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Review of acute hospital services in HSE Mid-West an action plan for acute and community services

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Health Service Executive

Review of Acute Hospital Services in HSE Mid-West

An action plan for acute and community health services

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This report has contains sensitive information on clinical services at some sites. The report is produced for the purposes of the Chief Executive of the Health Service Executive and no liability or responsibility is given to any director, member or officer in their individual capacity, or to any third party.

Abbreviations used in this report

A&E	Accident & Emergency
ALoS	Average Length of Stay
AMP	Advanced Midwife Practitioner
ANP	Advanced Nurse Practitioner
AP	Advanced Paramedic
CCU	Coronary Care Unit
CH	Community Hospital
CIT	Community Intervention Team
CMS	Clinical Midwife Specialist
CNS	Clinical Nurse Specialist
CNU	Community Nursing Unit
DRG	Diagnostic-Related Group
EL	Elective inpatient activity
GP	General Practitioner
HAI	Healthcare Associated Infections
HIPE	Hospital In-Patient Enquiry
HIQA	Health Information and Quality Authority
HSE	Health Service Executive
ITU	Intensive Therapy Unit
LHO	Local Health Office
LIMS	Laboratory Information Management System
NCHD	Non-consultant Hospital Doctor
NE	Non-Elective inpatient activity
NHO	National Hospitals Office
OT	Occupational Therapy
PACS	Picture Archiving and Communication System
PCCC	Primary, Community & Continuing Care
PCN	Primary Care Network
PCT	Primary Care Team
PHN	Public Health Nurse
PSCN	Primary and Social Care Network
UCC	Urgent Care Centre
UL	University of Limerick
Wte	Whole Time Equivalent

Key messages

The Health Service Executive has already laid out its strategies for the future delivery of both acute and primary, community and continuing care services. These strategies are designed to align health services in Ireland with international best practice, reflecting a global trend towards implementing new health systems that ensure:

- The majority of patients, those who require only a routine, straightforward level of urgent or planned care, will be safely managed locally, with treatment being delivered 'at home or as close to home as possible'; and
- The minority of patients, who require true emergency or more complex planned care, will be safely managed in designated acute regional centres of excellence, where all the relevant clinical expertise is concentrated so that consultant led, high quality care is available round the clock.

International evidence highlights that there is a critical mass relationship between medical workforce and workload for the systematic delivery of high quality 24/7 acute hospital care. This means matching the size of the consultant team with the size of the catchment population, i.e. having the right numbers on the team to ensure senior supervision of patient management at all times and the right size of clinical workload to produce the best clinical outcomes.

Our findings in relation to critical mass:

Although there has been good progress in some areas, there are still clear and substantial shortcomings in the way core acute hospital services are presently planned and provided, compared to international best practice. Substantial reconfiguration is required to move the acute services in HSE Mid-West towards the systematic delivery of safe, high quality patient care. This service reconfiguration is about reallocating existing HSE resources. The consultant resources for acute care are already largely sufficient but they are presently too dispersed across units that are too small to meet the critical mass criteria of workforce and population, such that it is not possible for staff to systematically deliver consistent high quality acute care.

Our findings in relation to inefficiencies in service delivery:

1. Too many patients are being admitted unnecessarily to hospital.

We found a wide variation in non-elective hospitalisation rates by county even after adjusting for age and sex, in medicine ranging from 571 to 1,203 per 10,000, in surgery from 347 to 688, suggesting different clinical practices and criteria for admission. This is in keeping with the findings of the recent national bed utilisation review that found that some 10% of acute admissions were inappropriate.

2. Too many patients are staying too long in hospital.

If the acute services in the Mid-West were to make efficiency improvements, benchmarked to national and international comparators, then this would mean that the 50,000 or so patients admitted each year would reduce their use of in-patient beds from some 938 to 642, a reduction of 296 (32%). Again, this is supported by the national bed utilisation review which found that 40% of in-patients in the Mid-West were considered to be inappropriate for acute hospital services.

An illustration of our findings and our concern about quality of service and patient safety

We have selected the Accident & Emergency service (A&E) to illustrate how the present service configuration, and corresponding consultant deployment, leads to the conclusion that the fragmentation of the current services generate an increased clinical risk to patient safety, are unsustainable and need to be reconfigured if they are to deliver to international standards. A&E should be delivered as a 'consultant-led' emergency 'round the clock service', with continuous consultant supervision and direct clinical input as necessary to provide systematic, high quality care at all times.

There are presently four discrete A&E units (Dooradoyle, the main A&E and regional trauma centre, and 3 others, at St. John's, Nenagh and Ennis) serving the Mid-West population. There are only 3 A&E consultants to cover these 4 units, providing a total of only 99 contracted hours of work per week (33 sessions, each of 3 hours).

The consultant sessions are distributed as 29 to Dooradoyle, 3 to Ennis, 1 to

St. Johns and none to Nenagh i.e. there is only nominal cover at Ennis and St. John's and no consultant cover at all at Nenagh.

Allowing for leave, on-call and non-clinical activities, the 3 consultants are able to provide direct clinical care for a total of around 50 hours per week across the standard working week – to cover the four units – to provide consultant supervision – to respond to emergencies during Monday to Friday during working hours.

It is therefore just not possible for patients attending A&E across the 4 sites to routinely receive direct consultant care as and when clinically required, with obvious consequences for the quality of clinical decision making and emergency patient management. The service is largely delivered in reality by non-consultant and junior doctors without enough supervision. In terms of critical mass:

- **The total consultant staffing is insufficient for the Mid-West population and also too dispersed to be fully effective at current staffing levels; and**
- **In terms of the populations served by Nenagh, Ennis and St. John's, they are too small to generate sufficient A&E workload for these units to qualify as viable, stand-alone A&E services and justify further local investment.**

It can also be argued that the dispersal of A&E resources has compromised the service requirements needed at Dooradoyle, which is the main A&E and regional trauma centre for the Mid-West e.g. the low level of consultant input and the lack of essential facilities, especially decontamination and isolation.

For A&E services, we have, therefore, made the following recommendations:

- **The HSE should direct the peripheral units and their staff to sensibly limit the 'unfiltered' emergencies that presently come to these small A&E units by:**
 - **Informing the public of the safety issues and announcing new access criteria and levels of treatment available;**
 - **Insisting that the ambulance service comply with current protocols to by-pass these small A&E units, and to update these protocols as necessary according to the new access criteria;**
 - **Announcing a programme of immediate, short and medium term actions to improve current services, pending full service reconfiguration.**
- **Confirm one regional A&E 'centre of excellence' at Dooradoyle, focused on**

managing the more major emergencies, and with a consultant recruitment plan to eventually establish a team of A&E Consultants sufficient for the provision of a 'consultant-led' 24 hour, 7 day a week service and compliant with the European Working Time Directive;

- Establish an Emergency Care Network for Adults and Children for the Mid-West, providing an integrated, seamless service, connecting all the professionals on emergency duty, whether General Practitioner, Advanced Nurse Practitioner, Community Nurse, the Advanced Paramedic and all the duty teams in the acute hospital specialties;
- Develop Nenagh, Ennis, and St. John's, and possibly other sites, into key elements of the Emergency Care Network. They need to both relieve and complement the regional A&E centre by providing all the services for minor injuries and illness (Urgent Care, with access 12 hours per day, 7 days per week) across the Mid-West. Each would be led by an Advanced Nurse Practitioner and professionally accountable, as part of the Network, to the regional A&E Consultant team; and
- In the meantime, until implementation of the new service configuration is completed, put in place additional temporary medical staffing, to improve the levels of patient safety of current services at Nenagh and Ennis.

Our overall recommendations:

We have set out our recommendations for action in a practical, 'patient-centred' implementation plan, aligned with the HSE Transformation Programme and designed to achieve consultant-led, clinically safe, sustainable, high quality acute and related primary and community services.

We have identified the risks and pre-conditions which the action plan needs to address, in particular, immediate actions to improve patient safety and transitional investments to maintain basic standards in the current acute core services, pending full implementation of the Transformation Programme.

We estimate that such a programme would largely achieve its objectives within 3 to 4 years, once the detailed project planning has been completed and subject to major capital builds. In overall terms, providing high quality, safe and sustainable services, built upon a 'best practice' foundation, across the Mid-West means:

- Each hospital and specialty taking prompt action to: remove excessive variations in clinical and organisational practices (by standardising clinical management according to Integrated Care Pathways); and improve their current levels of efficiency and effectiveness to avoid unnecessary hospital admissions and

reduce the length of stay in hospital;

- Reconfiguring services into clinical networks, operating across three local 'centres of excellence' providing a wide range of routine out-patient, diagnostic and treatment services, and one regional 'centre of excellence' in Limerick City providing all specialist acute care;
- Identifying what additional acute and community resources are needed to ensure that no patient is admitted unnecessarily to the acute hospital, and that all patients have access to supported earlier discharge;
- Undertaking detailed workforce planning, training, restructuring and development in line with future service objectives;
- Revisiting the Mid-West acute and PCCC capital build programme to confirm that the buildings and design enable the delivery of the new clinical strategies;
- Confirming that local 'centres of excellence' offer a fully integrated service profile and easy patient access to: primary care teams; out-patient clinics; urgent care; diagnostics; day surgery; endoscopy; rehabilitation; and therapy beds;
- Ensuring the ambulance strategy to deploy the Advanced Paramedic emergency workforce is in place;
- Introducing new, complementary clinical and corporate governance structures to support the concept of integrated working practices and clinical networks, which will also incorporate the university / academic organisations to ensure that service planning and delivery can benefit from academic leadership and clinical best practice; and
- Persuading all HSE staff and other providers to engage in challenging the 'status quo' and committing to support implementation of the HSE Transformation Programme across the Mid-West for the benefit of all patients, carers, resident population and the staff themselves.

The changes recommended in this report present major challenges, but, in terms of patient safety, the availability of high quality care and clinical sustainability, the continuation of the present configuration of services is not acceptable.

The benefits will be profound: much better patient experience and interaction with health care services; patients accessing more care at home and in their community setting; fewer patients spending unnecessary time visiting or being an in-patient in hospital; and safe and sustainable local and regional hospital services for patients, the population of the Mid-West, and for staff.

Setting the scene

The Health Service Executive has already laid out its future strategies for Ireland's Primary, Community & Continuing Care services¹, ambulance services² and acute hospital services³, and is currently developing a new programme to align laboratory medicine services with the new clinical strategies.

These strategies are now proceeding to implementation through the 2007-2010 HSE Transformation Programme⁴. They aim to substantially improve the care of all citizens by aligning the health services in Ireland with recognised international best practices.

The HSE is now seeking to understand how these strategies should be rolled out to the health services across the Mid-West.

The HSE approach

Since its inception, the HSE has embarked upon a nation wide programme of health reforms to move the current health and social services towards international standards of care:

- The PCCC strategy pre-dated the HSE and was launched in 2001. There is a national implementation programme to provide on average one new primary care team for every 10,000 of the resident population. In reality, due to the different catchment populations and communities for which PCCC services would be provided, this would result in putting in place some 600-1,000 primary care teams by 2011;

¹ Primary Care: A New Direction. Quality and Fairness – A Health System for You, Health Strategy, Department of Health and Children, 2001.

² The strategy for the national ambulance service is currently in development by the HSE.

³ Improving Safety and Achieving Better Standards: An Action Plan for Health Services in the North East. A report of the Health Service Executive. Teamwork Management Services Ltd., 2006.

⁴ Transformation Programme 2007–2010, Health Service Executive, 2006.

- The ambulance service is now being reorganised into a national service. A new cadre of Advanced Paramedics is being developed, who are skilled in urgent assessment and resuscitation. This development overcomes the problem of the traditional 'golden hour', the time within which a patient in a critical condition needs to reach an A&E service and start the resuscitation to save their life. In effect, resuscitation will start immediately, in the home or at the roadside; and
- The HSE strategy for acute services was developed in 2006, following Teamwork's independent review of acute hospital services in the North East. The new strategy specifically uses recognised international best practice standards in acute and community care as its foundation.

The HSE has also described a clear pathway to implementation for these and other related strategies through its 2007-2010 Transformation Programme. This sets out the HSE's purpose 'to enable people to live healthier and more fulfilled lives'.

The vision is that by 2010 'everybody will have easy access to high quality care and services that they have confidence in and staff are proud to provide'. Six service transformation priorities have been identified which encompass 13 different transformation programmes.

The six service transformation priorities are to⁵:

- Develop integrated services across all stages of the care journey so that people can easily get into, through and out of the health and social care system;
- Configure PCCC services so that they deliver optimal and cost effective results, and in so doing make it easy for people to access a broad spectrum of services through their local primary care teams;
- Configure hospital services to deliver optimal and cost effective results so that people will be able to easily and rapidly access high quality acute care through designated centres of excellence;
- Implement a model for the prevention and management of chronic illness so that people receive high quality care and positive clinical outcomes from comprehensive and integrated care in their communities and designated care centres;
- Implement standards-based performance measurement and management throughout the HSE so that people can be confident that they will receive high quality care measured against transparent standards; and
- Ensure all staff engage in transforming health and social care in Ireland and ensure their work has a direct impact on, and contributes to, the overall transformation of health and social services.

⁵ National Service Plan 2007, Health Service Executive, January 2007.

In summary, these national transformation priorities are setting a direction of travel in which more care is provided at home or as close to home as possible, and that when patients do need acute hospital services, they will receive high quality care that is integrated with local services and provides best value.

Review of acute hospital services in the Mid-West

The HSE commissioned Horwath Consulting Ireland Ltd and Teamwork Management Services Ltd to undertake a review of acute hospital services in the HSE Mid-West, using recognised international best practice as the comparator. We were asked to conduct our study on an independent 'fact-finding' basis, as opposed to undertaking a process of 'formal' consultation with all interested parties.

Our primary objectives of this review, therefore, are to:

- Assess the appropriateness or otherwise of current acute hospital services in the Mid-West;
- Define what these services need to look like in the future if they are to be in a position to deliver services in line with international best practice standards;
- Determine the optimal supporting governance structure for these acute services; and
- Draw up an action plan to move safely from today's model of care to the best practice model of care.

Review of PCCC and its interface with acute care

To ensure full integration of the acute and the community aspects of the HSE Transformation Programme, the original brief was extended to examine those elements of the PCCC services that directly relate to the acute hospital sector. We are now also required to report on:

- Estimating the future resources that PCCC will need if they are to reach their full potential for helping patients avoid acute admission to hospital or be safely discharged from hospital at an earlier stage in their recovery; and
- Identifying the PCCC actions required to achieve their full potential, and integrating these actions into the overall action plan for delivering the new strategy for acute services in the Mid-West.

Our understanding of the current acute services in the Mid-West has been informed by familiarisation visits to all existing hospitals delivering acute care, by fact-finding interviews with a range of relevant healthcare bodies and organisations, by demographic and hospital discharge (HIPE) data for patients resident in the Mid-West and also those patients from outside the area using Mid-West hospitals, published healthcare reports, policy documents provided by the HSE, and by written submissions from the hospitals themselves and interested parties.

For the PCCC component of our review, our understanding was gained through a combination of planning meetings, workshops and visits to selected representative PCCC centres and community hospitals.

Our recommendations in this report therefore take into account:

- Our conclusions from our fact-finding programme, supplemented by the written submissions;
- Our latest studies into the evidence from international best practice;
- Our understanding that the HSE has already adopted a new acute healthcare strategy in line with international best practice and is currently proceeding to implementation, starting in the North East; and
- The assumptions and pre-conditions that need to be fulfilled in order to deliver the optimal configuration of acute hospital services.

We are pleased to take this opportunity to thank everyone who took part in this review for their constructive, open approach to the task in hand. Their support and contributions to our work are much appreciated.

We recognise that the detailed changes proposed are substantial and challenge current working practices. They are designed to have a far reaching beneficial impact for patients through the provision of safe, sustainable, cost effective and high quality services across all the service sectors, from pre-hospital to tertiary care.

In the next section, we describe why and how the future clinical models of acute and community care are being developed for Ireland.

Understanding the new clinical model of care

In this section, we describe: the global drivers for change; the consistent international response to these pressures; the resulting new clinical model of acute care, benchmarked to recognised best practice standards; and how this acute model relates to, and integrates with, the new model for local primary and community care.

