also delivered.”

Mr Michael Benson, President of the British Orthopaedic Association

⁵⁷ UK Department of Health, The National Orthopaedic Project, Faster Access for NHS Patients, 5th April 2005

6. Future demand for acute beds if Ireland implements the planned changes across the health system

The NOP set up monthly up-to-date management information to monitor progress towards the target and identify health communities where the target might be missed. The NOP provided multi-disciplinary support teams to work with these communities - over 25% of the NHS. The teams worked with hospitals to implement changes and share best practice. They also acted as an escalation route for larger issues eg where additional investment in staff or theatres was needed to increase capacity.

The areas where change at a local level was needed to ensure the overall reform target was achieved were identified by the project and are shown below. The project then rolled out national strategies and tools to help the local NHS address these issues.

Figure 43: NOP target change areas

<i>Areas where more focus was needed to ensure the target was achieved:</i>	
<p>Acknowledging and ownership <i>Agreeing a joint PCT/Trust/SHA plan to achieve the target..</i></p>	<p>Organisation and communications <i>Improving relationships within and across organisations. Empowering staff to implement change.....</i></p>
<p>Capacity and Demand Measurement <i>Understanding current and future capacity / demand</i></p>	<p>Waiting list management <i>Validating regularly; ensure each patient on the list is fit...</i></p>
<p>Securing Capacity and Managing Demand <i>Making effective use of available capacity and alternatives to Secondary Care.</i></p>	<p>Management and clinical engagement <i>Making orthopaedics a priority, proving leadership and involving clinicians in decision making and delivery....</i></p>
<p>Performance management <i>Weekly performance management against targets</i></p>	<p>Use of existing capacity and resources <i>Running theatres and managing beds etc. efficiently...</i></p>

The number of patients waiting over six months for orthopaedic surgery was reduced from 57,128 to one. This success led to the adoption of the NOP’s approach and implementation structure being adopted across a number of other NHS initiatives, such as reducing hospital acquired infections.

6.7 Barriers to implementing the preferred health system

The stakeholder consultation confirmed a variety of barriers to delivering the Preferred Health System.

In particular, such reform requires a wholesale change in work practices across the health system. The move to day case will require some Consultants to retrain in less invasive procedures. Hospitals will need to change their systems to avoid unnecessarily admitting inpatients a day or more before an operation; this will also require behavioural change on the part of some consultants. Nurses and bed managers will work together and with community care / primary care teams to better manage the flow of patients through and out of the hospital⁵⁸. This change will require significant engagement and clinical championing on the ground.

Performance improvement also needs to be driven by a strong support infrastructure and defined standards across hospitals as well as accurate and timely data within hospitals. For example, the NHS Institute and related organisations provide UK Hospitals with detailed support and training as well as benchmark targets and detailed tools to drive local hospital improvement. Similarly, hospitals in many other countries have formal processes in place that measure daily, weekly and monthly performance directly from their patient administration system and use this data to drive operational improvements. Few Irish hospitals have an equivalent operational management approach or have access to specialist performance improvement resources. That is, the hospitals will need central support and systems on the ground from the HSE to help in delivering these improvements. However, the Performance Management Unit of the NHO has been working with hospitals on developing the flow of operational data around the system and is currently working to implement a number of pilot performance improvement projects at local level. Although significant work must be done in this area, the work of the PMU shows good promise that could be built upon.

This Preferred Health System delivers a healthier overall population by giving citizens the information and opportunity to better manage their own wellbeing and by identifying those with a health need earlier. It improves the quality of life for many by giving them the tools and expert support to better manage their existing condition in the most appropriate setting. It provides local and improved access for those seeking to engage with the health system. It delivers an efficient and effective service to those requiring acute hospital services. It moves these patients onto a more appropriate care setting when their acute care requirement is finished. It also provides health practitioners an environment where they can work with the system to deliver the best care for their patients.

⁵⁸ This can be particularly challenging in rural areas where patients are required to travel significant distances to access community or acute hospital services

6. Future demand for acute beds if Ireland implements the planned changes across the health system

The HSE Transformation Plan aims to deliver this Preferred Health System. Such massive reform across Ireland's largest employer is clearly a huge challenge. However, it must be remembered that this reform is being delivered successfully in other countries. Further, our alternative is to continually add additional beds to the existing system. This goes against the trend in other countries. It is also unlikely to be sustainable. Most importantly, it is also not in the patient's interest.

Appendices



Appendix A: Steering group and project group

Role	Name	Title
Chair of Steering Group	John O'Brien	National Director (Temporary), NHO
Steering and Chair of Project Group	Maureen Lynott	Advisor to CEO, HSE
Steering and Project Group	Fionnuala Duffy	Assistant National Director, Planning & Development, NHO
Steering and Project Group	Grainne Hannon	Project Manager, Planning & Development, NHO
Steering and Project Group	Professor Miriam Wiley	Head of the Health Services Research and Information Division, Economic and Social Research Institute
Steering and Project Group	Dr Marie Laffoy	Assistant National Director, Strategic Health Planning and Evaluation
Steering and Project Group	Dr Philip Crowley	Deputy Chief Medical Officer, Department of Health and Children
Steering and Project Group	Dympna Butler	Principal Officer, Department of Health and Children
Steering and Project Group	Dr Ciaran Browne	Performance Management Unit, NHO
Steering and Project Group	Adrian Charles	Local Health Manager for Dublin South West, PCCC
Steering Group	Dr Paul Burke	Consultant Vascular Surgeon
Steering Group	Dr Garry Courtney	Consultant Physician and Gastroenterologist
Steering Group	Tom Finn	Assistant National Director, Contracts & Utilisation, NHO
Steering Group	Angela Fitzgerald	National Hospitals Office (Network Manager – Dublin North East Hospital Group)
Steering Group	Tommie Martin	National Director, Office of the CEO, HSE
Steering Group	Joe Mooney	Principal Officer, Department of Finance
Steering Group	Tadhg O'Brien	Assistant National Director, PCCC, Dublin North East

A: Steering group and project group

Role	Name	Title
Steering Group	Denis O'Sullivan	Principal Officer, Department of Health and Children
Steering Group	Adrian Redmond	Senior Statistician, Central Statistics Office
Steering Group	Frank O'Leary	Head of National Employment Monitoring Unit, HSE

Appendix B: Methodology

This section provides a detailed explanation of the project methodology.

B.1 Acute patient activity

The primary source of acute patient activity in Irish public hospitals is Hospital In-Patient Enquiry (HIPE). HIPE is the principal source of national data on discharges from acute hospitals in Ireland. It is maintained by the Economic and Social Research Institute (ESRI) on behalf of the Department of Health and Children and input to by each individual hospital excluding Bantry General Hospital.

Information on acute patient activity in Irish private hospitals is supplied by VHI and the Independent Hospitals Association of Ireland (IHAI) member group.

Patient health episodes are grouped using Australian Refined Diagnosis Related Groups (DRGs). This is the accepted coding standard in Ireland and is coded per patient episode into HIPE using grouper software.

A team of clinicians mapped each of the 665 DRGs to 42 Specialties and then the following eight Specialty Groups;

- Medical
- Surgical
- Obstetrics
- Gynaecology
- Other
- Paediatrics
- Critical Care
- Mental Health.

That is, each HIPE patient episode is mapped uniquely to one of the above Specialty Groups. This approach is different from that of the 2002 Bed Capacity Review, which used the Consultant Specialty to map each patient episode to Specialty Group. However, Consultant Specialty is less valid in particular for regional hospitals where it is more common for Consultants to work across Specialties.

B: Methodology

Mental Health patients are outside the scope of this Review and are therefore excluded.

Paediatrics patients are further identified using their age.

Note that Critical Care refers to a type of patient episode rather than a bed type. Critical Care patients will use Critical Care and other bed types. Similarly, some patients from each other Specialty Group will use Critical Care beds.

This mapping and approach has been validated by Irish and international clinicians, including the Department of Health & Children Chief Medical Officer's Office.