The global nature of the drivers for change

Globally, many different countries and health care systems have recognised the need for fundamental change in the way health services are presently delivered in order to respond to a number of common severe pressures and drivers for clinical change^{6 7 8 9}, including:

- **The need to incorporate the rapidly increasing expansion in healthcare knowledge and expertise into normal clinical practice;**
- **The need to keep pace with demographic changes, in particular, the rapid growth in the health and social needs of the elderly;**
- **The impact of patient knowledge, demands and their rising expectations;**
- **The need to incorporate tough new infection control strategies to drive down the risks of exposure to healthcare associated infections through clinical service changes and updates in hospital design; and**
- **The enabling technologies to rapidly expand access to diagnostics and extend the boundaries of telemedicine.**

⁶ National Framework for Service Change in the NHS in Scotland. 'Drivers for change in Healthcare in Scotland'. National Planning Team, July 2005.

⁷ Common vision for the Canadian Health system, 2004.

⁸ Implementing the New Zealand Health Strategy, 2005.

⁹ Siegel, J.D. et al, 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, CDC Centers for Disease Control and Prevention, June 2007 (<http://www.cdc.gov/ncidod/dhqp/pdf/Isolation2007.pdf>).

What is ‘International Best Practice’?

Teamwork maintains a dynamic database of international developments in acute and community health services, updated on a regular basis. This information enables us to compare current health services against international standards. Our latest update at the time of this review is included in Appendix 5.

For the purposes of this review, we focused our attention on countries and health systems that have similar characteristics to Ireland in terms of health, economic status, urban and rural mix of services, population growth, environment, etc., namely Australia, New Zealand, Canada, USA, Scotland, Wales, Northern Ireland and England.

In practice, we found a strong consensus about how countries, including Ireland, are responding to the global drivers for change. We identified consistent strategies and core themes in routine use to bring about safe, sustainable clinical service improvement, changes that are commonly referred to and recognised as ‘International Best Practice’ standards of care.

The future clinical model of acute and community care described in this section is therefore a composite picture, derived from all the various individual elements of strategic service change that we know are happening today, somewhere, of changes in healthcare that are accepted as recognised international best practice and enable the delivery of an assured quality of care.

The emerging clinical model of care in Ireland

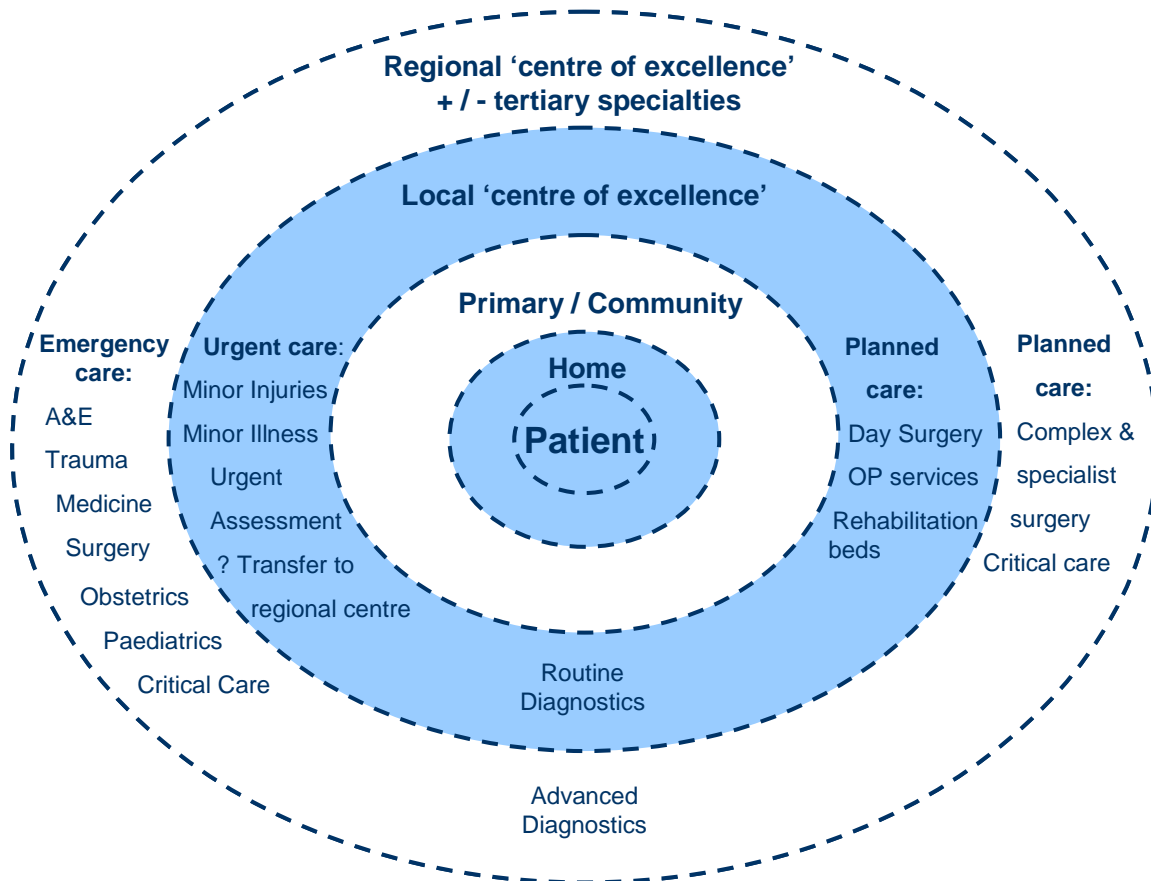
The common response, internationally and in Ireland as well^{10 11 12}, to the global drivers for change in healthcare, has been to develop a new clinical model that puts the patient at the centre of service planning and delivery, with the primary objective of delivering care ‘at home, or as close to home as is clinically safe and appropriate’, as illustrated in Figure 1.

¹⁰ Health Service Executive Service Plan, 2005-2008.

¹¹ Improving Safety and Achieving Better Standards: An Action Plan for Health Services in the North East. Report to the Health Service Executive, July 2006.

¹² A New Direction for Healthcare in the North East, Health Service Executive, July 2006.

Figure 1: The emerging new clinical model of acute and community care



The composite clinical model of care reflects the HSE's emerging strategy. Delivery of care is now being designed around what is best for the patient, not what satisfies the requirements of the service, or an organisation, or its staff, or its estate.

In essence

The strategy is about developing a clinical network of acute and non-acute services, designed to international 'best practice' standards, such that:

- **Non-acute care** is delivered in local 'centres of excellence', responsible for ensuring that the whole population has easy access to a wide range of services for primary care, community care and the investigation and management of most 'routine' conditions; and

- **Acute care** is delivered in a single, regional 'centre of excellence', responsible for managing the more complex conditions, the ones that need particular clinical expertise, continuous medical supervision and the support of critical care, so that patients have the best clinical outcomes from having access to safe, high quality 24/7 acute care.

The patient at home

The vast majority of patients will be managed away from the traditional acute hospital setting, that is:

- The patient is at the centre of the model, with services being focused on helping patients to 'self care' and on delivering much more management 'at home or as close to home as possible'; and
- The patient is supported by an integrated pre-hospital primary and community service (Primary Care Teams, general practice, ambulance service, etc) operating a comprehensive family of programmes for emergency response / care, admissions avoidance, chronic disease management, health promotion, elderly care, mental health, rehabilitation, etc.

The new emergency capabilities of the ambulance service

From the patient's point of view, the ambulance strategy is focused on ensuring that anyone presenting as a critical emergency has prompt 'life saving' treatment, delivered by an Advanced Paramedic (AP), a new member of the front-line workforce in the ambulance service. The patient benefits from the AP:

- Being specifically trained to carry out urgent clinical assessment and start emergency resuscitation in the patient's home, or at the roadside;
- Having direct tele-medical links with the appropriate specialty duty team at the regional 'centre of excellence', to get expert advice and to alert the service to receive the patient; and
- Having direct access to an air ambulance transfer to the regional 'centre of excellence', if the emergency occurs in a more remote or rural setting, or the patient is in a critical condition.

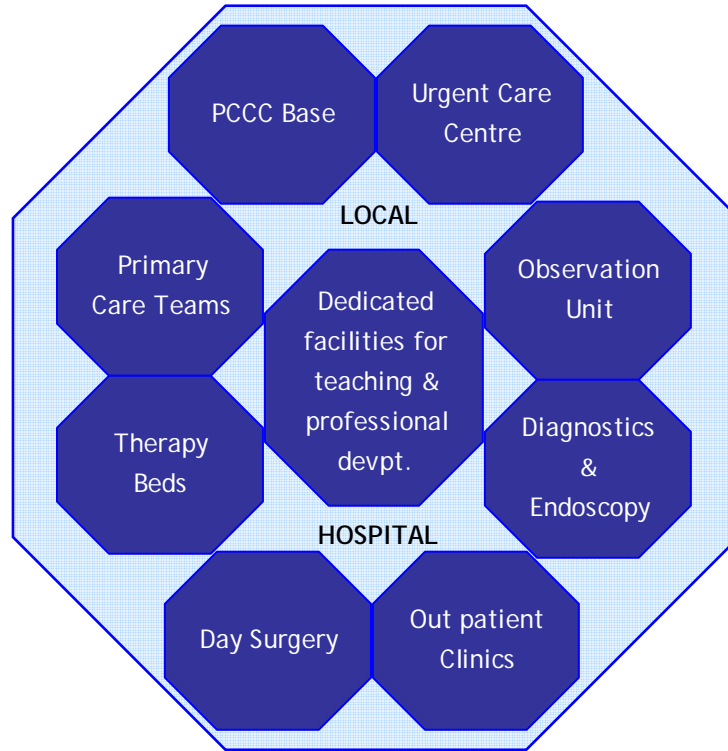
The local 'centre of excellence'

The patient and the pre-hospital services are further supported by their local 'centre of excellence', serving relatively small catchment populations ranging from 50,000 to 150,000 people, providing a wide range of services. Depending upon the local health needs, and reflecting that network services will be much more integrated in the future, this includes an option for the GP Out-of Hours service to also be located in the local 'centre of excellence', close to the diagnostic and urgent care service. These services are likely to include:

- A base for PCCC teams and services;
- A base for the GP Out-of-Hours service;
- An Urgent Care Centre (UCC), open 12 hours per day, 7 days a week, for adults and children, delivering, once fully established, a minor injuries service; minor illness service; and an observation area for urgent clinical assessment and decision-making with regard to whether the patient needs transfer to the regional 'centre of excellence';
- A full range of routine diagnostics, including plain X-ray, ultrasound, CT, cardiac tests, respiratory tests, Point-of-Care Tests (POCT), etc;
- Nurse and therapy led beds (for rehabilitation, step up and step down care);
- Outreach services, delivered by the specialty teams from the regional hospital, namely:
 - Out-patient clinics;
 - A comprehensive day surgery service, supported by all specialties;
 - Endoscopy investigations, including gastroscopy, sigmoidoscopy, bronchoscopy, and flexible cystoscopy; and
- Some centres, if justified by the size and nature of the population they serve, may provide additional services, such as day chemotherapy, community midwifery and home birth service, and chronic renal dialysis.

Conceptually, the local centre would be a family of complementary services appropriate to the size of the population it serves. The likely services and 'schedule of accommodation' is illustrated in Figure 2. This includes dedicated facilities for teaching and professional development.

Figure 2: The likely services and ‘schedule of accommodation’ in the local ‘centres of excellence’



For the local 'centre of excellence' to deliver patient-centred, seamless care, the design of the emerging clinical model needs to ensure that full functional, and preferably physical, integration is facilitated between all staff, whichever actual organisation is responsible for that element of the service.

It also needs to be able to access the expertise of the regional 'centre of excellence', as and when necessary, through excellent clinical communications, including telemedicine, tediagnosics and telecare.

The regional 'centre of excellence'

The minority of the population that needs more complex planned or emergency care will be managed in one designated acute hospital for the 'region'¹³ by expert clinical teams, available 'round the clock' so that patients have continuous, unrestricted access to an assured, high quality level of care, including:

- General medicine & sub-specialties;
- General surgery & sub-specialties;
- A&E, including a helipad for rapid air ambulance transfer;
- Trauma;
- Cancer/oncology;
- Obstetrics & Midwifery;
- Paediatrics;
- Critical care (Level 3 adult critical care, Level 3 neonatal critical care and Level 2 paediatrics);
- Anaesthesia and pain management service;
- Specialist acute psychiatry, including children and young people, forensic and intensive therapy unit; and
- Dependent upon the national programmes for tertiary services, the regional hospital may also deliver some tertiary level specialties.

The assumptions

The future clinical model of acute care necessarily has to be based upon a set of assumptions being in place, in preparation for delivering the optimal workforce, size and configuration for acute healthcare services in the future.

¹³ 'Region' in this context refers purely to the minimum catchment population of 350,000 to 500,000 recognised as generating sufficient workload for an acute centre of excellence to deliver sustainable, consultant-led, 'round the clock' high quality care.

Precondition 1: There must be a critical mass of medical workforce and workload in order to deliver an assured quality of acute care

All strategic developments have centred on the need to maximise access to local services for as many people as possible while at the same time providing assured, high quality care to the much smaller number of patients who need more expert, complex management. Providing the infrastructure for this more complex management means bringing together a critical mass of medical workforce teams for the acute core services and providing them with a matching critical mass of appropriate, complex workload to foster a combination of job satisfaction, high quality care and continued development of these skills and expertise. Critical mass is only achieved by delivering these services on a centralised, 'regional' basis. In practice, a balance is reached between workforce and workload when the 'region' refers to a minimum catchment population of 350,000 to 500,000.

These clinical expert teams must be able to provide continuous, assured, high quality, 'round the clock' acute care i.e. must be able to offer immediate access to an available, alert, duty consultant whenever necessary. This means there needs to be at least eight full time members on the team, to share out the workload and the time commitment in a manner that is equitable, appropriate and compliant with the European Working Time Directive. The minimum of eight also applies to the least number needed on each layer of the medical staffing shifts and rotas.

It is a fundamental assumption, therefore, that it is the matching of medical workforce numbers and expertise with the workload demand, supported by an optimal physical and functional configuration, that paves the way for that service to be able to deliver an assured quality of acute care 'as the norm' and in line with international best practice standards.

In turn, this assumption for acute care is based upon the second fundamental assumption that all elements of the new strategies for maximising access to local services through pre-hospital services e.g. Ambulance, AP, ANP, have first been fully implemented.

The critical mass relationship is of course applicable to all services, not just the acute services.

Precondition 2: A fully effective pre-hospital service must be in place

An essential element of improving services and safety, and ultimately of securing the optimal configuration for the regional 'centre of excellence', is to have a fully effective pre-hospital system in place, one that inspires confidence in all potential users of the service, knowing that they will be safely protected from unnecessary referral, admission, or from staying too long in the acute hospital, except for clear and compelling acute clinical problems needing active consultant specialist management.

The 'assumptions' for pre-hospital services are that:

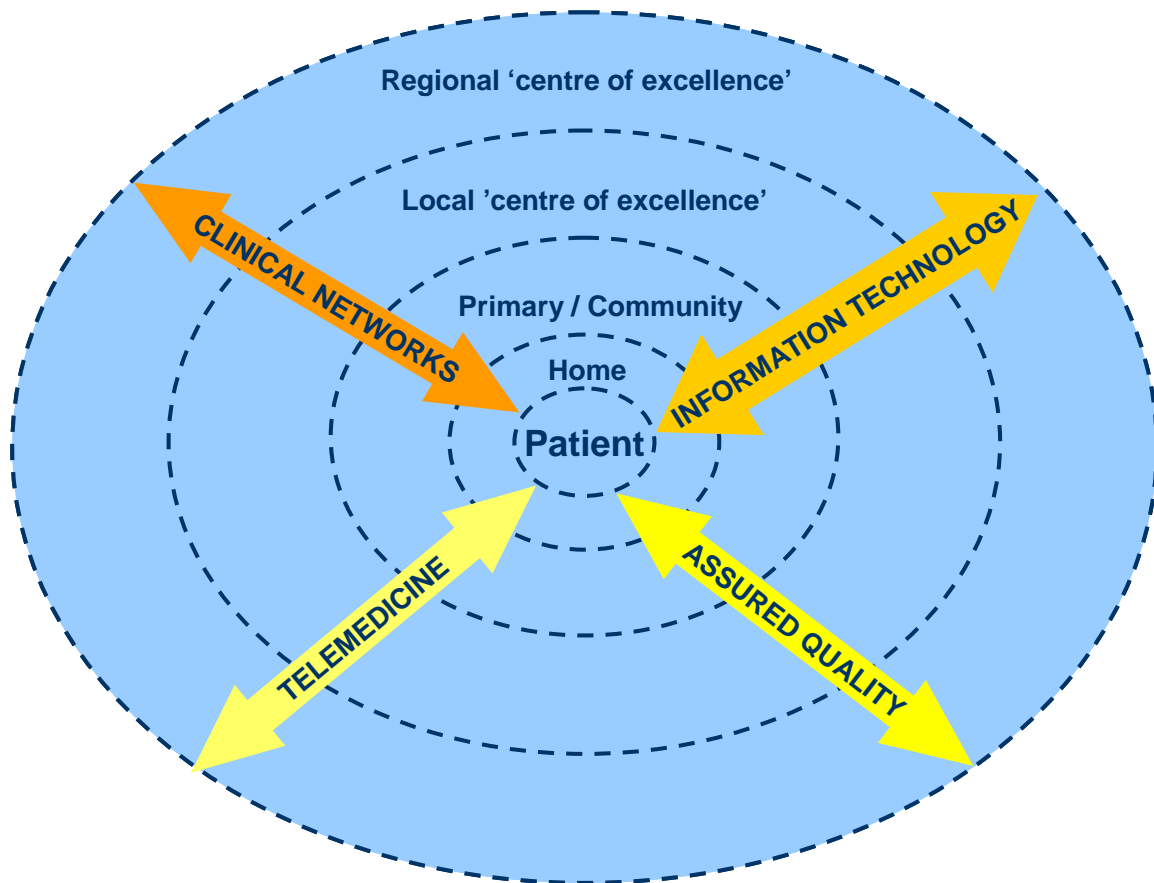
- The PCCC service has been resourced, developed, and working to recognised international best practice standards for the management of the anticipated demand, both during working hours and out-of-hours, for admissions avoidance and earlier supported discharge for adults and children;
- The ambulance service has fully developed its mobile emergency response capabilities, by developing and strategically deploying its Advanced Paramedic (AP) workforce and optimising the air ambulance service across the region;
- There is an Advanced Nurse Practitioner (ANP) and Clinical Nurse Specialist (CNS) workforce in place, leading the delivery of the network of Urgent Care Centres, integrated with local APs and duty GP teams and the single regional A&E service; and
- There is effective partnership working across all elements of the pre-hospital and hospital systems.

Precondition 3: The infrastructure for acute care must be in place

The future clinical model of acute care is designed around a robust infrastructure, as illustrated in Figure 3 below, with four key enablers for the provision of an assured quality of care:

- Clinical networks, led by formal clinical teams and teamworking, responsible for managing and coordinating care for that specialty or category of care across the region, including emergency care, planned care, cancer, critical care, obstetrics, paediatrics, radiology, pathology, etc;
- Assured quality, through systematic clinical governance and peer review, supported by dedicated, 'state of the art', undergraduate and post-graduate teaching and research facilities for all specialties;
- Clinically relevant information technology and communications (unique patient identification, electronic records, access to diagnostic test results, real time/store and forward transfer of clinical images, teleconsultation, etc); and
- Telemedicine and associated technologies.

Figure 3: The infrastructure: clinical networks, assured quality, information technology and telemedicine



In the next section, we use the emerging clinical model of care to determine the 'gap' between today's acute hospital services in the Mid-West and the future services needed to deliver according to international quality standards.

The 'gap' between today's acute services and the emerging future model

KEY ACHIEVEMENTS

The Mid-West has already made good progress towards best practice through the development of regional services for obstetrics, paediatrics, cancer/oncology, haematology, nephrology and orthopaedics.

KEY 'GAPS'

Standard 1: Acute emergency and complex planned care is provided in a single regional 'centre of excellence', serving a minimum population of 350,000 to 500,000.

Not met - the present system has 3 HSE hospitals and 1 voluntary hospital providing acute general care for the Mid-West population of 360,000.

Standard 2: Acute care in core medical and surgical services is delivered in teams of at least 8 consultants in order to provide patients with access to safe, high quality 'round the clock' care.

Not met – the present system of running 4 acute hospitals means that each team in each hospital lacks the critical mass of workforce and workload needed to meet international quality standards.

CONCLUSION

The core specialties of general medicine, general surgery, A&E and critical care are too fragmented, carry increased risks for patients and staff, and are not sustainable in their present form.

In the previous section, we described the argument for the acute regional 'centre of excellence' and the importance of critical mass and size of population in determining how best to deliver an assured, high quality service. We now use these strategic criteria to understand the patient benefits and risks in the current acute hospital services in the Mid-West.

The evidence from international practice on how best to systematically achieve the delivery of high quality clinical outcomes includes to:

- Concentrate the expert skills and competencies required into regional 'centres of excellence';
- Manage patients according to integrated care pathways that reflect international standards;
- Use automatic peer review to continually assess the quality of patient care;
- Ensure that service quality is monitored and reported through a system of clinical risk management and clinical governance;
- Ensure that staff stay fresh and patients stay safe, using working patterns that comply with the European Working Time Directive;
- Provide close clinical supervision of junior medical staff; and
- Avoid the damaging effects of professional isolation.

All these elements of best practice mean that current acute services, being delivered with low numbers of consultant staff per specialty, are no longer viable or sustainable.

Patient benefits in the current acute service configuration

In the Mid-West, patients are already benefiting from the move towards centralisation and previous regionalisation of some specialties, an important step in the provision of better, safer and more sustainable services. For example:

- Obstetrics & midwifery services are centralised in the Mid-Western Regional Maternity Hospital (St. Munchin's). However, there are well recognised residual risks to mothers as the hospital is not co-located with adult critical care support services. Furthermore, there is no on-site paediatric cover for babies which poses further risks. Plans are now agreed for a final move of the service to the Regional Hospital Dooradoyle;
- Orthopaedics operates a regional trauma centre at Dooradoyle and a regional elective centre at St. Nesson's Orthopaedic Hospital, Croom; and
- The regional hospital, Dooradoyle, is also recognised as providing regional services for paediatrics, urology and a range of tertiary services, including nephrology, haematology and cancer / oncology, as one of eight major specialist cancer centres.

The current system for acute services generates substantial risks to patients and staff

In essence, the present system means that the resources for four of the core acute specialties in the Mid-West - A&E, general medicine, general surgery and critical care, are too fragmented.

Presently, the resources are too diluted, dispersed across four hospitals and providing four small independent services. This circumstance is not satisfactory for staff and exposes patients to unnecessarily increased levels of clinical risk.

By and large, and with the specific exception of A&E, there are already enough consultants in the system. If grouped together on one site, they could provide systematic, safe, continuous, sustainable, high quality care to recognised international standards.

In relation to assessing clinical performance and checking upon the quality of patient care, there is presently no system of peer review or monitoring or reporting upon performance through clinical audit and clinical governance.

Particular concern was expressed about increased risks to trauma patients due to unnecessary delays in ambulance transfers to the regional trauma centre.

We recommend that consultants are invited to conduct regular peer review within their specialty and that the HSE develops a Clinical Governance strategy to openly and transparently assess the degree of compliance of service quality and patient outcomes against international standards and practice.

The present system has grown up around the concept that delivering **acute care** across several separate hospital sites serving small populations provides a satisfactory quality of patient care. In the Mid-West, therefore, acute general hospital services are presently provided across four stand-alone hospital sites, all within reasonable travelling distance of each other, namely:

- The Mid-Western Regional Hospital Dooradoyle;
- The Mid-Western Regional Hospital Ennis;
- The Mid-Western Regional Hospital Nenagh; and
- St. John's Hospital, Limerick.

However, the present service configuration can no longer deliver today's quality standards and needs to change fundamentally in order to be able to deliver international best practice. In other words, the present health system as delivered today is itself a key source of increased patient risks. These risk factors are not new, they are not subtle, and are already well known. They create circumstances that:

- Leave patients exposed to an environment where there is an increased risk of something going wrong¹⁴;
- Leave staff exposed to lack of consultant supervision; and
- Leave the quality of clinical performance unchallenged, in the absence of any system of regular audit, peer review and clinical governance.

In essence, acute emergency care in the Mid-West is too fragmented, such that the clinical resources, consultants, nurses and on-call staff, probably sufficient if grouped together on one site, are too diluted and overstretched across the four sites to provide safe, continuous, sustainable, high quality care to international standards.

Consultants and hospital managers, individually working hard to deliver a satisfactory quality of acute care, are exposed by this fragmentation, as are the patients, who rightly expect to receive high quality care in hospital. Consultants are routinely working in very small teams, or even single-handedly, patently inadequate to sustain an acute 24/7 service. There is not enough workload within and between the four sites to justify more consultants. These circumstances place excessive stress upon the staff, and expose patients to an unacceptable level of clinical risk.

We now assess the sustainability of today's core acute services across the Mid-West, focusing on the high impact specialties of general / elderly medicine, general surgery, orthopaedics, obstetrics and paediatrics.

¹⁴ There was a specific area of heightened patient risk highlighted during our fact finding interviews. Although there is a designated regional trauma centre for the Mid-West, this does not mean that trauma patients are automatically referred there directly. The ambulance service still continues with the old habit and practice of taking trauma patients to the nearest 'A&E' department, even when it is known that only the Dooradoyle site operates a trauma service. This has been identified as an avoidable high risk to trauma patients by the regional trauma consultants, in that definitive trauma management is often significantly delayed, with endangerment to the patient's life.

General medicine

The present arrangements for general medicine services are too fragmented and are not sustainable into the future.

There are already enough general medicine consultants in the system if the service was located in the regional 'centre of excellence'.

Table 1: General medicine: consultants, non-elective activity and catchment population

Component	Dooradoyle	St. John's*	Ennis	Nenagh	Total
Baseline >>>					
Population	183,863		110,800	65,988	360,651
Beds	117	43	58	44	262
Consultants >>>					
Full time (General)	4	0	2	3	9
Full time (Elderly Medicine)	1	0	0	0	1
F/t split site (wte)	2.0	2.2	0.6	1.5	6.3
Part time posts (wte) **	1.4	0.2	0.2	0.2	1.9
Total (wte)	8.4	2.4	2.8	4.6	18.2
No. of consultant sessions	92	26	31	51	200
Non-elective Inpatient activity >>>					
Admissions	6,164	1,168	3,644	2,718	13,694
Average length of stay	8.4	9.3	6.8	6.8	7.7
Daily average admissions	16.9	4.7	10.0	7.4	39.0

Source: HIPE data, 2005 and individual hospital submissions for the number of consultants validated by the HSE NHO Mid-West.

Note: * The emergency service at St. John's Hospital is a Mon-Fri, 8am to 8pm service only.

** These consultants may have commitments either at non-acute hospitals within the Mid-West or at hospitals outside the HSE Mid-West area and therefore they are regarded as part-time within the Mid-West. In addition, there are some clinicians who have academic sessions and are thus regarded as part-time for clinical purposes.

Analysing the information for 2005 (Table 1) against the criteria for the emerging clinical model of care leads to the following conclusions:

- None of the hospitals, on their own, has a catchment population large enough to qualify as an acute regional centre;

- However, if there had been one acute regional general medicine service, there would have been more than enough consultants (10 full time + 8.2 part time) to manage an average of 39 patients per day, from a population of 360,000, and the consultant workforce and workload would meet the critical mass criteria for high quality standards of care;
- High quality care is also based upon consultant availability, with no other commitments when on emergency duty and continuity of care. The common approach of consultants having either split site or part-time appointments (8.2 wte out of 18.2 across the Mid-West) is satisfactory for delivering planned care sessions, **but substantially compromises the sustainable provision of continuous consultant emergency care;**
- The present services at Ennis, Nenagh and St John's are not sustainable, either in terms of the number of consultants or volume of workload:
 - St. John's hospital has no full time consultant and only 2.4 visiting wte to run the service;
 - Ennis has only 2.0 wte full time consultants and admits an average of only 10 patients per day;
 - Nenagh has only 3 wte full time consultants and admits an average of only 7.4 patients per day; and
- At Dooradoyle, although there are 8.4 wte consultants, only 5 are full time on site, while 2.0 wte have split appointments, and 1.4 wte work part-time. As already stated, the element of consultant resources that are dispersed substantially detracts from consultant availability and continuity of consultant care needed for emergency patient management.

General surgery

The Mid-West has sufficient consultant surgeons and anaesthetists to deliver emergency general surgery in line with international standards of practice. However, this is not happening at present, as these consultant resources are excessively dispersed across 4 separate general surgery services, such that patients are exposed unnecessarily to increased clinical risks.

We recommend, in the interests of patient safety, that emergency general surgery is delivered as one regional service, based in Dooradoyle, as soon as possible.

Table 2: General surgery: consultants, non-elective activity and catchment population

Component	Dooradoyle	St. John's*	Ennis	Nenagh	Total
Baseline >>>					
Population	183,863		110,800	65,988	360,651
Beds	80	36	24	26	166
Consultant Surgeons >>>					
Full time	2	0	2	1	5
F/t split site (wte)	3.4	2.3	0.4	0.9	6.9
Total (wte) surgeons	5.4	2.3	2.4	1.9	11.9
No. of consultant sessions	59	25	26	21	131
Consultant Anaesthetists >>					
Full time	7	1	2	2	12
F/t split site (wte)	6.2	1.7	0.7	0.7	9.4
Total (wte) anaesthetists	13.2	2.7	2.7	2.7	21.4
No. of consultant sessions	145	30	30	30	235
Non-Elective Inpatient activity >>>					
Admissions	2,294	351	1,329	1,249	5,223
Average length of stay	6.7	6.6	5.2	4.8	5.8
Daily average admissions	6.3	1.4	3.6	3.4	14.8

Source: HIPE data, 2005 and individual hospital submissions for the number of consultants validated by the HSE NHO Mid-West.

Note: The emergency service at St. John's Hospital is a Mon-Fri, 8am to 8pm service only.

Analysing the information for 2005 (Table 2 above) against the criteria for the emerging clinical model of care shows the following.

For Emergency Care

- There are not enough consultant surgeons or anaesthetists to deliver sustainable 24/7 services in the present fragmented service arrangement:
 - Ennis has 2 full time consultant surgeons and 2 full time anaesthetists to run a 24/7 service;
 - Nenagh has 1 full time consultant surgeon and 2 full time anaesthetists to run a 24/7 service;
 - St. John's has no full time surgeon and 1 full time anaesthetist to cover its weekday service; and
- There are very low rates of daily average admissions: 6.3 at Dooradoyle, and only 3.6 at Ennis; 3.4 at Nenagh; and 1.4 at St John's (weekday service only).

Conclusions

- Presently, the general surgery resources are dispersed, attempting to deliver 4 separate general surgery services across the Mid-West;
- This fragmentation means that the 3 services at Ennis, Nenagh and St. John's do not have enough consultants to maintain a safe service for patients;
- The 3 services do not have enough workload to justify any more consultants;
- The services at Ennis and Nenagh do not have enough workload to justify the HSE keeping these theatre services available on a 24/7 basis; and
- If there had been a single regional general surgery service, there would have been enough surgeons and anaesthetists (11.9 surgeons + 21.4 anaesthetists), enough to manage a daily average of 14.8 emergency surgical admissions and to meet the critical mass criteria for the delivery of high quality care to international standards.

Recommendations

- We strongly recommend that the emergency surgery service is regionalised as soon as possible at Dooradoyle to reduce the risks to patients and raise the quality of care to international standards; and
- We strongly recommend the initial rationalisation of the emergency out-of-hours arrangements for theatres between Dooradoyle, Ennis and Nenagh.

For Planned Care

Major planned surgery should not be undertaken on an occasional basis or dispersed across multiple sites. It is recognised that the best clinical outcomes are achieved by such surgery being undertaken regularly, by teams specialising in that aspect of surgery.

We recommend, in the interest of patients having the best clinical outcomes, that major planned surgery is delivered as one regional service.

With the present fragmentation of surgical services across four sites, one of the other issues is where major planned surgery is undertaken.

It is generally acknowledged that individual units carrying out low numbers of major operations i.e. not undertaking such surgery on a regular weekly basis, are associated with poorer quality clinical outcomes. Cancer surgery is a good indicator of this critical mass argument. Table 3 below summarises the 2005 experience, which indicates that many cancer operations were undertaken on an occasional basis on all sites.

Overall, there were 812 cancer procedures undertaken across the four acute hospital sites equating to some 16 procedures a week across the Mid-West.

Table 3: Summary of Cancer Procedures in HSE Mid-West

Major Cancer Procedure	Dooradoyle	Ennis	Nenagh	St. John's	Total
Breast	41	17	25	188	271
Cervix	8			9	17
Colon	73	27	20	74	194
Oesophagus	2	5	14	7	28
Ovary	32			7	39
Prostate	51	3	13	11	78
Rectum, Recto-sigmoid & Anus	28	11	10	27	76
Uterus	44	2		63	109
Total	279	65	82	386	812

Source: Analysis of HIPE data, 2005.

Best practice is to reduce the spread of surgeons who undertake this category of surgery by establishing sub-speciality teams to manage them, as reflected in the reorganisation of cancer services that is now well under way in many countries^{15 16 17 18 19 20 21}, including Ireland^{22 23}.