B.2 Bed requirement calculation

A four stage approach is applied to calculate the acute bed requirements to 2020;

1. **Health need** – the number of acute health events within the population
2. **Health demand** – the number of health events that result in the individual engaging with the health system
3. **Health supply** – the approach taken by the health system to service this demand
4. **Bed requirement** – the resulting bed numbers by type required to deliver this service.

B.2.1 Health need

Existing Health Need takes existing patient activity within public and private acute hospitals. Further hospital episodes are added to address those patients waiting between three and fifteen months on a hospital waiting list. This includes those who are serviced via the National Purchase Treatment Fund during this time. This represents a year's worth of unmet demand that the system should have capacity for. It is assumed that those waiting greater than fifteen months be serviced by the National Purchase Treatment Fund rather than building additional capacity.

Health Need is then projected by DRG for each year to 2020 based on the following information sources;

- Irish epidemiology projections, including:
 - Diabetes projections sourced from Irish Diabetes Prevalence Working Group and created by Ireland and Northern Ireland's Population Health Observatory and The Institute of Public Health in Ireland
 - Draft projections for stroke, hypertension and ischaemic heart disease created by Ireland and Northern Ireland's Population Health Observatory and The Institute of Public Health in Ireland for the Department of Health and Children
 - Cancer projections by type sourced from the National Cancer Register Ireland
 - Cardiology projections sourced from HSE Population Health and Trinity College Dublin
 - Chronic disease management projection rates sourced from HSE Population Health
- Central Statistics Office population projections
- Observed year on year changes in Ireland
- Select International epidemiology projections
- Private Health Need projections provided by VHI.

These projections were also validated by Irish and international expert clinicians.

B.2.2 Health demand

B: Methodology

Health Demand acknowledges the market nature of the health industry and therefore assumes a further:

Ongoing increase to Health Need of 1% per year. This is consistent with the observed increase seen in Ireland and other countries and is at least partly due to medical innovation making new procedures available

Short-term increase to Health Need of 5% per year for two years as access to acute services in Ireland improves. This reflects the latent demand within the system and is broadly consistent with the increases seen in other countries that have addressed such issues, eg in the United Kingdom as ED wait times have decreased over the last five years.

B.2.3 Health supply

Existing health supply is based on the existing Day Case and Inpatient activity across Irish hospitals. These are calculated by DRG from HIPE.

Future health supply assumes Ireland transitions to the Preferred Health System detailed in the main document. This includes the following impacts on health supply bed volumes:

- Reduction in the % of ED presentations as more patients are treated within PCCC
- Reduction in the % of ED admissions admitted as inpatient as more patients are treated within MAU or outpatient clinics
- Increase in the % of acute admissions treated as Day Case
- Reduction in the ALOS for inpatients as Ireland moves towards Irish and International best practice length of stay
- Increase in the % of inpatient bed days delivered within a rehabilitation or long-term care setting.

Assumptions quantifying the impact of each of the above were calculated through a detailed quantitative analysis of Irish and international best practice. This includes rigorous benchmarking of Day Case rates and length of stay:

- Between comparable Irish Hospitals using HIPE by DRG and Specialty Group
- Of Ireland versus other OECD Countries using Health Data 2006
- Of Ireland versus Australia, Canada and the United Kingdom using HIPE and each country's detailed hospital performance statistics
- Of Ireland versus agreed clinical best practice targets, eg British Association of Day Surgery.

B: Methodology

Each assumption and its implementation to 2020 has been reviewed by Irish clinical Specialty Group experts and signed off by the international health expert Peer Review Group.

Existing and future Medical Assessment Unit (MAU) throughput is based on the historic performance from the Mullingar MAU and associated expert input from Ireland and the United Kingdom where such approaches have been adopted.

The output from this stage is the number of required bed days by type for each year to 2020.

B.2.4 Bed requirement

This stage translates the required bed days into a number of beds. The calculation is based on the below utilisation rates per bed type.

Table 29: Utilisation rates

Bed type	2007 target utilisation	Future target utilisation	Comment
Medical	85%	85%	
Surgical Elective	85%	95%	Increase in surgical elective bed utilisation with improved bed management, eg scheduling and predictive planning
Surgical Emergency	85%	85%	
Obstetrics	65%	65%	
Gynaecology	85%	85%	
Paediatrics	70%	70%	Lower utilisation reflective of smaller bed pool and lower predictability of paediatric demand.
Critical Care	75%	75%	As recommended by the European Society of Intensive Care Medicine

These rates have been discussed with Irish Specialty Group experts and agreed with the Peer Review Group. Finally, the bed requirement calculation incorporates the current bed closure rate in Irish hospitals.

B.3 Existing and planned bed volumes

Existing public hospital bed numbers by specialty are sourced via the NHO Performance Management Unit and have been signed off by each NHO Hospital. Planned public hospital beds are provided by the HSE NHO.

Existing and estimates of planned private hospital bed numbers are provided by:

- VHI
- Independent Hospitals Association of Ireland (IHAI) member group
- HSE Co-Location Project.

Appendix C: Irish consultation list

Name	Title
Professor Arthur Tanner	Director of Surgical Affairs, Royal College of Surgeons in Ireland
Mr Fergal Hickey	President, The Irish Association for Emergency Medicine
Dr Peter O’Gorman	President, Irish Society for Haematology and Haematology Consultant, Mater Hospital
Dr John Kellett	General Medical Consultant, Nenagh General Hospital and representative member of Irish Association of Internal Medicine
Dr Tim McDonnell	Respiratory Medicine Consultant, St Michael’s Hospital
Michael Horgan	CEO, Royal College of Surgeons in Ireland
Professor Tony Gallagher	Professor of Human Factors, National Surgical Training Centre, Royal College of Surgeons in Ireland
Professor Arnold Hill	Chairman of Surgery, Royal College of Surgeons in Ireland and Breast Surgeon, Beaumont Hospital
Ms Debbie McNamara	Colorectal Consultant, Beaumont Hospital
Ms Ellis McGovern	Cardiothoracic Consultant, St James’s Hospital
Undisclosed	ENT Consultant, A Major Irish Hospital
Mr Bill Quinlan	Chairman, Irish Institute for Trauma and Orthopaedic Surgery
Mr Dick O’Connell	Former Chairman, Irish Institute for Trauma and Orthopaedic Surgery
Mr Paddy Kenny	Honorary Secretary, Irish Institute for Trauma and Orthopaedic Surgery and Consultant Orthopaedic Surgeon, Cappagh Orthopaedic Hospital
Dr Noel Flynn	Anaesthetics and Critical Care Consultant, University College Hospital Galway
Dr Brian Marsh	Director, Department of Intensive Care Medicine, Mater Misericordiae University Hospital and Board Member, Intensive Care Society of Ireland
Dr Michael Power	Anaesthetics and Critical Care Consultant, Beaumont Hospital and President, Intensive Care Society of Ireland
Undisclosed	Paediatric Anaesthetics and Critical Care Consultant, A Major Irish Hospital
Undisclosed	Paediatric Anaesthetics and Critical Care Consultant, A Major Irish Hospital
Professor Fergal D. Malone	Obstetrics and Gynaecology Consultant, Mater Private
Dr Michael Robson	Obstetrics and Gynaecology Master, National Maternity Hospital
Dr Michael O’Hare	Master, Institute of Obstetricians and Gynaecologists