¹⁵ National Service Framework for Cancer Services. Department of Health, UK, 2001.

It is our understanding that since 2005, with the consolidation of cancer/oncology services at the Dooradoyle site, cancer surgery is increasingly centralised e.g. all breast surgery in the Mid-West is now centred on two sites, namely Dooradoyle and St. John's. This is a welcome trend in line with other cancer strategies.

Finally, the generally low volumes of planned inpatient surgery carried out across the sites in 2005 raises questions about clinical viability and quality of outcomes. This is particularly relevant to Ennis (292 procedures in the year) and Nenagh (266 procedures in the year).

Recommendation

We recommend that the HSE formally requires the centralisation of all major planned surgery in the appropriate sub-specialty regional service.

¹⁶ New Zealand Cancer Control Strategy. Ministry of Health and Cancer Control Trust, August 2003.

¹⁷ Cancer in Scotland. Action for change. HDL(2001)54 Executive Letter.

¹⁸ Canadian Strategy for Cancer Control: Treatment Working Group, Final Report, January 2002.

¹⁹ Optimising Cancer Care in Australia, A consultative report prepared by the Clinical Oncological Society of Australia, The Cancer Council Australia and the National Cancer Control Initiative, February 2003.

²⁰ Skinner KA et al. Breast Cancer: Do specialists make a difference? *Annals of Surgical Oncology* 10:606-615, 2003.

²¹ European Strategy for Breast Cancer. European Parliament calls for breast screening and breast surgery centres, 2003. (http://www.epqbc.org/pdf/pressroom/press_2.pdf).

²² A strategy for Cancer Control in Ireland, National Cancer Forum, 2006.

²³ Establishment of Managed Cancer Control Networks and Designation of Eight Cancer Centres, National Cancer Control Strategy, 2007.

Adult critical care

There is only one full time intensivist for adult critical care in the Mid-West and four units undertaking adult critical care.

It is not possible to maintain the appropriate level of trained staff needed to provide a satisfactory quality of critical care across all sites and at all times. This exposes patients to unnecessarily increased clinical risks.

We strongly recommend, in the interests of patient safety, that prompt action is taken to ensure that all adult critical care is delivered from one regional adult critical care unit and one regional coronary care unit.

As shown in Table 4 below, there are a total of 34 beds available for adult critical care in the Mid-West, split across four hospitals, Dooradoyle, Ennis, Nenagh and St. John's. In 2005, they had a total of 1,560 admissions, two thirds of which represented general medicine and coronary care patients.

Table 4: Adult Critical Care Services

Hospital	ITU/CCU Beds	Total Admissions (incl. CCU)	General Medical & Coronary Care Admissions	% General Medical & Coronary Care Admissions
Dooradoyle	20	865	494	57.1%
Ennis	6	598	505	84.4%
Nenagh	5	No data	No data	No data
St. John's	3	209	140	67.0%
Total	34	1,672	1,139	68.1%

Source: Analysis of HIPE data, 2005, individual hospital submissions and site visits.

Note: Data relating to St. John's Hospital has been provided separately from the HIPE data and is based on information recorded within its manual ITU register.

Analysing the information for 2005 against the criteria for the emerging clinical model of care leads to the following conclusions:

- Operating four stand-alone critical care units inevitably means that each is competing for scarce critical care staffing, expertise and resources, an arrangement that is inherently unsatisfactory, unsustainable and exposes patients to increased clinical risk;
- There are not enough intensivists, with only one single full-time intensivist in the Mid-West on the Dooradoyle site. Most of the critical care management and cover is provided by the consultant anaesthetists as part of their general duties;
- Three of the four units are small, with 6, 5 and 3 critical care beds in Ennis, Nenagh and St. John's, respectively; and

- There is a dedicated coronary care unit consisting of 7 beds on the Dooradoyle site with Ennis and Nenagh also accessing this facility.

Conclusion

- The present fragmented arrangements for adult critical care is unsatisfactory, with patients exposed to increased clinical risks due to the dispersed nature of the service.

Recommendation

- There should be only one regional, well resourced, general adult critical care service for the Mid-West; and
- Similarly, only one regional, well resourced, coronary care unit.

Accident & Emergency

There are only three A&E consultants across the Mid-West.

There are four stand-alone A&E services, mostly delivered without any consultant supervision. In addition, the A&E services at Ennis and Nenagh are staffed by external, non-HSE, non-specialist doctors recruited from overseas, with no particular qualification in A&E medicine.

The three services at Ennis, Nenagh and St. John's are not viable, cannot be considered as true A&E services and lack any critical mass criteria for them to become sustainable A&E services in the future.

The present system is unsustainable and we strongly recommend the HSE to take prompt action to reduce the current levels of clinical risk and improve patient safety.

Emergency A&E care should be provided from one regional centre for the Mid-West, appropriately resourced. Urgent care, for minor injuries and illness, should be provided by the network of local 'centres of excellence'.

When considering what constitutes a viable A&E service, it is helpful to refer to some of the evidence base, for example:

- In 1996, the Audit Commission, UK²⁴, recommended that there should be fewer, larger A&E departments, each treating at least 50,000 patients each year in order to maintain quality of care.
- In 2004, the Royal College of Surgeons of Ireland calculated future surgical services on the basis of an Emergency Department seeing 70,000 attendances each year²⁵;
- In 2005, the British Association of Accident & Emergency Medicine (BAEM) and College of Emergency Medicine²⁶ categorised emergency departments according to their annual workload of **new** attendances and indicated that a large hospital would have a minimum of 70,000 to over 100,000 attendances per annum;

²⁴ By Accident or Design - Improving A&E Services in England and Wales. The Audit Commission report, 1996.

²⁵ The Future of Surgical Specialties in Ireland, Royal College of Surgeons in Ireland, April 2004.

²⁶ The Way Ahead. British Association of Emergency Medicine and The College of Emergency Medicine 2005.

- The BAEM support the development of Urgent Care Centres where appropriate, staffed by NCHDs (career grade medical staff) and emergency nurse practitioners; and
- The Kerr report on the future of services in Scotland identified that some 60 to 80% of attendances did not require management within an A&E setting²⁷, supporting the argument for separation of minor conditions to Urgent Care Centres and GP duty teams, rather than attending A&E, which should be managing more major conditions.

Table 5: A&E Attendances and Consultant Staffing

Hospital	Total Attendances	Consultant Sessions	Consultant Staff (wte)
Dooradoyle	53,551	29	2.63
Ennis	21,345	3	0.27
Nenagh	13,329	0	0.00
St. John's	19,669	1	0.10
Total	107,894	33	3.00

Source: Hospital submissions, 2005.

Note: Consultant staff wte calculations based on 11 sessions for each wte consultant.

Analysing the information for 2005 (Table 5 above) against the criteria for the emerging clinical model of care for A&E services leads to the following conclusions:

- There are serious gaps in consultant staffing, with only 3 wte consultants for four A&E services, seeing an annual total of over 100,000 attendances;
[The BAEM recommends at least 9 consultants at that level of clinical activity, calculated on 1 consultant per 12,000 attendances to provide 24/7 cover]
- With over 50,000 annual attendances, only Dooradoyle meets the criteria for clinical viability, but has only 2.63 wte consultants;
- The workloads at Ennis, Nenagh and St. John's, ranging from 13,000 to 21,000, are too low for them to qualify as true A&E services and to be staffed accordingly. Their workload levels would make them suitable to be developed as nurse led Urgent Care Centres, providing minor injuries & illness services;
[There is already a Minor Injuries Unit service operational at St. John's Hospital which treats some 9,000 of the total 19,000+ attendances a year]
- Moreover, Nenagh has no consultant input to its A&E at all, while Ennis and St. John's both have nominal consultant cover and support, which is not sustainable;

²⁷ Building a Health Service Fit for the Future, NHS Scotland (2005).

- There are patently unsatisfactory A&E staffing arrangements at Ennis and Nenagh. The service is provided by external, non-HSE, non-consultant doctors, recruited from overseas on contract to a commercial medical recruitment agency. Concerns have been expressed in relation to the fact that although there is some consultant input to the services at Ennis, they operate independently, and there appears to be no measure of their quality of service delivery; and
- Overall, there are not enough consultants, and they are spread too thinly across too many sites to provide a satisfactory level of consultant supervision anywhere in the present system.

The bottom line is that the current services in the Mid-West have major practical difficulties in meeting basic standards, let alone international best practice standards.

Recommendations

We strongly recommend that the HSE takes prompt action to develop a specific programme to address these unsatisfactory arrangements, including:

- It would be prudent for the HSE to direct the affected units and their staff to sensibly limit the unfiltered emergencies that presently come to these small A&E units by:
 - Informing the public of the safety issues and announcing new access criteria and levels of treatment available;
 - Insisting that the ambulance service comply with current by-pass protocols to avoid these small A&E units, and to update the protocols as necessary according to the new access criteria;
- Announcing a programme of immediate, short and medium term actions to improve current services, pending full service reconfiguration;
- Confirm one regional A&E 'centre of excellence' at Dooradoyle, focused on managing the more major emergencies, and with a consultant recruitment plan to eventually establish a team of A&E Consultants sufficient for the provision of a 'consultant-led' 24 hour, 7 day a week service and compliant with the European Working Time Directive;
- Establish an Emergency Care Network for Adults and Children for the Mid-West, providing an integrated, seamless service, connecting all the professionals on emergency duty, whether General Practitioner, Advanced Nurse Practitioner, Community Nurse, the Advanced Paramedic and all the duty teams in the acute hospital specialties;

- Establish local Urgent Care Centres at Nenagh, Ennis, and St. John's, and possibly other sites, as the key local services of the Emergency Care Network. The Urgent Care Centres need to both relieve and complement the regional A&E centre by providing all the services across the Mid-West for minor injuries, minor illness and urgent assessment / observation to determine whether patients need to be referred to services at the regional centre. Access to Urgent Care should be at least available 12 hours per day, 7 days per week. Each UCC is led by an Advanced Nurse Practitioner and professionally accountable, as part of the Network, to the regional A&E Consultant team; and
- In the meantime, until implementation of the new service configuration is completed, put in place transitional support arrangements, in the form of additional temporary medical staffing for Ennis and Nenagh in particular to improve the quality of current services.

Other specialty services

Obstetrics & Midwifery

Obstetric services in the Mid-West are being relocated onto the Dooradoyle site from the current location at St. Munchin's Hospital. Table 6 provides a profile of the current service provision and Consultant Obstetrician and Gynaecologist sessions.

Table 6: Obstetric Services

Hospital	Births	Consultant Sessions	Consultant Staff (wte)
Dooradoyle		20	1.8
MWRMH	4,542	47	4.3
St. John's		10	0.9
Total	4,542	77	7.0

Individual hospital submissions provided for consultant staffing levels.

Note: Consultant staff wte calculations are based on 11 sessions for each wte consultant.

The obstetrics service is a good example of a satisfactory critical mass relationship between workforce, workload and population. It has seven consultants, operates as a single regional service and, with 4,500 births per annum, more than meets recognised international standards for the volume of deliveries needed for a high quality, sustainable service.

For example, the UK Royal College of Obstetricians and Gynaecologists guidelines²⁸ suggest that annual delivery rates greater than 3,000 ensure maintenance of clinical skills and competencies of all staff, and be able to support a neonatal intensive care unit.

Paediatrics

Paediatrics already operates as a regional service on the Dooradoyle site, where the consultant paediatric workforce is based.

Workforce modelling undertaken by the Royal College of Paediatrics and Child Health²⁹ in the UK has identified the need for between 8 and 10 consultants per rota to cover a unit with a consultant present on a 24/7 basis. Currently, the consultant paediatric service within the HSE Mid-West does not satisfy this requirement with 4 wte consultants.

²⁸ The Future of Obstetrics and Gynaecology in Scotland, Service Provision and Workforce Planning, Royal College of Obstetricians and Gynaecologists, December 2005.

²⁹ Paediatric Medical Workforce Model, Royal College of Paediatrics and Child Health, April 2001.

Also, examining how the paediatric surgical services (under 14 years) are provided, reveals that a significant proportion of paediatric surgical activity (9%) is undertaken by surgeons doing fewer than 50 cases per annum. In 2005, at the Dooradoyle site, there were 13 surgeons undertaking fewer than 50 cases with a further 17 surgeons undertaking 50 cases or more per annum. Concerns are also raised regarding the level of paediatric surgical work undertaken by individual consultants at Croom Hospital, Nenagh Hospital, and St. John's Hospital.

It is our understanding that the vast majority of paediatric surgery from the Mid-West is sent to the present national children's hospital at Our Lady's Hospital for Sick Children (OLHSC) Crumlin, Dublin. This is in line with international best practice which indicates a catchment population of some 3.5 to 5 million people for a viable and sustainable tertiary paediatric service³⁰. This is based on providing a critical mass of sub-specialist care which is the most important factor in delivering best outcomes for patients.

The existing national children's hospital is to be replaced by a new national paediatric hospital on the site of the Mater Misericordiae co-located with an adult teaching hospital³¹.

Urology

Presently, there is a single-handed consultant responsible for providing urology services across the Mid-West. There is also a general surgeon with a significant commitment to urology, some 0.8 wte (equating to some 9 sessions per week).

The current service is neither viable nor sustainable for a population of 360,000.

ENT

Presently there are only 3 wte consultant ENT surgeons to provide a regional service. This is not sustainable.

Ophthalmology

Presently there are only 3 wte consultant ophthalmic surgeons to provide a regional service. This is not sustainable.

³⁰ HSE: Children's Health First – International best practice in tertiary paediatric services: implications for the strategic organisation of tertiary paediatric services in Ireland, McKinsey&Company, 1st February 2006.

³¹ Report of the Joint Health Service Executive / Department of Health and Children Task Group to advise on the optimum location of the new national paediatric hospital, May 2006.

Clinical Governance

Consultants across the Mid-West have clinical autonomy in how they look after patients. They are not currently required to:

- Undertake regular clinical audit;
- Peer review the performance of their colleagues or their specialty as a whole;
- Use agreed care pathways to improve the overall quality of care; or
- Participate in clinical governance.

Presently, therefore, the health service operates by default. The system assumes that patients receive a satisfactory quality of care, and it does not systematically assess the level of quality of care.

Some progress is reported, through the efforts of the Health Information and Quality Authority (HIQA). It has an ongoing programme, operating at service level, to raise staff awareness of the need to measure clinical and organisational performance in relation to the quality of service delivery and clinical outcomes and to put a system in place to encourage monitoring and reporting.

Recommendations

We recommend that the consultants across the Mid-West are invited to set aside a regular session each month for the team to undertake internal peer review, examine the quality of care across the specialty, review compliance with agreed care pathways and agree further quality improvements in patient outcomes.

We recommend that the HSE develops a Clinical Governance strategy, designed to openly and transparently monitor that service quality and patient outcomes across both the local and regional 'centres of excellence' are satisfactory and meet international standards of best practice. The strategy also needs to accommodate the concept of networks and of integrated care being delivered in teams. It needs to work across organisations and individuals.

Effective clinical governance, ensuring that patient outcomes are optimised, depends therefore, for example, on the effective interaction between clinicians in different organisational units, some of them being HSE employees and others being GPs in private practice.

In making these recommendations, we naturally respect the need for the consultant's clinical autonomy to be protected. We also respect the need for:

- The patients to be much better informed and reassured that the service they are accessing has an effective system for measuring quality, that performance is objectively measured, that it is confirmed to be satisfactory and that any shortcomings are quickly identified and action is taken accordingly; and
- The organisation to know that clinical risk management is being effectively and proactively managed and that there is optimal use of resources;

Therefore, there is a need for consultants, at the same time as citing clinical autonomy as acting in the best interests of their patients, also to contribute to performance review, checking that the overall quality of their clinical and organisational working practices are in line with international best practice.

SUMMARY

The current system for acute hospital services disperses the resources across four hospital sites to deliver 4 stand-alone services, each serving the local population. This dilution generates substantially increased risks for patients and staff alike. There are not enough consultants to provide continuous high quality 24/7 acute care and not enough workload on these sites to justify more consultants.

It is only by reconfiguring the present system, to bring all the existing resources onto one site, that the services, once the consultants have been brought together, can be successfully delivered to an assured quality of care in line with international best practice standards.

There needs to be a system of internal peer review and clinical governance to measure service quality and patient outcomes.

In the next section, we look at the development of safe, sustainable high quality acute and community services in the Mid-West.

Developing safe, sustainable high quality acute and community services in the Mid-West

The current catchment population of 360,000 justifies one regional 'centre of excellence' for acute care in the Mid-West, to be developed by reconfiguring the Dooradoyle site.