C: Irish consultation list

Name	Title
Undisclosed	Paediatric Consultation, A Major Irish Hospital and representative member of Royal College of Paediatrics and Child Health
Dr John McKiernan	Paediatrics Consultant, Royal College of Physicians
Undisclosed	Representative member, Irish College of General Practitioners
Undisclosed	Representative member, Irish College of General Practitioners
Dr Sean McGuire	Irish College of General Practitioners
Fergal Goodman	Principal Officer, Primary Care, Department of Health and Children
Fergal Lynch	Assistant Secretary, Primary Care, Department of Health and Children
Bernadette Kiberd	Local Health Manager, PCCC
Dr Angela Jordan	The Institute of Public Health in Ireland
Dr Kevin Balanda	Associate Director, The Institute of Public Health in Ireland
Dr Siobhan Jennings	Public Health Medicine, Population Health
Dr Orlaith O'Reilly	Director of Public Health, South Eastern Area, HSE
Deirdre Carey	Statistician, Population Health
Dr Mary Hynes	Assistant National Director of Quality, Risk and Consumer Affairs, NHO
Dr Mary Codd	Epidemiologist
Trevor O'Callaghan	Hospital Manager, Mullingar Midland Regional Hospital
Katherine Kenny	Divisional Nurse Manager, Mullingar Midland Regional Hospital
Colette Cowan	Bed Manager, Nenagh General Hospital
Patrick Cleary	Director of Nursing, Nenagh General Hospital
Ian Carter	CEO, St James's Hospital
Eilish Hardiman	Deputy CEO, St James's Hospital
Jeff Virgo	Bed Manager, St James's Hospital
Dr Danny O'Hare	Chairman, Independent Hospital Association of Ireland
Torlach Denihan	Director, Independent Hospital Association of Ireland
Pat Lyons	CEO, Bon Secours Hospital and member of Independent Hospital Association of Ireland
Brian Harty	CEO, Blackrock Clinic and member of Independent Hospital Association of Ireland
Fergus Clancy	CEO, Mater Private Hospital and member of Independent Hospital Association of Ireland

C: Irish consultation list

Name	Title
Deborah Brehe	CEO, Beacon Hospital and member of Independent Hospital Association of Ireland
Paraic Bergin	CEO, Galway Clinic and member of Independent Hospital Association of Ireland
Pat Canavan	Finance and Support Services, St Francis Private Hospital and member of Independent Hospital Association of Ireland
Matt O'Driscoll	Corporate Finance Director, Quality Health Care Group, Independent Hospital Association of Ireland
Eamon Fitzgerald	CEO, Hermitage Medical Clinic and member of Independent Hospital Association of Ireland
Dr Jim Kiely	Chief Medical Officer, Department of Health and Children
Dr Paul Kavanagh	Specialist Registrar of Public Health Medicine, Department of Health and Children
Dr John Devlin	Deputy Chief Medical Officer, Department of Health and Children
Dr Colette Bonner	Deputy Chief Medical Officer, Department of Health and Children
Dr Eibhlin Connolly	Deputy Chief Medical Officer, Department of Health and Children
Dr Helena Murray	Specialist Registrar of Public Health Medicine, Department of Health and Children
Dr Tony Holohan	Deputy Chief Medical Officer, Department of Health and Children
Michael Scanlan	Secretary General, Department of Health and Children
Liam Woods	National Director of Finance, Health Service Executive
Damian Casey	Assistant National Director of Finance, Shared Services, HSE
Declan Lyons	Assistant National Director of Finance, Dublin Mid Leinster, HSE
John Leech	Senior Finance Team, HSE
Yvonne O'Neill	Assistant National Director of Finance, VFM, HSE
Paddy McDonald	Assistant National Director of Finance, Vote and Treasury, HSE
Joe Sheeky	Acting Assistant National Director of Finance, Dublin North East, HSE
Liam Minihan	Assistant National Director of Finance, West, HSE
John Browner	Assistant National Director of Finance, Estates, HSE
Peter Finnegan	NHO Estates, HSE
Sile O'Malley	Nursing Directorate, HSE
Karen McNeil	Performance Management Unit, NHO
Dr Patrick Doorley	National Director, Population Health

C: Irish consultation list

Name	Title
Dr Bernadette Carr	Medical Director, VHI Healthcare
Dr Jacinta O'Halloran	VHI Healthcare
Vincent Sheridan	CEO, VHI Healthcare
Dr Howard Johnston	Health Intelligence, Population Health
Carmen Cullen	Health Intelligence
Derek Doyle	Health Intelligence
Marie Glynn	HIPE Training Coordinator, ESRI
Aisling Mulligan	HIPE Data Manager, ESRI
Helen Cahill	Statistician, Central Statistics Office
Pat O'Byrne	CEO, The National Treatment Purchase Fund
Liz Lottering	National Waiting List Information Services Manager, The National Treatment Purchase Fund
Dr Hamish Sinclair	Head of Drug Misuse Research Division, Health Research Board
Dr Harry Comber	Director, National Cancer Registry of Ireland
Dr Kathleen Bennett	Consultant, Department of Pharmacology and Therapeutics, Trinity College Dublin
Dr Tracey Cooper	CEO, interim Health, Information and Quality Authority
Frank McClintock	Assistant National Director, Pre-Hospital Emergency Care, NHO
John O'Brien	National Director (Temporary), Winter Initiative
Anita Behan	Project Manager, National Plan for Radiation Oncology, HSE
Richie Dooley	South Eastern Hospitals Group, Network Manager, HSE
Gerry O'Dwyer	Southern Hospitals Group, Network Manager, HSE
Chris Lyons	North Eastern Hospitals Group, Network Manager, HSE
John Bulfin	Dublin Midlands Hospitals Group, Network Manager, HSE
Louise McMahon	Dublin South Hospitals Group, Network Manager, HSE
Alan Moran	West and North Western Hospitals Group, Network Manager, HSE
Jim Breslin	Assistant National Director, Service Management, Dublin Mid Leinster, PCCC
Laverne McGuinness	National Director of Primary, Community and Continuing Care
Tadgh O'Brien	Assistant National Director, Service Management, Dublin North East
Jane Carolan	Acting Assistant National Director, Planning, Monitoring and Evaluation, PCCC

C: Irish consultation list

Name	Title
Cate Hartigan	Assistant National Director, Planning, Monitoring and Evaluation, PCCC
Seamus McNulty	Assistant National Director, Service Management, West PCCC
Mary O'Connell	National Care Group Manager, Primary Care, PCCC
James O'Grady	National Care Group Manager, Disabilities, PCCC
Seamus Mannion	National Care Group Manager, Children, Youth and Families PCCC
Martin Rogan	National Care Group Manager, Mental Health, PCCC
James Conway	National Care Group Manager, Palliative Care and Chronic Illness, PCCC
Alice O'Flynn	National Care Group Manager, Social Inclusion, PCC
Pat O'Dowd	Assistant National Director, PCCC
Pat Healy	Assistant National Director, Service Management, South, PCCC
Hugh Magee	Senior Statistician, Information Management Unit, DOHC
Des Williams	National Human Resources Directorate, HSE
Dr Frank Murray	National Specialty Director (Beaumont Hospital) - Gastroenterology
Dr Tom O'Gorman	National Specialty Director (UCHG) – General Medicine
Professor John Reynolds	Lead for Cancer Services – St James Hospital
Dr Sean Murphy	Medical Assessment Unit, Mullingar Midlands Regional Hospital
Ruth Langan	Winter Initiative Project Manager
Jackie Ebbs	Primary, Community & Continuing Care
Dr Emer Feely	Strategic Health Planner
Ms. Ann Keating	Bed Manager, Cork University Hospital
Ms. Celia Cronin	Nurse Service Manager, Cork University Hospital
Ms. Lisa Barry	Management Information Analyst, Cork University Hospital
Ms. Ber Baker	Business Manager , Cork University Hospital

Appendix D: International Consultation List

Name	Title
Margaret Edwards	CEO, Yorkshire Strategic Health Authority
Andrea Kabcenell	Director, Institute for Health Improvement (USA)
Barrie Dowdeswell	Executive Director, EU Health Property Network
Professor Alan Maynard	Professor of Health Economics/Foundation Trust Chair, University of York
Professor Sir George Alberti	National Director for Emergency Care, NHS and Royal College of Physicians
Aidan Halligan	CEO, Elision Health
Emmett Moriarty	Senior Health Specialist, International Finance Corporation (Washington)
Graham Lister	Senior Associate, The Judge Business School (Cambridge)
James Cercone	President, Sanigest International Slovakia and Costa Rica
Per-Gunnar Svensson	Director General, International Hospital Federation (Geneva)
Professor Rifat Atun	Professor of International Health Systems, Imperial College London
Lis Nixon	Independent Health Reform Consultant and former National Emergency Care lead for A&E, NHS
Dr Nathan Proudlove	Senior Lecturer in Operational Research, Manchester Business School
Lindsay Sales	Independent Health Reform Consultant and former Deputy Director General of Health for New Zealand
Anonymous	Director of Public Health, South East Asian Country
Anonymous	Professor of Public Health, Leading US University
Anonymous	Director of Health Planning, Middle East Country
Anonymous	Director of Finance, Middle East Country
Anonymous	Director of Quality, Middle East Country
Anonymous	Chief Medical Officer, Scandinavian Country
Anonymous	Director of eHealth, South East Asian Country
Anonymous	Director of Commissioning, Australasian Health Group

Appendix E: Public Submissions to the Review

Name	Title/addresses
Nora Henessy	Thurles, County Tipperary
Patricia Kerr	Dublin 18
Dr. Pascal O'Dea	Bagenalstown, County Carlow
Dr. Andrew C Macey	Consultant Orthopaedic Surgeon, Sligo General Hospital
William T. G. Dunne	Dublin 18
Ann Judge	CNM2, Sligo General Hospital
Teresa Farrell	CNM2, Sligo General Hospital
Dorothy Rudd	Dublin 6
Conchessa O'Donnell	Dublin 5

F: Organisation submissions to
the review

Appendix F: Organisation submissions to the review

Name	Organisation
Liam Doran, General Secretary	Irish Nurses Organisation, Dublin 7
Professor Desmond O'Neill, Chairman	Council on Stroke, Irish Heart Foundation
Secretary	Dublin Inner City
Mags Rogers, Development Manager	Neurological Alliance of Ireland, Dublin 7
Maureen Chalmers, Chairperson	WISE (Social Workers from Ireland's Western Seaboard Working with Older People)
Dr Teresa Graham	MRSA and Families Network, Tramore, County Waterford
Michael P.S. Shiell	Health Hero Network Ltd, Monkstown, County Dublin
Derek McCormack, Managing Director	TCP Homecare Ltd, Dublin 12
Josephine Hassett	Tralee Women's Resource Centre, Tralee, County Kerry
Hilary Scanlan	Care Group Co-ordinator, Care Group for Older People, Kerry Community Services, HSE
Eugene Murray, CEO	The Irish Hospice Foundation
Mareeda de Róiste, General Management	Kerry General Hospital
Bob Carroll, Director	National Council on Ageing and Older People, Dublin 2

Appendix G: Expert peer review group

Name	Title
Professor Rifat Atun	Professor of International Health Systems, Imperial College London
Lis Nixon	Independent Health Reform Consultant and former National Emergency Care lead for A&E, NHS
Dr Nathan Proudlove	Senior Lecturer in Operational Research, Manchester Business School
Lindsay Sales	Independent Health Reform Consultant and former Deputy Director General of Health for New Zealand

Appendix H: Future health innovations⁵⁹

Minimally invasive approaches to diagnosis and treatment⁶⁰

Less invasive procedures require a shorter recovery time. Development of “minimally” and/or less invasive approaches to surgical procedures (lap chole, hip replacement, thoracic surgery, open-heart surgery) and diagnosis (Fast CT, PET) supports length of stay reduction and the shift of care from inpatient to outpatient setting. In some cases these less complex medical procedures reduce demand for more complex surgery, eg the use of angioplasty in heart disease. Carotid stenting will replace traditional endarterectomies. Research suggests that angioplasty, previously an inpatient procedure, may be performed safely on an outpatient basis. Natural orifice surgery will also facilitate the move towards day surgery. Incisionless surgery and totally endoscopic surgery will increase. Use of the Maylard incision has been shown to reduce length of stay for radical hysterectomy. Overall, day case rates and applicability will increase.

Replacement of surgery with medical therapy

The volume and range of medical and pharmaceutical treatments which can replace surgical interventions is increasing. Within cardiovascular care, for example, the widespread use of statin drugs together with the use of angioplasty and drug-eluting stents may eventually replace a substantial portion of open heart surgery. Advances in treatments such as chemotherapy drugs, intravenous antibiotics or some of the new long-acting drugs for long-term conditions mean that this can be done at home or in more local, community settings. In gynaecology, medical rather than surgical management of gynaecological conditions is increasing and the Marina Coil has played a major role reducing surgery

New inpatient surgical procedures – proliferation of devices

There are many emerging implantable devices that may boost intervention rates. These include ventricular assist devices, artificial hearts, spinal cages, artificial discs, vagus nerve stimulators, deep brain stimulators, retinal implants, insulin pumps and bio-artificial livers. Other devices that are implanted to provide close monitoring of high-risk chronically ill patients may however reduce hospitalisations by preventing crises that require acute care.

⁵⁹ Capacity Needs in a Changing Healthcare System, Commission on Health Care Facilities in the 21st Century, New York, February 2006

⁶⁰ A New Era of Diagnostics, Institute for the Future Health Horizons Program, December 2003

H: Future health innovations

New imaging technologies

New imaging technologies such as virtual colonoscopy and CT heart scans, have the potential to dramatically increase the number of people screened and the volume of abnormalities identified and treated. It is not clear, however, how to assess the overall impact of this kind of innovation. How much of the pathology identified through screening is genuinely “new” demand versus demand at an earlier stage of morbidity? Does identification at an earlier stage obviate the need for later inpatient?

Advances in telemedicine

The developments in information technology mean that monitoring patients at home is now a practical alternative to keeping people in hospitals. For example, this can be used for the more effective management of heart failure in the community. Appropriate and regular monitoring prevents patients suddenly deteriorating and needing an emergency admission. Patients with a number of long-term conditions can have their condition monitored by specialist equipment that helps them manage their own care and give early warning to health staff that their condition is deteriorating. This allows a much earlier intervention that can avoid the need to be admitted to hospital.

Appendix I: Sensitivity analysis

This section applies a number of alternative assumptions to the bed capacity projection. The following selection is shown below;

- The Irish population increases a further 10% more than projected
- Only 33% of the reduction in acute admissions is actually realised
- Only half of the inpatient ALOS reduction is actually realised

The section also defines the impact of only achieving a proportion of the proposed preferred health system improvements.

I.1 Further 10% increase in population

This scenario considers the number of beds required if the population increases by 10% from 2007 – 2020. All the assumptions for the Preferred Health System are applied. The impact on the current practice scenario is provided below.

Table 30: Public Patient Bed Requirement to 2020 (Current Practice) for 10% Further Increase in Population

CURRENT PRACTICE	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
TOTAL PUBLIC BEDS (INC CRITICAL CARE)														
Base Scenario	12,778	13,174	14,070	14,457	14,415	14,937	15,477	16,036	16,615	17,236	17,843	18,492	19,143	19,822
Increase in Population by 10%	14,193	14,633	15,628	16,057	16,010	16,591	17,191	17,812	18,456	19,145	19,820	20,540	21,264	22,019
DIFFERENCE	1,415	1,459	1,558	1,600	1,595	1,653	1,714	1,776	1,840	1,909	1,977	2,049	2,121	2,197

Table 31 shows the impact a further 10% increase in population has on the Preferred Health System.

Table 31: Public Patient Bed Requirement to 2020 (Preferred Health System) for 10% Further Increase in Population

PREFERRED HEALTH SYSTEM	2007	2014	2020
TOTAL PUBLIC BEDS (INC CRITICAL CARE)			
Base Scenario	12,778	8,008	8,834
Increase in Population by 10%	14,193	8,816	9,722
DIFFERENCE	1,415	807	888

I: Sensitivity analysis

I.2 Only delivery 33% of reduction in acute admission target

This scenario assumes that improved population health and chronic disease management within the community only delivers a third of the expected reduction in acute admissions in the Preferred Health System.

Table 32: Public Patient Bed Requirement to 2020 (Preferred Health System) if Only 33% of Acute Admission Reductions are Delivered

PREFERRED HEALTH SYSTEM	2007	2014	2020
TOTAL PUBLIC BEDS (INC CRITICAL CARE)			
Base Scenario	12,778	8,008	8,834
Only Deliver 33% of Acute Admission Reductions	12,778	8,519	9,876
DIFFERENCE	0	511	1,042

I.3 Reduction in ALOS improvements

This scenario assumes that only 50% of the expected reduction in ALOS is delivered.