We set out how the regional 'centre of excellence' needs to deliver an integrated service with a network of local 'centres of excellence'. We propose three such local centres, one in each of the counties of Clare, Limerick City, and North Tipperary.

These local centres will provide Urgent Care & Assessment, day surgery, enhanced diagnostics, endoscopy, outpatient services, and rehabilitation, all integrated with PCCC teams and services.

Significant improvements in admissions avoidance, day case rates, and hospital length of stay are needed to bring current operational performance in line with international best practice.

In addition to current PCCC investment plans, there needs to be further targeted investment to ensure that all patients have access to admissions avoidance and safe earlier discharge from the acute centre of excellence.

The development of the local and regional 'centres of excellence' and the clinical networks need to be supported by a new clinical and corporate governance infrastructure and reporting system, specifically designed for the purposes of delivering clinically and cost-effective seamless, integrated care across a range of provider services.

It is clear from the previous section that the current configuration of acute hospital services is not sustainable in its present form and does not conform to the emerging future clinical model of acute and community care.

We now use the model to define what the optimal configuration for acute and community services needs to look like across the Mid-West in order to deliver an assured quality of care in line with international standards.

Integrating PCCC services with the acute services

To complement the regional and local 'centres of excellence', there needs to be a comprehensive range of primary and community services, which can support the changes in acute hospital care. **Most importantly will be health promotion and the prevention of ill health, the avoidance of hospital admissions and supporting earlier discharge from the acute care setting.**

Most of this support will be provided by the development of:

- Self care, promoted through education of patients and carers and telemedicine;
- Home care packages, PCTs and PSCNs to support patient management in the home;
- Community chronic disease management programmes;
- More PCCC services to cover out-of-hours and week-end requirements;
- An Advanced Paramedic service; and
- Community facilities to provide an Urgent Care Centre, nurse and therapy managed beds for rehabilitation, access to enhanced diagnostics and a base for staff.

The recent national Acute Hospital Bed Review³² identified a significant proportion of inpatients who could have been cared for in more appropriate care settings, both at admission and during their stay in hospital. At a national level the review found that 13% of patients were unnecessarily admitted to hospital and that 39% of patients in hospital could have been treated in an alternative setting on the day of care, if appropriate alternatives were available.

The national review also identifies the appropriate alternatives to acute hospital care that would be required, and the proportion of patients occupying an inpatient bed that would satisfy these alternatives. For the Mid-West, these alternatives and their proportions are shown in Table 7.

Table 7: Proportion of patients for alternative care settings in the Mid-West

Alternative Care Setting	Proportion of inappropriate admissions	Proportion of patients whose length of stay could have been reduced
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³² HSE: Acute Hospital Bed Review: A review of acute hospital bed use in hospitals in the Republic of Ireland with Emergency Departments, PA Consulting and Balance of Care, 4 May 2007 (available from the HSE website at www.hse.ie).

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Alternative Care Setting	Proportion of inappropriate admissions	Proportion of patients whose length of stay could have been reduced
None or not specified	18%	17%
General Practitioner	12%	11%
Home with support	19%	22%
Home Care Packages	3%	0.3%
Non Acute Bed	3%	7%
Non Acute Bed & Therapy	9%	21%
Hospice	3%	0.3%
Mental Health Bed	0%	1%
Diagnostics/Assessment	33%	21%
Total	100%	100%

Source: Based on information contained within the National Acute Hospital Bed Use Review, 4 May 2007.

For inappropriate admissions, 18% required no alternative service and a further 12% required access to the normal services of a GP. A third of inappropriate admissions required access to diagnostics and assessment outside of the acute hospital setting, with the remainder of patients requiring alternative bed based support or home care support.

For those patients whose length of stay in an acute hospital could have been reduced, 17% required no support and could have been discharged immediately, and a further 11% only required access to the normal services of a GP. For those patients who required additional support following discharge from the acute hospital, 28% required access to a non-acute bed either with or without therapy services, just over 22% required home care support or a Home Care Package, and 21% required access to diagnostics and assessment outside of the acute care setting.

We have taken these findings of the alternative care settings from the Acute Hospital Bed Review and applied them to the number of patients that we identified for admission avoidance and earlier supported discharge, (modelled to 2010), by applying our best practice assumptions. Our analysis has identified 4,586 patients whose admission to an acute hospital could have been avoided, and 8,717 patients whose care could qualify for earlier supported discharge.

Having identified the number of patients requiring access to services in primary and community settings, we have converted this into appropriate capacity requirements for avoidable admissions (Table 8) and earlier supported discharge (Table 9). The outcomes have been subsequently reviewed and agreed with Local Health Managers of the Primary, Community and Continuing Care Directorate of the HSE Mid-West³³.

³³ Workshop convened on 19th June 2007 with Mid-West LHO managers.

Key findings from the analysis are:

- 33% (1,513 patients) of avoided admissions and 21% (1,831 patients) of supported earlier discharges requiring access to diagnostic services through primary care services;
- 3% of patients (138) avoiding admission to regional hospital services requiring home care packages;
- Less than 1% of patients (29) being discharged earlier from regional hospital services requiring a home care package;
- The remainder of patients avoiding admission to, or being discharged earlier from, regional hospital services requiring support either through the specialist skills of the Primary Care Teams and wider network support, or a stay in a rehabilitation/community support bed; and
- On average, the length of stay for rehabilitation/community support would be up to four weeks, given the range in intensity of care required.

Admission avoidance

The estimated impact of the additional home care packages, patients supported by PCTs and rehabilitation/community support beds relating to admission avoidance is presented in Table 8.

Table 8: 2010 Impact on PCCC from admission avoidance (4,586 patients)

Resource type	Proportion	Patients	Assumption	Resource quantum	Resource currency
None or not specified	18%	825	None	0	

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Resource type	Proportion	Patients	Assumption	Resource quantum	Resource currency
GP	12%	550	None	0	
Home with support	19%	871	10 wte supporting 1,000 referrals	9	wte
Home Care Packages	3%	138	Patients	138	Patients
Non Acute Bed	3%	138	Extended Care	138	Patients
Non Acute Bed & Therapy	9%	413	LoS of 4 weeks	32	Bed equivalents
Hospice	3%	138	LoS of 4 weeks	11	Beds
Mental Health Bed	0%	0	LoS of 2 weeks	0	Beds
Diagnostics	33%	1,513	Patients	1,513	Patients
Total	100%	4,586			

Source: Proportion from National Acute Hospital Bed Review applied to Teamwork best practice analysis.

This analysis shows that some 30% of patients (1,375) admitted did not require any further resources over and above those already available to them in the community. A further 33% of patients (1,513) were admitted for diagnostic purposes.

Earlier supported discharge

The analysis relating to supported earlier discharge from the acute regional hospital and its impact on PCCC services is presented in Table 9. This shows that 28% of patients (2,383) were in a hospital bed that required no other resource than the normal support of their GP. Furthermore, 22% (1,889) would require some additional support at home and 21% (1,831) a diagnostic test to enable earlier discharge.

Table 9: 2010 Impact on PCCC from supported earlier discharge (8,717 patients)

Resource type	Proportion	Patients	Assumption	Resource quantum	Resource currency
None	17%	1,453	None	0	
GP	11%	930	None	0	
Home with support	22%	1,889	10 wte supporting 1,000 referrals	19	wte
Home Care Packages	0.3%	29	Patients	29	Patients

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Resource type	Proportion	Patients	Assumption	Resource quantum	Resource currency
Non Acute Bed	7%	610	Extended Care	610	Patients
Non Acute Bed & Therapy	21%	1,831	LoS of 4 weeks	141	Bed equivalents
Hospice	0.3%	29	LoS of 4 weeks	2	Beds
Mental Health Bed	1%	116	LoS of 2 weeks	4	Beds
Diagnostics	21%	1,831	Patients	1,831	Patients
Total	100%	8,717			

Source: Proportion from National Acute Hospital Bed Review applied to Teamwork best practice analysis.

The above analysis in Table 8 and Table 9 has then been further translated into the support required within each of the Local Health Office locality areas based on the resident population for each LHO locality area, as shown in Table 10.

Table 10: Additional estimated PCCC services by LHO locality area for 2010

Local Health Office locality area	Patients requiring access to diagnostics	Additional Home Care Packages	Additional referrals supported by PCTs	Additional Rehabilitation bed equivalents
Limerick	1,304	65	1,076	67
Clare	1,003	50	828	52
North Tipperary/ East Limerick	1,037	52	856	54
Total	3,344	167	2,760	173

Source: Teamwork analysis.

Based on the assumptions derived at the PCCC workshops, there is a significant requirement for additional diagnostic, home care packages and PCT support.

As part of the on-going transformation of services by the HSE, an investment in additional resources to provide fully functioning PCTs and PSCNs and to deliver additional home care packages has already been identified for the coming years. This shows that for the Mid-West, there is to be an additional 111 wte personnel to support the PCTs. Approximately 30 wtes are already in place with a further 81 to be in place by December 2010.

However, it must be noted at this point that there are other major shortfalls in PCCC resources that were identified during the workshop programme, shortfalls not yet accounted for in the investment planning. In summary these are:

- The year on year wte core deficits, incurred as a result of the national headcount policy;
- The fact that PCCC does not provide 24/7 hours across the relevant family of programmes;

- The fact that current PCCC resources have budgets designated for supporting the elderly over 65 population, failing to recognise that, in reality, there is a substantial requirement for supporting the under 65 population as well, such that this cohort of patients is not being looked after;
- Developing comprehensive community chronic disease management programmes; and
- Addressing the need for aggressive preventative programmes, particularly for the elderly.

Evidence is available from the UK^{34 35}, which gives a comparison of community teams providing both rapid response and re-ablement services in order to avoid admissions to hospital and support earlier discharge. This shows that a multidisciplinary team of 10 wtes can support 1,000 referrals per annum. On this basis, then the additional 2,760 referrals to the PCTs would require an additional 27 wtes.

If it is assumed that the existing plans for PCTs and the additional recruitment make no contribution to admissions avoidance or earlier discharge, this requirement of some 27 wte PCT staff would be in addition to the 111 wtes already planned to be in place by 2010. It is more realistic to discount the extra 27 wte that we have calculated as necessary, by say 20%, to acknowledge some contribution from existing plans.

The additional 173 rehabilitation beds (see Table 10 above) makes no allowance for the preferred way forward, for fewer beds and more staff to take rehabilitation into the home. The bed needs could be largely accommodated over time through the release of acute beds as the current acute hospitals transform their functions.

Investment will be required in relation to additional home care packages. Patients avoiding admission are largely those with chronic diseases, therefore, they will need access to a range of CNSs in the community, including respiratory, cardiac and diabetes. Some of these CNSs are already in post in the acute general hospitals and, therefore, there may need to be a realignment of duties between community and hospital based care, for example, more inreach and outreach services, as well as some further investment in specialist nurse training³⁶.

³⁴ Southern Norfolk Primary Care Trust – Rapid Response Team Interim Evaluation Helen Ritcher, 1st Quarter Report, 2005.

³⁵ The Rapid Response Team, NHS Grampian, Hansha Patel, May 2003.

³⁶ Strategy & Action Plan for Nursing & Midwifery, Acute Hospital Services, HSE Mid-Western Area 2005-2008, 1st Annual Progress Report 2006. Health Service Executive, June 2006.

The Mid-West needs 3 local ‘centres of excellence’

The model for a local ‘centre of excellence’ needs to provide accessible services to local populations for the wide range of planned and urgent conditions that need straightforward care, such that they can be safely and expertly managed without the need for continuous medical supervision in an acute care setting.

Ensuring that these facilities are appropriate also requires a minimum critical mass of population. Unlike the evidence for an acute regional hospital, there is no definitive international evidence-based catchment population for a ‘local’ population. For health communities, which have developed similar models of health care³⁷, an assumption for a local catchment population is between 100,000 to 150,000.

Applying this assumption to HSE Mid-West, this would identify a requirement of **three local ‘centres of excellence’**. The location for each would need to be determined by examining the future profile of resident populations across the counties and the road infrastructure to ensure equitable access for the majority of residents. At this stage, it would be natural to consider that the existing services, at Ennis, Nenagh and St. John’s in Limerick City would be the starting points for transformation into local ‘centres of excellence’.

The local ‘centres of excellence’ will be designed to provide the majority of routine healthcare services for patients, as illustrated in the earlier section on the emerging clinical model of care. This is in line with the priorities as described in the HSE Transformation Programme for the integration of PCCC services. On the assumption that critical mass can be satisfied, most local centres would be in a position to functionally co-locate a whole family of services, including making provision to facilitate the inclusion of general practice.

The PCCC services in the Mid-West are split into three LHO localities, each serving a resident population of between 106,000 and 140,000.

A possible configuration for determining the provision of local non-acute services for the Mid-West could follow the same catchment boundaries, thereby being coterminous with local Primary, Community and Continuing Care services. The resident catchment population of these three localities are:

- Limerick with a population of 140,000;
- Clare with a population of 106,000; and
- North Tipperary/East Limerick with a population of 119,000.

³⁷ Gwent Clinical Futures Public Consultation Document, Gwent Local Health Board, 2006.

In assessing how local non-acute services could be configured and provided in each locality, a set of criteria need to be determined. These include:

- Ensuring patient safety;
- Being accessible to as many of the resident population as possible;
- Determining the fitness of purpose of current healthcare sites; and
- Potential for co-locating services and providing a range of care seamlessly.

For each locality, we have highlighted what acute hospital and other known facilities exist and provided a commentary for how each locality should proceed in determining its local requirements for services.

Limerick Locality

Given the concentration of residents in and around Limerick City, it is reasonable to expect that there would be a need for a 'local' hospital providing a standard range of services as described in the model within the locality boundary.

In Limerick, there is the MWRH Dooradoyle, Mid-Western Regional Orthopaedic Hospital, Mid-Western Regional Obstetric Hospital, and St. John's Hospital.

It is already agreed in principle for the obstetric hospital to be rebuilt, located on the Dooradoyle site. As will be seen later on in this section, we also recommend that the elective orthopaedic service be similarly relocated to a ring fenced service to the Dooradoyle campus. This leaves the St. John's Hospital as the potential location for a local 'centre of excellence'.

From the site visit, our observation would be that many areas of the St. John's Hospital have undergone recent refurbishment. One drawback to this is the small footprint and the lack of access for patients and staff by car. However, any city centre location would face a similar issue. This site already has 106 inpatient and day case beds available. Significant development plans are proposed for a 94 bed 'tower block' development to replace this existing patient accommodation.

Based on our site familiarisation review, we recommend that St. John's Hospital be considered as a potential location for a local 'centre of excellence' for Limerick City and County, providing a whole suite of local non-acute services. An indicative service profile and facilities to be provided at St. John's Hospital, Limerick is presented in Table 11.

Table 11: Indicative profile for a local 'centre of excellence' at St. John's, Limerick

Resource	Number and type
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Resource	Number and type
Day cases (Surgical and Medical)	16,705 patients
Day beds	38 beds
Day case theatres	2 theatres
Endoscopy	1 room
Therapy beds / Observation Unit	67 beds (rehabilitation, step-up and step-down)
Urgent Care Centre (UCC)	30,000 attendances
Diagnostics	1 x MRI scanner, 1 x CT scanner
PCCC base	
Primary Care Teams	
Outpatient Clinics	
Information Technology	HIPE system, PACS, LIMS interface, telemedicine equipment

Note: UCC attendances are based on 50% of current A&E attendances.

Clare Locality

The population of Clare is 106,000. The Mid-West Regional Hospital, Ennis was built in the 1940s and has around 94 inpatient and day case beds. However, the hospital requires substantial backlog maintenance and, therefore, its role and function as a local 'centre of excellence' needs to be considered carefully.

Although the location is ideally suited to be a local 'centre of excellence', the buildings and infrastructure require substantial investment to meet the service criteria as laid out for the emerging clinical model of care.

We recommend that an estates review is undertaken with a view to refurbishment or new build to establish a standard local 'centre of excellence'.

An indicative profile of the service and the facilities that could be based in a local 'centre of excellence' at Ennis are presented in

Table 12.

Table 12: indicative profile for a local 'centre of excellence' at Ennis, County Clare

Resource	Number and type
Day cases (Surgical and Medical)	12,850 patients
Day beds	29 beds
Day case theatres	2 theatres
Endoscopy	1 room
Therapy beds / Observation Unit	52 beds (rehabilitation, step-up and step-down)
Urgent Care Centre (UCC)	10,000 attendances
Diagnostics	1 x MRI scanner, 1 x CT scanner
PCCC base	
Primary Care Teams	
Outpatient Clinics	
Information Technology	HIPE system, PACS, LIMS interface, telemedicine equipment

Note: UCC attendances are based on 50% of current A&E attendances.

North Tipperary/East Limerick Locality

The North Tipperary locality (60,000) on its own would fail to satisfy the minimum catchment for a local 'centre of excellence'. However, a third of its resident population is from the East Limerick area and therefore gives it a resident population of some 119,000 which is a viable population base to support and sustain a local centre.

The Mid-West Regional Hospital, Nenagh is located in this area with a bed base of some 81 inpatient and day case beds. Over the years there has been some capital development to improve its facilities.

A profile of the services and facilities that could be provided in a local 'centre of excellence' at Nenagh Hospital is presented in Table 13. However, we recommend that an estates review is undertaken with a view to refurbishment or new build to establish a standard local 'centre of excellence'.

Table 13: indicative profile for a local ‘centre of excellence’ at Nenagh, North Tipperary

Resource	Number and type
Day cases (Surgical and Medical)	13,279 patients
Day beds	30 beds
Day case theatres	2 theatres
Endoscopy	1 room
Therapy beds / Observation Unit	54 beds (rehabilitation, step-up and step-down)
Urgent Care Centre (UCC)	15,000 attendances
Diagnostics	1 x MRI scanner, 1 x CT scanner
PCCC base	
Primary Care Teams	
Outpatient Clinics	
Information Technology	HIPE system, PACS, LIMS interface, telemedicine equipment

Note: UCC attendances are based on 50% of current A&E attendances.

Developing day surgery services in the future local ‘centres of excellence’

The regional ‘centre of excellence’ will not routinely provide day surgery, unless there is a legitimate need for regionalisation on grounds of clinical complexity, small patient volumes or special needs, as for example, with ophthalmology, paediatric surgery, etc.

The local ‘centres of excellence’ will become the mainstay provider of day surgery in their locality. As a broad indication, we have identified the potential volume of **surgical day cases** which may need to be undertaken in the local centres for each of the main surgical specialties, Table 14.

Please note that the calculated service profile and facilities presented for St. John’s, Limerick (Table 11), Ennis (

Table 12), and Nenagh (Table 13) are based on **total** day cases. Table 14 only identifies the main **surgical** specialty day cases for the sites.

Table 14: Day case requirements for main surgical specialties in 2010

Specialty	Total Day Cases	Limerick	Clare	North Tipperary/ East Limerick
General Surgery	9,518	3,712	2,855	2,951
Urology	1,520	593	456	471
Ophthalmology	3,242	1,264	93	1,005
Gynaecology	1,115	435	335	345
Orthopaedics	2,199	858	660	681
Otolaryngology (ENT)	2,070	807	621	642
Total	19,664	7,669	5,900	6,095

Source: HIPE data 2005 modified to include population growth and best practice assumptions to 2010.

This day surgery activity will need to be modelled by locality level into an operational facility comprising day bed and day surgery theatre estate capacity, also taking into account the need for more complex day surgery to be managed in the regional centre.

The Mid-West needs one regional 'centre of excellence' for acute care

The current population of HSE Mid-West is around 360,000 and, by 2021, the population is forecast to increase to some 405,000. Table 15 shows the forecast population in 2021, based on regional growth projections.

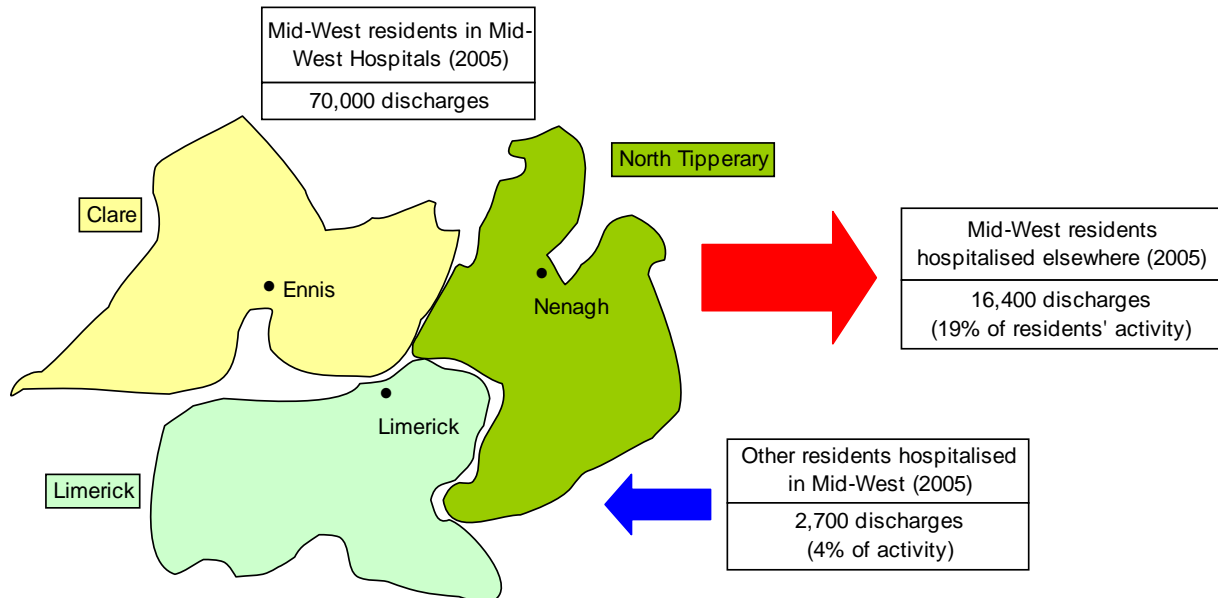
Table 15: Forecast County Populations

County	Census 2006	Forecast 2021
Limerick City	52,560	57,575
Limerick County	131,303	144,889
Clare	110,800	124,000
North Tipperary	65,988	78,136
Total	360,651	404,600

Source: Census 2006 Preliminary Report, Central Statistics Office, July 2006.

However, it is already acknowledged that a significant proportion of residents (19%) across the Mid-West access services in Dublin, Cork, Waterford and Galway (see Figure 4 below). If this pattern of choice and access to services continues in the future, the resident catchment population requiring acute hospital services in the HSE Mid-West would be around 328,000. Based on the international evidence of the minimum catchment population for a regional hospital of between 350,000 and 500,000, there is a clinical need for **one regional 'centre of excellence'** for the Mid-West.

Figure 4: Acute hospital activity flows for the Mid-West



Source: Analysis of HIPE data, 2005.

As stated earlier, in terms of the organisation of services:

- There will be separation of planned care from emergency care workloads at the regional centre;
- The clinical networks will require the regional 'centre of excellence' to deliver comprehensive outreach services to the local centres and the wider community; and
- The local 'centres of excellence' will meet all the out-patient, ambulatory care and routine diagnostic needs for the region. This system avoids patients having to travel to the regional centre for their routine outpatient care.

Defining the clinical specification and estimating the bed requirements for the regional centre

As described in the emerging model of care, the regional 'centre of excellence' will provide in-patient services and complex planned care in:

- General medicine (including geriatric medicine, cardiology, respiratory medicine, gastroenterology, endocrinology, neurology, clinical haematology, renal medicine, rheumatology and dermatology);

- General surgery (including upper gastrointestinal surgery, lower GI surgery, breast surgery, vascular surgery, endocrine surgery), orthopaedics, maxillo-facial surgery, urology, gynaecology, ENT, ophthalmology;
- Major A&E, with a helipad for emergency air ambulance transfer;
- Trauma;
- Obstetrics, with co-located midwifery service, and level 3 neonatal unit;
- Paediatrics, with high dependency unit;
- Cancer services, in line with national cancer control strategy;
- Anaesthesia and pain management service; and
- Level 3 adult critical care.

Cancer services are already provided on the Dooradoyle site in a joint public-private venture. The unit was built by the hospital's Trust and is operated by the Mater Private Hospital. The centre is privately operated in co-operation with the National Plan for Radiation Oncology³⁸.

The level of tertiary activity undertaken in the acute regional 'centre of excellence' will be dictated by national strategies. For example, for paediatrics, we understand that all specialist tertiary work will be undertaken by the new national paediatric hospital in Dublin.

We have forecast the number of patients to be treated in the acute regional 'centre of excellence' in 2010. This assumes that all residents are treated at the regional centre with recognition that some tertiary services may be provided outside of the Mid-West. This analysis also excludes any additional activity that the regional centre may attract from outside the counties of Limerick, Clare and North Tipperary.

The methodology for modelling the anticipated volume of patients in 2010 includes the following assumptions:

- 2005 resident-based data has been used as the baseline for modelling the impact analysis³⁹;
- Population growth is based on Central Statistical Office forecasts which has been included for 2010;
- All planned day cases will be treated at local 'centres of excellence' ; and
- Bed capacity modelling assumes occupancy levels of 85% and takes account of trends in hospital design for best practice in the management of infection control.

³⁸ Annual Report and Financial Statements 2006, Health Service Executive, 2007.

³⁹ The hospital data came from the Hospital Inpatient Enquiry (HIPE) system collected by the HIPE and National Perinatal Reporting System (NPRS) Unit of the Economic and Social Research Institute.

Within our modelling, we have made assumptions about the level of improvements that can be made in preventing avoidable admissions to the regional centre and achieving a safe and earlier discharge.

Improvements in acute service efficiency, particularly reduction in bed requirements, are traditionally based on international, national and peer group comparators. We have complemented this approach with our own evidence-informed 'best practice' template for targeted collective groups of similar care called Diagnostic Related Groups.

The best practice template, which covers some 45% of Diagnostic Related Groups, is derived from published literature, experience from elsewhere, and other relevant sources. We have successfully used this in working with whole health communities and acute service specialties in changing clinical practice so that the move towards 'best practice' becomes the 'normal way of working'. Applying these assumptions provides a projection of activity and modelled bed capacity requirements for 2010 (see detailed modelling methodology in Appendix 6 - Modelling assumptions).

Summary of projected 2010 acute activity

The increase in public patient demand for in-patient planned and emergency care for Mid-West residents from 2005 to 2010, based on the cumulative impact of applying the above set of planning assumptions, is shown in Table 16. It shows the baseline for all acute admitted patient activity across the Mid-West and the impact of a series of positive and negative factors which either increase or decrease the impact on the acute bed capacity requirements for the Mid-West.

Table 16: Impact of change in activity and occupied bed days for regional and tertiary based hospital services in the Mid-West

Planning Assumptions	Admissions		Occupied Bed Days		Calculated Inpatient Bed Capacity Requirement
	Elective Inpatient	Non-elective	Elective Inpatient	Non-elective	
Baseline (2005) – Mid-West	13,199	37,441	76,026	215,049	938
Population change	1,096	2,624	6,930	18,767	82
Admission avoidance	-255	-3,555	-1,363	-18,925	-65
Day case rates	-4,819		-7,991		-26
Excess bed days			-8,776	-16,750	-82
Ireland ALoS (2005)			-8,794	-36,718	-146
International Best Practice			-5,418	-13,143	-59
Forecast (2010) – Mid-West	9,221	36,510	50,614	148,280	642

Source: Analysis based on application of best practice assumptions for the delivery of acute care.

Note: The activity baseline excludes those admissions to hospices, rehabilitation and continuing care facilities.

This analysis in Table 16 shows that, for residents in the Mid-West, the regional 'centre of excellence' would need an acute in-patient bed capacity of some **642 inpatient beds** based on a standard 85% occupancy level. This comprises 478 beds for emergency in-patient admissions and 164 beds for elective in-patient admissions. These figures include admissions to tertiary services, but as already stated, some tertiary activity may in the future be provided at a tertiary centre outside the Mid-West.

Site configuration

Given the above analysis in Table 16, the regional 'centre of excellence' would need to have the capacity to accommodate 642 in-patient beds.

The Dooradoyle site currently has 472 beds (375 in-patient and 97 day case beds), with development plans for transferring obstetrics, and for additional beds through the co-location project⁴⁰. This would significantly increase the site's bed base.

If sufficient accommodation could be provided and the current site could be reconfigured, then the **Dooradoyle site should be designated as the regional 'centre of excellence' for the Mid-West.**

However, consideration must be given to the economies of scale in developing the existing site to provide a modern, 'fit for purpose' facility, or whether a new purpose-built regional 'centre of excellence' should be developed. The list of reconfiguration/refurbishment (excluding any private co-location build programme), is substantial and includes:

- New obstetrics, midwifery and neonatal unit;
- New elective orthopaedics unit;
- New or refurbished A&E;
- New or refurbished critical care unit;
- Complete ward refurbishment to infection control standards; and
- New additional in-patient beds, totalling 135.

The HSE may wish to undertake a high level appraisal study to examine the feasibility of reconfiguration/refurbishment against a new build option.

⁴⁰ The capacity of the co-location project for the Dooradoyle site in the Mid-West is indicated to be 138 inpatient beds and 34 day case beds, HSE press announcement, 5th July 2007.

Understanding the impact of the new clinical model of acute care upon service capacities and configuration

Table 17 gives an indication of the possible changes in bed capacity requirements by type of activity and by site across the Mid-West. This shows that the Dooradoyle site would require 301⁴¹ (676 beds less 375 beds) additional in-patient beds to operate as the regional 'centre of excellence' for acute care. Assuming the relocation of obstetrics **and** orthopaedics, the net additional requirement would be 135 acute inpatient beds.

Table 17: What the new acute hospital bed configuration looks like in the future

Beds	Dooradoyle	Ennis	Nenagh	Obstetrics	Croom	St. John's	TOTAL
Baseline 2005							
Acute Inpatient	375	88	75	99	67	96	800
Day Case	97	6	6	0	10	10	129
Total (Beds)	472	94	81	99	77	106	929
Emergency and ring-fenced Elective inpatient centre at Dooradoyle (see Note re occupancy)							
Non-elective	508						508
Elective	168						168
Day Case		29	30			38	97
Total	676	29	30	0	0	38	773
Change in acute inpatient beds:							
Acute inpatient beds change	301	-88	-75	-99	-67	-96	-124
Of which:							
Obstetrics	99						
Orthopaedics	67						
Net addit. acute beds	135						
Including 'Required equivalent beds' for rehabilitation:							
Acute IP bed baseline	676	0	0	0	0	0	676
Day case	0	29	30	0	0	38	97
Rehab beds	0	52	54	0	0	67	173
Total beds	676	81	84	0	0	105	946

Source: Based on analysis of HIPE data, 2005 and application of best practice assumptions.

Note: Beds for non-elective and elective critical care dependent activity are modelled at an occupancy level of 80% and all other bed requirements are modelled at an occupancy level of 85%.

The MWR Orthopaedic and Obstetric Hospitals are assumed to be re-located to the Dooradoyle site.

⁴¹ The bed figures for the non-elective and the critical care dependent elective workload have been derived based on occupancy levels of 80%. This lower occupancy level will ensure that there is sufficient capacity and flexibility within the bed base to allow for all peaks in activity. All other beds have been modelled based on an occupancy level of 85%.

Table 17 does **not** reflect the additional in-patient and day case bed capacity from the private hospital co-location programme, and to what extent this will contribute to the 135 in-patient beds at Dooradoyle, or to the overall 97 day case beds as indicated in the local 'centres of excellence'.

Subject to the impact of the co-located private hospital, in overall terms, the total number of in-patient and day case beds at 946 will be virtually the same as in the 2005 baseline.

This would include a significant increase at Dooradoyle, which reflects the assumption of transferring both obstetrics **and** orthopaedics. The analysis in Table 17 also indicates that the existing capacities at Ennis, Nenagh and St. John's are sufficient to accommodate future requirements. However, the usage and designation of the beds will be **significantly different** from the present arrangements for each site.

Understanding the functions of the clinical networks

The development of effective clinical networks is critical to the successful implementation of the future clinical model of acute care. The scenarios that follow describe the typical function, clinical responsibilities and organisation of the major networks that need to be put in place. In practice, the Emergency Care Network usually receives the most priority, given the all encompassing nature of the clinical workload that it has to manage, under many different circumstances, levels of urgency and the diversity in the most appropriate clinical response.