Table 33: Public Patient Bed Requirement to 2020, Reduction in ALOS Improvement Scenario

PREFERRED HEALTH SYSTEM	2007	2014	2020
TOTAL PUBLIC BEDS (INC CRITICAL CARE)			
Base Scenario	12,778	8,008	8,834
Only Achieve 50% of Improvement in ALOS Reduction	12,778	9,311	10,469
DIFFERENCE	0	1,303	1,636

I.4 Achieving a proportion of proposed improvements.

This sensitivity analysis considers the impact on bed requirement in achieving a proportion of the preferred health system improvements.

Table 34: Public Patient Bed Requirement to 2020: Sensitivity Analysis

	2007	2014	2020
PUBLIC PATIENT BEDS			
Current Practice	12,778	16,036	19,822
Achieve 25% of improvements	12,778	13,439	16,174
Achieve 50% of improvements	12,778	11,262	13,165
Achieve 75% of improvements	12,778	9,467	10,743
Preferred Health System	12,778	8,008	8,834

I: Sensitivity analysis

Table 35: Public Patient Bed Requirement to 2020: Achieving 75% of Preferred Health System Improvements

TYPE BED	2007	2014	2020
PUBLIC PATIENT BEDS			
Inpatient	9,823	5,271	5,892
Day Bed/Place	1,598	2,525	3,056
Additional Non Acute	0	294	223
Sub Acute	368	180	209
MAU	0	45	55
TOTAL PUBLIC	11,789	8,315	9,435
Critical Care	989	1,152	1,308
TOTAL PUBLIC (INC CRITICAL CARE)	12,778	9,467	10,743

Table 36: Public Patient Bed Requirement to 2020: Achieving 50% of Preferred Health System Improvements

TYPE BED	2007	2014	2020
PUBLIC PATIENT BEDS			
Inpatient	9,823	7,157	8,308
Day Bed/Place	1,598	2,367	2,931
Additional Non Acute	0	270	214
Sub Acute	368	256	308
MAU	0	33	41
TOTAL PUBLIC	11,789	10,083	11,802
Critical Care	989	1,179	1,363
TOTAL PUBLIC (INC CRITICAL CARE)	12,778	11,262	13,165

Table 37: Public Patient Bed Requirement to 2020: Achieving 25% of Preferred Health System Improvements

TYPE BED	2007	2014	2020
PUBLIC PATIENT BEDS			
Inpatient	9,823	9,484	11,365
Day Bed/Place	1,598	2,199	2,786
Additional Non Acute	0	180	148
Sub Acute	368	351	434
MAU	0	18	22
TOTAL PUBLIC	11,789	12,232	14,755
Critical Care	989	1,206	1,419
TOTAL PUBLIC (INC CRITICAL CARE)	12,778	13,439	16,174

Appendix J: Network model

This section provides a detailed explanation of the model as defined by NHO Hospital Network.

One of the key deliverables of the project is to:

- Identify nationally, to HSE Hospital Administrative Area level, the number and type (adult/paediatric/medical/surgical/critical care split) of acute beds that are required

As part of this, the Review Project Management Group agreed that two projection scenarios would be considered regarding the Irish hospital networks:

- Continuation of the existing hospital network referrals, eg 40% of the patients from within the Border Regional Authority attend a hospital within the North Eastern Hospital Network.
- The four Hospital Areas become self sufficient by 2012, eg unless stated otherwise patients are no longer required to visit other Hospital Areas for acute services

J.1 Current referral scenario

Under the current referral scenario, the populations for each network were defined by the current referral pattern and the appropriate increases applied, eg 2% of all discharges from the Border regional authority attend a hospital within the Dublin Midlands Network. Any increases in population in the Borders region are therefore applied as the current pattern.

Table 38: Public Patient Bed Requirement to 2020 by Network, Current Referral Scenario

	2007	2014	2020
PUBLIC PATIENT BEDS			
DUBLIN MIDLANDS	1,613	990	1,074
DUBLIN NORTH EAST	1,850	1,119	1,221
DUBLIN SOUTH	1,951	1,131	1,265
MID-WESTERN	787	454	488
NORTH EASTERN	805	466	501
SOUTH EASTERN	1,051	580	627
SOUTHERN	1,447	867	977
WEST/NORTH WESTERN	1,917	1,157	1,294
Sub Acute Beds	368	119	133
Critical Care Beds	989	1,125	1,253
TOTAL PUBLIC (INC CRITICAL CARE)	12,778	8,008	8,834

J.2 Regionalisation scenario

In this scenario, each hospital administration area becomes self-sufficient by 2012. Patients attend hospitals within their hospital administration area only, except for a select number of centralised tertiary services. These tertiary services were identified and agreed with the project group. Due to regionalization, there is now a required need for a small number of additional inpatient and critical care beds. This is due to the fact that services which were once provided in only one or two locations are now provided in up to four, resulting in an increased demand for beds.

Table 39: Public Patient Bed Requirement to 2020 by Network, Regionalisation Scenario

	2007	2014	2020
PUBLIC PATIENT BEDS			
DUBLIN MIDLANDS	1,613	987	1,073
DUBLIN NORTH EAST	1,850	1,132	1,240
DUBLIN SOUTH	1,951	1,140	1,276
MID-WESTERN	787	450	484
NORTH EASTERN	805	461	497
SOUTH EASTERN	1,051	577	622
SOUTHERN	1,447	868	971
WEST/NORTH WESTERN	1,917	1,135	1,284
Sub Acute Beds	368	119	133
Critical Care Beds	989	1,123	1,248
TOTAL PUBLIC (INC CRITICAL CARE)	12,778	7,990	8,828

Appendix K: Beds by specialty group

This section provides a detailed breakdown of beds by specialty group.

Table 40: Bed Requirement By Specialty Group

TYPE BED	2007	2014	2020
PUBLIC PATIENT BEDS			
Critical Care	189	205	243
Gynaecology	200	40	18
Medical	4,389	1,505	1,687
Obstetrics	1,070	857	849
Other	290	64	63
Paediatrics	818	257	229
Surgical	2,868	839	936
Inpatient	9,823	3,767	4,025
Critical Care	0	0	0
Gynaecology	61	114	136
Medical	836	1,368	1,724
Obstetrics	11	32	32
Other	88	130	145
Paediatrics	141	321	330
Surgical	460	707	792
Day Bed/Place	1,598	2,673	3,160
Critical Care	0	20	16
Gynaecology	0	0	0
Medical	0	156	113
Obstetrics	0	0	0
Other	0	6	4
Paediatrics	0	0	0
Surgical	0	87	63
Additional Non Acute	0	270	196
Sub Acute	368	119	133
MAU	0	55	66
TOTAL PUBLIC	11,789	6,883	7,581
Critical Care Beds	989	1,125	1,253
TOTAL PUBLIC (INC CRITICAL CARE)	12,778	8,008	8,834

Appendix L: Critical care

This section provides more detail with regard to the projection of critical care beds.

Critical care beds can be separated into seven sub-categories; neonatal (including special care baby units), paediatric, coronary care, burns units, liver units, high dependency and intensive treatment. These bed types are within small and highly specialised pools and generally not interchangeable. Currently, HIPE does not separate critical care bed days by these different bed types. However, using age and also the location of the hospital it was possible to separate out Critical Care beds into three general categories:

- Neonatal Intensive Care (this includes Special Care Baby Units)
- Paediatric Intensive Care (only dedicated PICU at Children's University Hospital, Temple St and Our Lady's Hospital for Sick Children, Crumlin).
- Other Critical Care (includes: CCU, HDU, ICU, Burns and Liver Units).

Further validation of the output of this approach was sought through completing a top down assessment of Ireland's critical care bed requirement. However, this was problematic due to the fact that critical care beds are spread across relatively many hospitals in Ireland. That is, critical care beds are typically in very small bed pool in Ireland and so international comparisons are less valid.