Emergency Care Network (Adult and Children)

The local elements of the network:

- The Advanced Paramedic workforce will be at the front line of the local emergency response for all major, life-threatening events, strategically deployed to be accessed locally by the whole population. They will immediately assess, resuscitate, stabilise, triage and transfer the patient directly to the appropriate emergency service. They will be in constant clinical communication, including real-time remote physiological monitoring as necessary with the appropriate duty team at the regional centre. This approach helps solve the perennial argument about travel times to the nearest A&E and the concern about accessing appropriate treatment interventions within the 'golden hour';

- The mobile emergency response is tailored to fit the urgency of the patient's needs. Definitive emergency management begins in the home, and, if clinically safe, the patient remains at home, with arrangements for follow up assessment and care being delivered as necessary by the general practitioner, public health nurse, local community health and social service staff. Experience to date from the UK national pilot sites indicates that Emergency Care Practitioners already substantially reduce the rate of conveyance to hospital⁴² of patients accessing the ambulance service as an emergency;
- The mobile emergency service is complemented by a network of Urgent Care Centres based in the local 'centres of excellence';
- These Urgent Care Centres:
 - Are nurse led by Advanced Nurse Practitioners, professionally accountable to the regional hospital A&E team for the quality of service; they will progressively extend their range of skills and competencies under the aegis of the regional A&E centre, for example to include the management of simple fractures;
 - Treat both adults and children and are normally open 12 hours per day, 7 days a week;
 - Manage minor injuries and illnesses;
 - Undertake observation and assessment, to decide whether patients need to access the regional centre or not;
 - Are supported by 'Point-of-Care' laboratory facilities, plain X-ray, and 24/7 telemedicine and teleradiology links to the regional A&E duty team or other appropriate service;
- The services provided by both the Advanced Paramedic and Advanced Nurse Practitioners are formally integrated with the GP emergency service, with routine consultation to optimise each individual emergency response;
- The local GPs have an enhanced range of resuscitation skills, competencies and equipment to complement those of the AP and ANP; and
- All the above services are integrated with, and have 24/7 access to, local community nursing, social care, and voluntary sector teams.

⁴² Data from the Coventry & Warwickshire Ambulance Service, UK. Teamwork Management Services, Ltd, Communication, 2005.

The regional elements of the network:

- The A&E service at the regional 'centre of excellence' in Dooradoyle, with a multi-disciplinary team, is led by a group of at least 8 consultants providing 24/7 supervision, input and specialist advice across the whole network;
- The regional A&E centre will manage some 80,000⁴³ A&E attendances per year; and
- Patients being transferred from the local Urgent Care Centre for more specialised care are triaged directly to the most appropriate emergency unit in the regional centre, for example, medical assessment, coronary care, trauma unit, or critical care.

The organisational infrastructure:

- There is formal, 'real-time' integration across the whole workforce on duty i.e. GPs, APs, ANPs, CNSs, A&E staff, on-call hospital consultants, emergency assessment units, coronary care units, critical care, duty community nursing, social care and voluntary sector teams, etc;
- The smooth day-to-day running is the responsibility of the regional arm of the national ambulance service. It manages all staff deployment, and is supported by real-time monitoring of status, access to care and available acute beds;
- There is a single point of entry into the emergency care system and a single assessment and triage process across the network;
- All the frontline workforce rotate regularly through all the service elements of the network for wider experience and professional development;
- The AP ambulance workforce is strategically deployed across the network to provide a local first response service for life-threatening patient events;
- The network is technology-enabled to provide:
 - A system for staff 'in the field' to communicate across the whole network, seek urgent specialist advice, use teleradiology, telemonitoring;
 - Support for training and development through tele-education; and
- The emergency care network liaises closely on a daily basis with its 'partner' network responsible for critical care.

⁴³ The actual figure is likely to be substantially lower, on the assumption that there is an effective network of Urgent Care Centres.

Critical Care Network

The local elements of the network:

- There is no provision of critical care at the 'local' centre;
- The local 'centre of excellence' is still a key member of the critical care network. It provides a post-acute/step down/rehabilitation programme that:
 - Enables the safe, early transfer of the patient closer to home; and
 - Optimises the patient flow through the regional critical care service, ensuring the most effective use of these beds.

At the regional centre:

- The critical care centre is a key service of the regional 'centre of excellence', co-located with those acute specialties most likely to need immediate access;
- There is a full multi-disciplinary critical care team, reflecting the complexity of patient illness, co-morbidities and management needs, led by consultant intensivists, with input from ANPs / CNSs in intensive care, physiotherapists, respiratory technicians, clinical laboratory medicine specialists, nutritionists, pharmacists, radiographers, speech and language therapists, occupational therapists, medical physicists and engineers and staff in training;
- The critical care centre delivers:
 - A 24/7 system of comprehensive Level 2 and Level 3 critical care support for seriously ill patients and for patients undergoing complex planned or emergency surgery⁴⁴;
 - A 24/7 system of preventative critical care outreach surveillance to identify 'at risk' patients on the acute general wards; and
 - A critical care rehabilitation programme, delivered across the whole network.

⁴⁴ Improved outcomes are reported for patients undergoing complex surgery if they have Level 2 care for the first 24 to 48 hours, with reduced complications and shorter lengths of hospital stay. Modernising care for patients undergoing major surgery, Improving Surgical Outcomes Group, 2005.

Organisational infrastructure:

- The regional critical care centre is at the heart of the regional 'centre of excellence';
- The service is led by a consultant team of at least 8, providing 24/7 supervision and input across the clinical network, with some consultants working on a full-time basis for critical care only, and others also supporting the regional anaesthetic and pain management service;
- There is a dedicated operational management structure to ensure the smooth day-to-day running and organisation of the clinical network;
- There are dedicated robust triage, transfer and transport arrangements in place for both admission and transfer home of patients; and
- The intensivist team lead a system of critical care education and training for the whole network.

Planned care network

The local elements of the network:

- The local 'centres of excellence' will provide a wide range of services, including outpatient, day surgery and diagnostic testing. The benefits of these centres are the provision of local access, dedicated facilities, and the development of new models of care enhancing the quality of patient care.

At the regional centre:

- All major planned care is undertaken in the regional centre; and
- There is separate streaming and bed provision for planned in-patient and for emergency admissions to ensure no interruptions of planned procedure activities.

Cancer care network

The local elements of the network:

- Day case and outpatient medical oncology services to be provided by the local 'centre of excellence';
- Appropriate care closer to home or at home, with access to supportive and rehabilitative services including pain management, psychosocial support and end of life care; and
- Integrated, multidisciplinary team working involving primary, community and social care services.

The regional elements of the network:

- Site specific cancer procedures undertaken by appropriately trained sub-specialist surgeons. The concentration of sub-specialty teams and a critical mass of patient volumes will ensure better outcomes and quality of care for patients;
- Sufficient numbers of trained oncologists, clinical nurse specialists, and radiologists and radiographers;
- Integrated working between the regional and tertiary service and the local centre and community services;
- Ensuring each site is visited, audited for compliance with standards and confirmed to be undertaking sufficient procedures each year to maintain and develop sub-specialty skills and competencies;
- Preventing individual surgeons and hospitals undertaking 'occasional' surgery;
- Ensuring that the surgeon works as a key member of a multi-disciplinary team;
- Ensuring that all patients have their management regularly reviewed by case conferencing across the network;
- Implementing standard integrated care pathways that set the standards of care; and
- Ensuring the results of all clinical outcomes are formally audited.

Understanding how the model works in practice for patients

To understand how the new configuration of services will benefit patients in the future, we have included a number of patient scenarios. They describe patient journeys for a variety of common conditions. The sequence of events presented within the scenarios is different from today, and is based upon application of best practice.

Care will be delivered in the most appropriate setting as close to the patient's home as possible with the regional hospital focused on the acute and complex care delivery. The scenarios are based on the preconditions that the infrastructure, resources, workforce and, most of all, this new way of working is in place to make it all happen in a cohesive, seamless manner.

Scenario 1: Eileen has a fall at home

Eileen is 86, lives alone and is fiercely independent. She has managed to stay at home, in her ground floor flat, supported by the home care service to take care of her basic health and personal hygiene needs. She was not interested in being a patient in an old folks' home.

It's 08:35 am. Coming out of the loo, she trips over the cat, falls and breaks her left hip. She activates the alarm that she wears round her neck and the community services are alerted. The call to the emergency helpline number is triaged to the Primary Care Team. Half-an-hour later, the team member on-call, a physiotherapist, attends Eileen and quickly diagnoses a fractured neck of femur. Her left hip is very painful, her leg is rotated.

The system swings into motion. The physiotherapist knows the best practice guidelines for Eileen's management. She had helped draw them up with the regional trauma team. A call to the trauma coordinator at the regional centre confirms that Eileen, if she is fit enough, can have her hip operated tomorrow. The coordinator makes three bookings: (1) a bed in the urgent elderly assessment unit for a check up, to make sure she has no other problems requiring attention and to prepare her for the operation; (2) a slot in the trauma theatre for 12.00 pm next day, to be confirmed by the duty physician as going ahead or not; (3) a 'step down' rehabilitation bed in the local centre, starting two days post-surgery, to continue her intensive physiotherapy and reablement programme.

In the meantime, the physiotherapist calls the ambulance to get Eileen safely to the regional centre, and, while she is waiting, checks her records on-line, to find out that Eileen is already known to the elderly assessment team, has had an OT assessment carried out and that there is nothing to stop Eileen coming home, on the assumption her operation and recovery go as planned. She suspends her home care service for one week, to be confirmed, depending upon Eileen's progress.

One week later, Eileen has proven that the fractured neck of femur pathway works well. She has had uneventful surgery, is fit for discharge from the rehabilitation unit and is completing her recovery and reablement at home. She is now on tablets to make her bones stronger. The primary care team visits her twice daily for a week, confirms satisfactory progress and hands over to the home care service.

The only thing Eileen is worried about is the cat, not herself. The physiotherapist books her in as well, for a week's holiday at the local cat's home. All part of the service!

Scenario 2: Fionnuala develops a fever

Fionnuala, age 3, already has a reputation. She is stubborn and into everything. Nothing is safe within 5 metres, so says her mum. But not today. Fionnuala is not herself. Went to bed last night, didn't want any supper and was a bit grumpy, saying her head was sore. This morning, she does not bounce out of bed as usual. She is hot, looks flushed and has just been sick.

Mum is worried. She immediately rings her GP for advice. The GP refers her to the local Urgent Care Centre that recently opened, one of the new local 'centre of excellence' services. He knows that the UCC offers urgent paediatric assessment from ten in the morning to ten at night and that it's an outreach facility of the acute regional paediatric service.

Fionnuala's GP had gone to the open night at the new local centre of excellence when that opened last month. He was impressed. It may not admit emergencies any more, but it certainly did just about everything else his patients needed. No need for them to travel unless they were really ill. Local clinic to see the consultant. Local CT and ultrasound. Endoscopy suite. Day surgery suite. Twelve hour urgent care service for adults and kids. Good rehab team. And all hot wired to the regional hospital. Not bad at all. And even a seven day phlebotomy clinic and specimen collection service. Nice! It might just become a real 'centre of excellence' after all.

The Clinical Nurse Specialist is waiting for Fionnuala, having been alerted by the GP. The CNS is trained to manage children as well as adults. She takes a history and examines Fionnuala. Everything appears normal, apart from a high temperature. No obvious source of the problem. As a precaution, she takes bloods and urine for immediate analysis in the Point-of-Care Test Laboratory next door and orders a chest X-ray.

Thirty minutes later, the Point-of-care test results are normal, as is the chest X-ray, remotely reported urgently by the network duty radiologist. The CNS still thinks it prudent to observe her for a few hours, 'to be on the safe side'. Fionnuala is put under observation in the paediatric assessment bay. There's plenty of space for Mum too. It's 11:00 am, allowing about 8 hours of clinical assessment before deciding if she can safely go home or needs to be transferred for inpatient management to the regional paediatric unit. The CNS checks the out patient clinic timetable to see which paediatrician is doing the clinic that afternoon. She makes an urgent booking for the consultant to see Fionnuala at 5:00 pm. If it had been the weekend, she would have booked a real time teleconsultation with the paediatric duty team to get expert advice on the decision.

By 5:00 pm, Fionnuala is feeling a bit better. Her headache is still there but not so bad and her temperature is settling. Further examination by the consultant confirms the initial findings. Nothing untoward. It is safe for Mum to take Fionnuala home and to come back in the morning for a follow up consultation.

Scenario 3: Paul presents with acute abdominal pain

Paul is 35. A busy man, busy selling nice cars. No time to be ill. He thinks it is the curry he had last night that upsets his tummy. Sharp cramping pains in his middle, waking him from his sleep. He gets them from time to time, but ignores them, they always go away. Has some diarrhoea, goes back to bed and falls asleep again. In the morning, he feels OK, his tummy feels as if it has a bit of a hangover. He ignores it as usual, rushes his breakfast as usual and starts his busy day.

His tummy does not like being ignored. By 2:00 pm, he feels as if he has a stitch in his right hand side, as if he has been running too far. And he feels nauseated. Not right, he thinks. What to do? – Go home? – see his GP? – Go to ED? No, he says to himself, picking up his mobile and dialling the helpline for the new local 'centre of excellence'. Now he knows why he filed it away when he heard about the new service on local radio.

Paul's call is triaged through to the Urgent Care Centre. He books himself in for an urgent check up for 5:00 pm, after work. He sells another nice car by then, but by then, he also knows his stomach is definitely not right. Too painful down the right hand side. The duty Clinical Nurse Specialist listens to the history and examines him. Paul winces in response to his abdominal examination. The CNS reports "Tender under the right ribs on deep inspiration, no muscle guarding or rigidity, abdomen soft and normal elsewhere, looks like you may have gallstone trouble. Let's get some tests done".

One hour later, Paul knows that the X-ray of his abdomen is normal and that his ultrasound confirms lots of little stones in thin-walled, non-obstructed gallbladder are both normal, as reported by the radiologist on duty at the regional centre. His white count is a bit elevated, consistent with a possible inflammation. Liver profile is normal and urine is clear, no suggestion of inflammation or jaundice. Looks like gallstones are the cause of his troubles.

The CNS contacts the duty consultant surgeon at the regional centre and books an urgent teleconsultation for 10:00 pm. The surgeon talks to Paul, views his X-rays and ultrasound and agrees with the diagnosis of acute gallbladder inflammation. The surgeon explains that an operation is needed and ideally quickly, before things gets worse. Paul consents, the surgeon checks the emergency theatre bookings and books Paul's operation in for the 11:00 am slot the next morning.

The CNS completes a pre-operative assessment profile to confirm Paul is fit for operation, checks there are no allergies, gives him an antibiotic injection and some painkillers, prints out the explanatory leaflet about the operation, goes through the pre-operative instructions with him and finally makes an urgent ambulance booking for him to be at the emergency theatre reception for 8.00 am in the morning.

Next morning, after a final check by the new duty surgeon and anaesthetist, already fully informed about Paul's history and diagnosis by the electronic records, Paul has keyhole surgery, an uneventful laparoscopic cholecystectomy. He is discharged home the day after surgery. The GP receives an electronic summary the same day. There are no stitches to be removed and no follow up is required. He has the helpline number if there are any problems.

Three days later, Paul is back at work, selling more cars.

Scenario 4: Cathal has a heart attack

Cathal is aged 50 and self-employed. It's 5:15 pm. His GP is treating Cathal for high blood pressure and high cholesterol, with good control, for the past five years. Cathal is working too hard, trying to keep his business afloat. It is tough, not made easier today with the meeting he is having with his bank. He did not feel well going into the meeting, not surprising, but he now feels even worse. Light-headed, a bit breathless and he has a funny tingle in his left arm, passing right down into his fingertips. He sits, anxious, waiting for it all to pass, to get over the stress of the meeting.

The chest pain hits Cathal five minutes later, as he is driving home with his wife. The pain takes his breath away, tries to crush his chest and moves up into his throat and left shoulder. He manages to pull in and stop the car. He knows he is having a heart attack, he has seen his father suffer the very same thing.

His wife's call to the ambulance service is triaged as an emergency. The Advanced Paramedic (AP) arrives within ten minutes. The AP finds Cathal in severe pain, pale, breathless and hypotensive. He diagnoses a likely myocardial infarction. He moves Cathal to the ambulance and begins emergency treatment. He gives him oxygen, intravenous pain relief via a cannula he has inserted, starts monitoring his vital signs and reads his ECG.

Within minutes, Cathal is more comfortable and already en route to the coronary care unit (CCU) at the regional centre, some 40 miles away. Last year, he would have automatically been taken to the local hospital down the road when it was still taking emergencies. Yes, Cathal would have been in a hospital bed within half an hour, but with no dedicated heart specialist to look after him. Now, with the new system, all heart attack victims are treated at the one specialist CCU in the regional centre, with a full heart specialist team on permanent standby, supported by a cardiac catheter laboratory suite.

Using 'real time' telemetry, Cathal's condition, his pulse, blood pressure, ECG and pulse oximetry, are already being monitored by the duty team in the CCU. His condition is regarded as stable, but he is still hypotensive. The ECG confirms an infarct. The AP starts thrombolysis after confirming that Cathal meets the criteria for treatment.

Fours hours later, Cathal is in the cardiac catheter laboratory. The duty cardiologist inserts a coronary artery stent across the blockage to restore the circulation. This results in immediate improvement in Cathal's cardiac status and he is admitted to the CCU for close monitoring.