It is recommended that the above estimates are validated and detailed per sub-category as part of the proposed Critical Care Review. As part of this, the Critical Care Review should also consider in detail current practice within Critical Care units and their configuration across many sites in Ireland.

Table 41 shows the breakdown of Critical Care bed requirements by sub-category.

Table 41: Critical Care Bed Requirement by Sub-Category

	TYPE BED	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PREFERRED HEALTH SYSTEM	NICU/SCBU	269	273	288	292	284	287	290	292	294	296	297	297	296	299
	PICU	41	42	44	45	44	45	45	45	46	46	46	46	46	47
	OTHER CRITICAL CARE	678	692	734	750	737	754	771	788	806	823	840	858	876	907
	TOTAL CRITICAL CARE	989	1,007	1,066	1,087	1,066	1,086	1,106	1,125	1,145	1,165	1,184	1,202	1,218	1,253
CURRENT PRACTICE	NICU/SCBU	269	276	295	303	299	306	313	320	326	333	340	344	348	352
	PICU	41	42	45	47	46	47	49	50	51	52	53	54	54	55
	OTHER CRITICAL CARE	678	701	753	779	776	804	833	864	895	927	960	995	1,031	1,067
	TOTAL CRITICAL CARE	989	1,019	1,094	1,129	1,122	1,158	1,195	1,233	1,273	1,312	1,353	1,393	1,433	1,474

Appendix M: Capital and operating costs

This section provides more detail with regard to the calculation of capital and operating costs. All costs were reviewed by the HSE Senior Finance team.

M.1 Capital costs

Capital costs were defined by HSE Estates and by the Assistant Director of Finance, Capital. Costs were provided both for the provision of a new build and also for the extension of an existing site and were also split by type of hospital, i.e. major teaching hospital and regional hospital and by location.

Capital costs for a new build included:

- Construction
- Fees
- Equipping
- Other Costs

However, costs for building on an existing site did not include the additional cost of any additional equipment associated with the extension if required. Costs were also provided for the addition of a medical assessment unit to an existing site. In the case where a bed type was transferred from one type to another (eg an inpatient bed transferred to a day case bed), there was some provision of costs for refurbishment. Costs were also provided for the construction of new community nursing units.

Assumptions were made regarding the split of beds for these hospital types based on analysis of the current capacity data. The range of costs by bed type for 2007 is shown below. It was assumed that 50% of new beds would be on existing sites and 50% new build. An ongoing cost increase of 1% per year above interest rates was also included for each subsequent year.

M: Capital and operating costs

Table 42: Capital Costs by Bed Type (2007)

Bed type	Unit capital cost - existing site	Unit capital cost - new build
Inpatient Bed (Major Teaching Hospital)	€ 187,500	€ 1,000,000
Inpatient Bed (Major Regional Hospital)	€ 187,500	€ 576,632
Day Case Bed (Major Teaching Hospital)	€ 187,500	€ 1,000,000
Day Case Bed (Major Regional Hospital)	€ 187,500	€ 576,632
Critical Care Bed (Major Teaching Hospital)	€ 187,500	€ 1,000,000
Critical Care Bed (Major Regional Hospital)	€ 187,500	€ 576,632
Medical Assessment Unit	€ 200,000	N / A
Non Acute Beds	N / A	€ 180,000
Transfer of Bed Type: Inpatient to Day Case	€ 18,750	N / A
Transfer of Bed Type: Inpatient to Sub-Acute	€ 18,750	N / A
Transfer of Bed Type: Inpatient to Critical Care	€ 37,500	N / A

M.2 Operational costs

Operational costs were estimated based on cost per day data from the Assistant Directors of Finance in the Dublin North East and West North West hospital networks. Data was split by costs per bed day by region for:

- Major Teaching Tertiary Hospitals
- Regional Hospitals

Assumptions were also made regarding the split of beds for these hospital types based on analysis of the current capacity data.

Costs were also defined for the cost per bed day for critical care patients, based on international data and input from the HSE Finance team as well as the cost per bed day for a daycase, which was based on data from the Casemix Unit of the NHO. Data for the operational costs of a community nursing unit was based on an analysis of data regarding costs per week of nursing homes in Ireland.

The range of operating costs for 2007 by bed type is shown below. An ongoing cost increase of 1% per year above interest rates was also included for each subsequent year.

Table 43: Operating Costs by Bed Type (2007)

Bed type	Daily operating cost
Inpatient Bed (Major Teaching Hospital)	€1,123
Inpatient Bed (Major Regional Hospital)	€825
Day Case Bed (Major Teaching Hospital)	€588
Day Case Bed (Major Regional Hospital)	€588
Critical Care Bed (Major Teaching Hospital)	€2,600
Critical Care Bed (Major Regional Hospital)	€2,000
Medical Assessment Unit	€1,050
Non Acute Beds	€225

Appendix N: Preferred health system links with HSE transformation programme

The below table maps the links between the Preferred Health System the HSE Transformation Plan seeks to deliver.

Table 44: Preferred Health System to HSE Transformation Plan Map

COMPONENT	CHARACTERISTIC	HSE TRANSFORMATION PROGRAMMES												
		1. Develop integrated services across all stages of the care Journey	2. Configure PCCC services to deliver optimal & cost effective results	3. Configure PCCC services to deliver optimal & cost effective results	4. Implement a model for the prevention and management of chronic illness	5. Implement standards based performance measurement and management through the HSE	6. Engage all staff in delivering transformation of health and social care in Ireland	7. Finance, Budget allocation and shared systems	8. Shared services strategy and implementation	9. Human resource strategy and implementation	10. ICT	11. Facilities / estates strategy and implementation	12. Board, Corporate Stakeholders and relationship management	13. Procurement
No Care	The health system prioritises informing and changing the personal health behaviours of the population long before clinical disease develops.													
	Preventive medical care facilitates early detection and treatment of illness.													
	Surveillance informed by good data and patient screening supports preventative measures targeted at the highest risk and informs decision-making on health issues													
Patient Self Care	A model for prevention and management of chronic disease and long-term conditions is implemented.													
	At-risk patients are identified to avoid the occurrence of acute episodes.													
	Patients are informed how to contribute to this management by changing behaviour.													
Primary, Community and Continuing Care	The burden of chronic disease is recognised and actively managed in the community.													
	Patients at risk of illness or acute episodes are identified and managed.													
	A broad spectrum of home-based care, tailored to patient specific needs, is available.													
Acute Care	There are appropriate alternatives to acute admission and facilities that reduce inappropriate and preventable admissions and support timely discharge.													
	Bed capacity is planned and managed to match demand													
	Managing the flow of patients through the hospital and daily bed management are clinically led, priority decision-making functions within the hospital													
	Patients are actively managed before and during their hospital stay to ensure timely access to and discharge from beds													
	The focus of care has shifted away from inpatient care													

Appendix O: International case studies

Case study	Outline
1	<p>The North Karelia experiment in Finland showed significant reductions in Coronary Heart Disease (CHD) mortality as a result of public health interventions. The pilot phase took place in North Karelia from the late 1960s to the late 1970s. It was then rolled out across Finland. Interventions included:</p> <ul style="list-style-type: none"> • Primary care (eg programmes to cut smoking, cholesterol and blood pressure) • Media (eg anti-smoking and healthy lifestyle campaigns) • Health service activities (especially in primary care) • Environmental (eg smoke free areas at work, blood pressure measurements in supermarkets)
2	<p>Preventive services for the early detection of disease have been associated with substantial reductions in morbidity and mortality.</p> <p>Age-adjusted mortality from stroke in the US, for example, has decreased by more than 50% since 1972, a trend attributed in part to earlier detection and treatment of hypertension.⁶¹ This has been delivered through the addition of preventive services to public and private health plans.</p> <p>Although screening tests are an important part of these preventive services, there is also a strong emphasis on educating patients regarding personal health behaviours. The importance of this aspect of practice is evident from studies linking some of the leading causes of death in the U.S., such as heart disease, chronic obstructive pulmonary disease, unintentional and intentional injuries, and human immunodeficiency virus (HIV) infection, to a handful of personal health behaviours.</p>
3	<p>The Dr Foster health data agency used the technique of 'health needs mapping' in the UK to pinpoint worst areas for heart disease and diabetes. The data suggested that some districts have more than twice as acute a problem with coronary heart disease than others.</p> <p>Statisticians were able to pinpoint the English districts likely to have the worst problems of heart disease and diabetes, as well as mental health problems, winter hospital admissions and teenage pregnancy.</p> <p>The technique enables managers and doctors responsible for organising healthcare to focus attention and resources on localities most in need. The mapping approach involves breaking down the social and demographic makeup of each district. Calculations are then made according to the prevalence of diseases or health conditions for each population group, using national data already available. The technique, which can be applied as precisely as neighbourhood level, has already been put into practice in Slough, Berkshire, to identify people in the south Asian community who are at risk of diabetes or who have the disease but have failed to come forward for treatment.</p> <p>Tim Kelsey, chief executive of Dr Foster, said: "In Slough we have helped the NHS to find people</p>

⁶¹ Garraway WM, Whisnant JP, The changing pattern of hypertension and the declining incidence of stroke JAMA. 1987 Jul 10;258(2):214-7

O: International case studies

Case study	Outline
	with diabetes who never knew they had a problem. Over time, those people would probably have ended up in hospital."
4	<p>Kaiser Permanente Healthcare providers focused on chronic care as a priority rather than primary care and secondary care. These diseases were tackled by stratifying the population according to risk and adopting a population management approach that combined an emphasis on prevention, self management support, disease management, and case management for highly complex members. Population management was one of the factors that enabled Kaiser to avoid inappropriate use of hospitals. This was summarised in the philosophy that 'unplanned hospital admissions are a sign of system failure'.</p>
5	<p>Review of falls preventions programmes in Australia and New Zealand identifies three key components:</p> <ul style="list-style-type: none"> • risk identification, • falls prevention, and • injury prevention strategies. <p>Falls in people aged 65 years and over are of particular concern due to their frequency, associated morbidity and mortality, and cost to the healthcare system and community. Falls prevention approaches combining education and home-based resources for example have been shown to yield benefits for frail older people.</p>
6	<p>The NHS Expert Patient Programme in the UK provides group-based training for people in the self-management of chronic conditions. Training is provided by a network of more than 600 trainers and volunteers, all of whom have long term conditions. More than 10,000 people have been through the programme which teaches problem solving, decision making, utilising resources, developing partnerships with health providers and taking action. The programme is based on the principle that better chronic disease management requires more patient involvement, to help them develop their own skills and to empower them to take control and show them that they are in charge of their condition. Principles of the NHS chronic disease management approach include:⁶²</p> <ul style="list-style-type: none"> • A strong emphasis on patient education and empowerment • Comprehensive and integrated packages of personalised health and social care services • Joint health and social care teams, 24/7 contact and an information system that supports a shared health and social care record • Good local community health and care facilities • Health and social care commissioners with the right incentives to deliver better care for those with complex needs • Mandatory risk stratification to identify those most at risk, and intensive use of assistive and remote monitoring technologies
7	<p>A chronic disease management programme trial in New Zealand for chronic obstructive pulmonary disease (COPD) patients that incorporated a variety of interventions, including pulmonary rehabilitation and implemented by primary care, reduced admissions and hospital bed days. Key elements were patient participation and information sharing among healthcare</p>

Case study	Outline
	<p>providers.</p> <p>A steady increase in COPD admissions was addressed by enhancing primary care to provide intensive chronic disease management. The aim of the study was to compare the effect of a disease management programme, including a COPD management guideline, a patient-specific care plan and collaboration between patients, general practitioners, practice nurses, hospital physicians and nurse specialists with conventional care, on hospital admissions and quality of life.</p> <p>One hundred and thirty-five patients with a clinical diagnosis of moderate to severe COPD were identified from hospital admission data and general practice records. General practices were randomized to either conventional care (CON), or the intervention (INT). Pre- and post-study assessment included spirometry, Shuttle Walk Test, Short Form-36, and the Chronic Respiratory Questionnaire (CRQ). Admission data were compared for 12 months prior to and during the trial.</p>
8	<p>A study in South West Sydney Area Health Service in Australia found that the proactive identification, assessment and referral of elderly patients who have fallen for intervention and present to the ED could reduce inappropriate admissions and maximize use of community resources.</p> <p>Once an elderly person has had one unexplained fall they are at a significantly greater risk of subsequent falls. A prior history of falling is an intrinsic risk factor for further falls, increasing the risk of a further fall in the next twelve months by two and a half times.</p> <p>In the study the consultation team prevented many inappropriate hospitalisations and invoked the optimal use of community based resources to provide the most appropriate patient care. This confirmed the benefits of comprehensive multidisciplinary geriatric assessments in targeted elderly patients identified in hospital. Positive outcomes have included improvements in mortality rates, morbidity, length of hospital stay, nursing home placement, quality of life, medication utilisation, diagnostic accuracy, and mental and functional status.</p>
9	<p>The role of the Community Intervention Team in Ireland is to provide a rapid response from community services to patients (for example nursing services and home care assistants) so that unnecessary hospital admissions can be avoided and the patient can be cared for at home in their community where most prefer to stay.</p> <p>Referrals by GPs and Hospitals can be made both in and outside of normal working hours and the Community Intervention Team directly provides the care needed to patients in their home while mainstream community services are put in place.</p> <p>Where Community Intervention Teams are already in existence (in Dublin, Cork and Limerick), outcomes such as the prevention of patients having to re-attend A&E for procedures such as unblocking a urinary catheter have been observed. In other cases, patients in A&E departments were discharged home to the care of the Community Intervention Team; instead of being admitted to a ward to wait while the necessary community services required were put in place.</p> <p>An English study also found that the introduction of a multidisciplinary primary care team (GPs, community nurses, nurse co-coordinator, social worker, care attendants) was associated with the ability to keep patients at home in times of crisis, a reduction in emergency admissions and shorter lengths of stay for patients when they were admitted. The introduction of teams was also associated with high levels of patient and carer satisfaction.</p>

Case study	Outline
10	<p>The MAU can have an important role to play in facilitating access to diagnosis and assessment and avoiding admission. Some hospitals have set up short-term booking of diagnostics via MAUs to GPs, for example Roscommon and Castlebar. MAUs can form a central point for a range of pathways for patients referred for immediate medical assessment, who otherwise would be admitted to facilitate rapid investigation and assessment. These include:</p> <ul style="list-style-type: none"> • Provision of facilities for next day assessment in an outpatient clinic. • GP out of hours services linked to intermediate care/community based rapid response • Therapy and social work teams in A&E on 24 hour basis to identify patients immediately suitable to return home with support or for intermediate care • Direct referral from community to MAU or other facility to provide rapid access to diagnostics • Direct referral from A&E/MAU to community nursing/intermediate care/rapid access home care. <p>Mullingar MAU provides access to diagnostics for patients directly referred from Primary Care. This avoids the need for the patient to be admitted or to wait in the ED.</p>
11	<p>New South Wales Health in Australia has supported hospitals in focusing on improving patient flow through beds by reducing variation in admission and discharge to maximise bed capacity. Strategies involved:</p> <ul style="list-style-type: none"> • Focusing on discharging patients before 10AM to ensure beds were free to accommodate the peak in afternoon admission from the A&E • Matching ward capacity to predicted demand on an hourly, daily and seasonal basis <p>These strategies have reduced the delayed in patients admitted in the ED securing an inpatient bed (decreasing 'access block' in ED).</p>
12	<p>Guy's and St. Thomas' Trust in London reduced the medical bed requirement through effective performance management of length of stay. Four medical wards were closed over two years without any negative effect on readmission rates.</p> <p>Action Taken:</p> <ul style="list-style-type: none"> • Information on Length of Stay was made available and used including a daily report on the bed state by LOS with a red/amber/green system for alerting the consultant in charge to patients exceeding ALOS. • Length of Stay was performance managed. <ul style="list-style-type: none"> – Multi-disciplinary 'Cluster meetings' were held each week involving the consultant in charge, their junior team, ward sister, physio etc. Each patient under that consultant team was discussed and their discharge plan reviewed. – Monthly performance data on LOS by consultant was issued (as well as other key measurable statistics such as income per bed day) • Changes were clinically championed. Clinical champions worked with analysts to improve data credibility and piloted changes to clinical process to lead by example for other clinicians.
13	<p>Use of B&B beds to support Day of Surgery Admission - Cork University Hospital, Ireland</p> <p>The population served by CUH covers a wide geographical area. Patients travelling long distances to the hospital for treatment were often admitted the day before their surgery. These</p>

Case study	Outline
	<p>patients did not require acute care, but did need to stay in Cork city to ensure they were available for their surgery without the stress of a long journey on the same day. To promote best use of hospital beds through admission on day of surgery, the CUH Bed Management team introduced a policy of providing patients travelling long distances with B&B beds the night before their surgery.</p>
14	<p>The UK Department of Health White Paper 'Our Health, Our Care, Our Say' set out a new direction for community services. Fundamental to this reform was a shift in the place of care from the acute hospital to locations close to or at the patient's home.</p> <p>Five areas of the secondary care pathway that have focused on to enable this shift of care to the community are:</p> <ul style="list-style-type: none"> • Simple diagnostics tests • Outpatient appointments • Day case surgery • Step down care • Outpatient follow up <p>A recent follow up study highlight the four main strategies that are helping health communities deliver on this agenda:</p> <ul style="list-style-type: none"> • Integration of services across primary and secondary care • Substitution <ul style="list-style-type: none"> – of location – of skills – of technology – from clinical to self management – of organisations • Segmentation of population (including sectors and targeting) • Simplification of process (reducing structures and pathways)

Appendix P: Illustrative patient stories

P.1 No care requirement

Ita is 84. She has two daughters, one who lives across town and the other who has moved 200 miles away. The daughter who lives in the same town works full time and has a family and is not able to see Ita as often as she would wish.

Recently Ita has begun to find that her joints are getting stiffer, she feels that she is slowing down and is beginning to feel lonely and scared in her flat. Ita discusses her worries with her daughter and they decide to investigate what help and company she may be able to access.

Her daughter first contacts her GP surgery and is put in touch with a local scheme run by Age Action. A local village hall hosts a daily drop in service for the elderly.

This service combines a daily menu of social activities with some basic health and well being education, screening and monitoring. Ita agrees to attend the day unit and although initially anxious she soon begins to access the services regularly. Initially Ita becomes involved in the social activities but is soon persuaded to take up the offer of a health assessment which is done by a visiting geriatrician.

Ita is generally very healthy but is given some advice about looking after herself. This includes advice on nutrition and diet, low risk exercise plan and personal safety. She is also prescribed some low dose anti-inflammatory drugs for her joint pain. The information given to Ita is reinforced in the centre with talks and demonstrations on many subjects including ideas for good nutritional meals, gentle exercise classes and personal and home safety.

Ita now feels part of her community and her visits to the centre mean that not only is she making friends and participating in social activities but is also part of a health monitoring scheme which should pick up any early indicators of deteriorating health.

Her daughter has also noticed a real change in Ita; she says her mother is more confident and interested in life.

P.2 Patient self care

Ciaran is 48. He is married with two boys and tries to keep up with them. He has a lifelong history of asthma which has been poorly controlled. He has always taken a cocktail of drugs, including steroids which have produced various long term complications.

A recent spate of fairly acute attacks, one of which resulted in hospital admission has led him to his GP surgery to try and access some extra help. Ciaran has been allocated a case manager from his local Chronic Disease Management Unit and has an initial assessment visit at home. During this visit his medication is reviewed, his general health assessed and he discusses his understanding of asthma and its management with the nurse.

Following this initial assessment Ciaran and the case manager agree a programme of self care interspersed with visits and checks with the case manager. Ciaran is given extra information about asthma and some ideas on how to manage his condition more proactively. He is also given a number to call where he can access advice from one of number of case managers 24 hours a day.

Ciaran uses a set of measures to self assess his own state of health; these include using a peak flow meter at regular intervals, measuring his own respiratory rate and using an assessment tool to determine his general state of well being. He notes all these factors in a journal in which he also records his dietary intake and exercise regime.

Over a period of a few weeks, Ciaran begins to identify the key triggers to his asthma attacks and begins to feel more in control of the situation.

He has regular contact with his case manager and begins to develop a programme for dealing with the complications of his disease and the drugs he has had to take.

Ciaran knows his asthma will always be with him but now feels that he is not taking the wrong medication in the wrong doses and that he can identify more easily when he is likely to have an attack. He now also feels supported at home and more likely to be able to avoid visiting the emergency services at the hospital.

P.3 Primary, community and continuing care

Maciej is 38. Following a recent collapse at work he has been admitted to a hospital Medical Assessment unit (MAU) where he has been diagnosed with diabetes.

Maciej is self employed so is worried not only about his health but also about his ability to maintain his business. He is particularly concerned that he will be spending time in hospital and will lose work as he is not seen as reliable.

Maciej was brought to the MAU by the ambulance crew who had been called by his work colleagues. During the journey to the hospital the paramedics obtained some baseline observations, including his blood sugar level. These early results were transmitted directly to the MAU and preparations for his arrival were already in progress as he arrived at the hospital.

Further tests were immediately undertaken by the nurses in the MAU, these included blood tests done in the unit itself to confirm the suspicions of diabetes.

The Acute physicians on the MAU performed a complete health assessment and the diagnosis of diabetes was determined.

Maciej was immediately commenced on intensive treatment and was referred to the Diabetic Nurse Specialist from primary care.

All these services were offered within a few hours of Maciej's arrival at the hospital and were carried out on the Assessment Unit.

The Diabetic Nurse Specialist discussed his diagnosis, treatment and options with him. As a young and previously fit man Maciej was offered a scheme which was a combination of self care and case management carried out in the community. The support from health professionals would always be available to him and would necessarily be more intense in the early days following his diagnosis with the goal of increasing Maciej's confidence and resulting in an increase in his self management and knowledge of his disease.

Maciej was also given an emergency number which linked him directly with the MAU at the hospital if he suffered any health crises and indeed he has used this on a couple of occasions in the early days. Every time, including his first visit Maciej was seen and managed on the Assessment Unit without the need for admission to the main hospital.

Maciej is growing in confidence and with the support of his local diabetic service is controlling the management of his own disease with easy access to extra help and services when he needs it.

P.4 Acute care

Clodagh is 28 and is being admitted to hospital for an operation on her damaged knee. She recently had a skiing accident which has resulted in damage to her cruciate ligament.

Initial treatment was carried out at the ski resort but this was only to stabilise and support her knee. Clodagh returned home and was immediately referred by her GP for surgery on her knee. She attended for pre-assessment at the Orthopaedic department in the hospital.

At this pre assessment clinic an Orthopaedic Nurse Specialist undertook various tests which included baseline observations, blood tests, radiological investigations and a clinical assessment of the range and movement of the knee joint. This was all done in a one stop visit. At the end of this visit Clodagh was given a date for her surgery. This was made possible as the pre assessment clinic staff had direct access to the theatre lists and could book patients in directly. Each theatre list was planned with points allocated to each particular operation to a pre-determined total.

Clodagh was also given details of her likely length of stay in hospital and the progress to expect. Her date of discharge was estimated and she was told what to plan for and expect when she leaves hospital. At this time any special requirements post discharge were discussed. Some patients may require health and social care support at home and these would be planned at pre assessment to minimise delays in hospital. If necessary, follow up appointments either at the hospital or in community clinics, primary care settings would also be booked at the pre assessment clinic.

Clodagh was sent a letter confirming her admission date and ward, and on the day of her surgery went directly to the ward and waited in an admissions area for her operation. She was taken to theatre for her surgery and was returned to an allocated bed on the ward after the operation.

Her recovery was uneventful and she was discharged on the planned day. On that day Clodagh vacated her bed during the morning and waited in the discharge lounge for her husband to arrive to take her home.

Her recovery at home continued uneventfully and following a visit to her GP surgery she had her stitches removed and continued with her physiotherapy.

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