Three days later, Cathal is discharged into the care of the cardiac rehabilitation service, an outreach programme delivered at his local centre. He may not be able to find the solution to his business worries, but he knows his heart is being well looked after. Time to learn from the experience.

In the next section we look at developing the implementation plan to deliver the new model of care within the HSE Mid-West.

Developing the implementation plan

We propose a transformation programme for the next steps in the reconfiguration of acute services in the Mid-West.

Immediate actions include establishing a programme management group, making transitional investments to urgently address clinical risk and improve patient safety, to substantially improve the clinical and cost effectiveness of current services, and to develop the workforce and education plan.

Implementing 'locality action plans' are critical to putting in place all the local services needed so that the optimal configuration of the regional 'centre of excellence' can be fully implemented.

There are a number of risk factors that have serious potential to stop the implementation of the HSE's acute service element of its transformation programme.

It is absolutely essential that the HSE acts now to make sure that these risks are definitively, robustly and transparently dealt with, operating to fixed deadlines and timescales, certainly by 2010 at the latest, and to the satisfaction of service staff, patients and other interested parties.

Specifically, **unless full and effective pre-hospital services are put in place**, down to the most local level, and proven to be effective by all objective measures of performance, **the HSE will not achieve its intention to implement international standards of acute care, as it will find itself unable to proceed to the next step, the planned acute service reconfiguration.**

The risks are described below as the pre-conditions to success.

Pre-conditions to delivering service reconfiguration

It is self-evident that a fully resourced, detailed implementation programme is required if the Mid-West is to secure international best practice quality for its acute and related PCCC services in terms of clinical standards, service configuration and working relationships. Such a plan needs to take account of:

- Putting in place an effective implementation group, one that commands respect, has all round support and has the capacity to deliver;

- Taking urgent steps upfront to reduce clinical risk and improve patient safety in areas of the current services where the present quality of care needs to be addressed;
- Maintaining the current service configuration and reducing deficiencies in capacity to meet today's demands, pending implementation of the new service configuration;
- Developing integrated locality working between NHO and PCCC services;
- Ensuring that all the pre-conditions to delivering the optimal configuration for acute care are in place; and
- Ensuring that appropriate contingency plans are in place to manage the risks to success.

The over-riding principle is that no acute service will be withdrawn from the current general hospitals until the regional 'centre of excellence' is resourced and ready to deliver that service with reference to international quality standards.

In turn, these assumptions for acute care are based on the following assumptions for pre-hospital services:

- The PCCC service has been resourced, developed, and is working to recognised international best practice standards for the management of the anticipated future demand across the Mid-West, both during working hours and out-of-hours, for admissions avoidance and earlier discharge;
- The ambulance service has fully developed its mobile emergency response capabilities, by developing its 'Advanced Paramedic' workforce and by deploying them to all areas of the Mid-West;
- The Helicopter Emergency Medical Service is fully integrated into the emergency care system for Mid-West;
- There is an 'Advanced Nurse Practitioner' and 'Clinical Nurse Specialist' workforce in place, leading the delivery of a Mid-West network of local nurse led Urgent Care Centres, integrated with local Advanced Paramedic and duty GP teams and the single central A&E service; and
- There is effective partnership working across all elements of the pre-hospital and hospital systems.

The future clinical model of acute care is designed around a robust infrastructure. Creating the circumstances for the provision of an assured quality of care is based upon the presence of:

- Formal clinical teams/networks, responsible for managing and coordinating care for that specialty or category of acute care across the region (emergency care, planned care, cancer, critical care, obstetrics, paediatrics, radiology, etc);

- An integrated network programme for education, teaching, training and research, developed in partnership with all local stakeholders, including the University of Limerick, the 'regional centre of excellence' and the local 'centres of excellence' as part of the academic network; and
- Clinically relevant information technology and communications (unique patient identification, electronic records, real time/store and forward transfer of clinical images, tele-consultation, etc).

The action plan below sets out the major steps to achieving the necessary changes in service reconfiguration. We estimate, excluding the timescales for new builds and refurbishment, that the programme should be deliverable within 3-4 years, following completion of the detailed project planning stage.

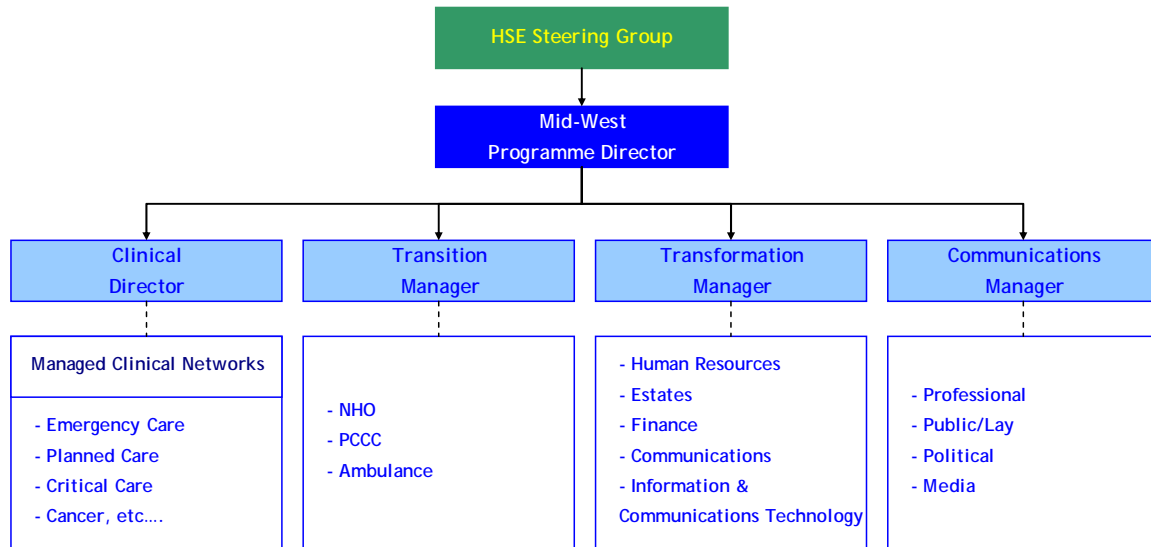
Actions have been identified in relation to the project management arrangements, improvements in operational efficiency, the regional 'centre of excellence', localities, and workforce development.

The actions also identify the transitional arrangements necessary to make clinical services safer in the immediate future, pending the full transformation of services.

Managing the implementation programme

In order to oversee the implementation of the changes and actions identified below, it is essential that effective project management arrangements are put in place promptly, as presented in Figure 5.

Figure 5: Implementation structure for the Mid-West Transformation Programme



The project management arrangements need to include:

- A small HSE steering group to oversee the programme and take executive action as necessary to keep the programme on track;
- A Mid West project board comprising representatives from NHO, PCCC, Population Health, University of Limerick and a nomination from the consultant body, supported by:
 - HR, Finance (inc. Procurement), and Estates directorates;
 - Consultative panels of clinicians and other local stakeholders;
- A full-time programme director with overall responsibility for leadership and managing the programme team;
- Project manager/s or seconded personnel within PCCC and NHO to manage and coordinate the phasing of the actions;
- Clinical directors responsible for leading the development of the managed clinical networks: emergency care; planned care; critical care; cancer; pathology; radiology; etc.;
- Service change leads to support the service programme changes within the networks, including the clinical support services of pathology and radiology;
- Workforce director to lead the workforce planning, education and development;

- Undertaking an estates review to assess compliance of the current programme with the new model of acute and community care and managing any future capital investment and disinvestment in the Mid-West; and
- Ensuring resources are identified and made available to support the transitional arrangements and any capital and revenue implications of the Mid-West transformation programme.

Using best practice standards for clinical change management

Most clinical and organisational change occurs incrementally and slowly. Most health professionals have experience at this level, very few have any exposure to, or confidence in, a whole system change.

This implementation programme is a whole system change. We have developed a unique understanding and expertise in mentoring health planners, clinicians, acute service and community organisations through whole system change, using best practice standards as the basis for that change, from initial understanding, to clinical engagement, skills transfer, action planning and on into implementation.

The implementation plan for the Mid-West needs to be drawn up with these characteristics in mind.

The implementation plan: details and timescales

We estimate, once detailed project planning has been completed, that the majority of the programme should be completed within 3-4 years, excluding new builds. The key milestones and provisional estimates of timescales for each element to be fully implemented are presented in Table 18.

Table 18: Implementation plan – Indicative milestones and timescales

Key milestones	Timescale to completion
Delivery of best practice in acute services	6 to 12 months maximum
Transfer of Acute General Surgery to Dooradoyle	Within 6 months
Establishment of single critical care service	Within 6 months
Interim transition programme	Within 12 months
Transfer of day surgery to local services	Within 12 months
Completion of PCCC service developments	Within 3 years
Transfer of Acute General Medicine to Dooradoyle	Within 3 years
Advanced Paramedic workforce in place	Within 3 years (Programme needs to be accelerated)
Advanced Nurse Practitioner workforce in place	Within 3 years (Programme needs to be accelerated)
Local 'centres of excellence' established	Within 3 to 4 years (excluding new build)
Regional 'centre of excellence' established	Within 4 years (excluding new build)
Transfer of Obstetrics	Dependent on new build
Transfer of Orthopaedics	Dependent on new build

Within 6 months

We recommend prompt action within the first six months to: reduce the current levels of clinical risk and improve patient safety in emergency general surgery and critical care; commence improved efficiencies right across all the acute services; and complete the entire detailed project planning for transformation for the reshaping of the regional and local 'centres of excellence'.

Within the first year

We recommend action within the first year to: provide temporary ongoing support to other essential services, particularly A&E; deliver the efficiency improvement programme; and complete the rescheduling of day surgery to local services.

Within three years

In years 1 to 3, we envisage a period of: progressive refurbishment of facilities to enable most services to be reprovided in their appropriate local or regional setting; consolidation and completion of the PCCC development programme; acceleration of the workforce development programmes for APs and ANPs to lead the development of the local ambulance emergency response and Urgent Care Centres; and, strong infrastructure development to support the clinical networks.

Within 4 years

Years 3 to 4 should see the regional 'centre of excellence' able to deliver all the core acute services not associated with new builds with further development of the local 'centres of excellence'.

We now proceed to describe the implementation plan in more detail.

Areas for urgent action and implementation

The first priority has to be for the HSE to take immediate action to reduce the current level of clinical risk and improve patient safety in a number of service areas where the quality of care needs to be addressed.

1. Taking action to reduce clinical risk and improve patient safety.

a) All major trauma patients must be taken directly to the regional trauma centre

In the opinion of the trauma consultants, the current practice of the ambulance service taking major trauma patients to the nearest hospital, instead of directly to the regional trauma centre at Dooradoyle, exposes the patient to increased risks.

It delays the patient's access to prompt and definitive emergency management, management that is not available in the smaller hospitals.

Therefore, the HSE needs to restate the instruction that all major trauma patients **must** be taken directly to the regional trauma centre, with no ambulance stopover at a peripheral unit. This will immediately improve patient safety with regard to the transfer of trauma patients to hospital.

In addition, there needs to be an urgent review of why the Helicopter Emergency Medical Service (HEMS) is so infrequently used. There is a general impression that it should be getting used **much more frequently**.

b) All sick children and pregnant mothers being conveyed by ambulance must be taken directly to the appropriate recognised service

Despite clear protocols in place, it is reported that the ambulance services are continuing to take sick children and pregnant mothers to Ennis and Nenagh hospitals, again being the nearest site.

This practice is inherently **unsafe**, as these units have no facilities for their emergency management. **Moreover, Ennis and Nenagh are specifically excluded from providing acute paediatric care**⁴⁵.

The HSE needs to issue immediate instructions for the relevant protocols to be adhered to.

c) Establish a formal retrieval service for the transfer of critically ill patients between hospitals

The transfer of critically ill patients commonly has significant patient safety issues on two counts:

- The base hospital, from which the patient is being transferred, often has to send the duty doctor /anaesthetist with the patient on the transfer to make sure any problems on the way are properly managed; this means the base hospital has to try and backfill the absence of the doctor during transfer, not easy to do in a peripheral unit;
- Some patients have to be transferred with staff that are not sufficiently skilled in looking after the problems that may arise during transfer, so increasing the risks to the patient during that transfer.

The HSE needs to establish a formal retrieval system for critically ill adults and children to overcome these patient safety issues.

d) Establish a regional Level 3 adult critical care service at Dooradoyle as soon as possible

Our report has already highlighted the dispersed nature of critical care across the Mid-West. We understand the critical care network already works well informally but this is against the backdrop of having to cope with excessive fragmentation of critical care staffing and skills.

⁴⁵ Care of the critically ill child in Irish Hospitals, Recommendations of the Faculty of Paediatrics, RCPI and the Irish Standing Committee, Association of Anaesthetists of Great Britain and Ireland, February 2005.

The clinicians and the HSE need to commit to establish a single Level 3 unit as soon as possible, preferably as a 'quick win', and to equally declare that other units offer Level 2 high dependency services only, pending any other service changes. We understand this would involve only a nominal transfer of resources to make it happen.

e) Establish criteria to identify and exclude patients from increased risk as a result of undergoing complex orthopaedic surgery at Croom in the absence of on site critical care support

Croom Hospital is a stand-alone elective orthopaedic service performing large numbers of major procedures. Concern has been expressed that some patients would be more suitable to be operated upon at Dooradoyle.

We recommend that the orthopaedic surgeons and anaesthetists explore and resolve this issue in order to ensure that any avoidable patient risks are properly managed.

f) Establish a decontamination facility for the A&E service at Dooradoyle

There is presently no facility to decontaminate patients in the Mid-West, either to protect the patient or the service that is automatically compromised and would have to be closed upon a patient's arrival.

We recommend that HSE seeks to procure a suitable temporary decontamination system, pending definitive longer term planning within A&E as a regional service.

g) Establish an isolation facility within the critical care service at Dooradoyle

There is presently no isolation facility for patients who need critical care management in the Mid-West. This puts critical care patients and the staff at increased risk.

We recommend the HSE seeks expert advice from the consultants responsible for infection control procedures to identify how best to reduce this risk, particularly if there is a commitment to the early establishment of a regional service.

Actions and objectives in the first six months

The key actions, 2 to 6, listed below, represent an intensive period of activity and detailed project planning. The outcomes within 6 months should be:

- Clear HSE evidence of commitment, through leadership, support and funding;
- Explicit, integrated, short, medium and long term plans to support transition for current services and deliver the final network of regional and local 'centres of excellence', supported by a robust project management structure and implementation team; and
- A professional media awareness and information programme.

2. Establishing a transitional support programme to improve current services.

- Temporarily expanding the A&E medical staffing numbers to the level of being able to establish a suitable rotation out of the A&E service at Dooradoyle to serve both Ennis and Nenagh, until such time as nurse-led local Urgent Care Centres are established as part of the Emergency Care Network;
- Specifically linking the general medicine duty teams across the Mid-West with the duty team at Dooradoyle, with clear responsibilities for providing urgent advice and patient transfer to the centre; and
- Establishing an effective Medical Assessment Unit/Clinical Decision Unit at Dooradoyle to overcome the present interdepartmental bottlenecks between the A&E, acute medicine and emergency surgery services.

3. Developing new governance structures to support the overall implementation plan.

The HSE needs to lead the joint development of:

- A Clinical Governance strategy, designed to manage the clinical governance dimensions of clinical networks and integrated care being delivered by multi-disciplinary teams. The strategy therefore needs to primarily cover the acute services but also reflect shared care arrangements with PCCC and include the academic dimensions, through the University of Limerick medical faculty; and also
- A Corporate Governance strategy and code of practice, aligned with managing the inherent complexities and accountabilities in the funding, devolving and delivering of integrated models of care across a number of key stakeholders and organisations.

4. Establishing a regional 'best practice' programme to reduce the overall acute bed needs through improved service efficiencies, in preparation for full transformation.

A 'best practice' team, composed of acute, PCCC and HSE support staff, need to get on with a programme that effectively reduces unnecessary admissions to an acute bed and makes sure that patients are discharged in a timely manner, including:

- Optimising access to community services and expanding their influence to keep patients safely out of hospital or to plan their discharge better;
- Developing more Hospital at Home services;
- Ensuring more consultant input into rapid clinical decision making and safe immediate discharge for urgent general medicine referrals;
- Proactive discharge planning from Day One of admission, having joint acute / PCCC input to discharge planning, agreeing standard lengths of stay for common, routine, uncomplicated conditions, effective discharge arrangements at weekends, etc;
- All in-patients, both planned and emergency, have a date of intended discharge recorded in their notes at pre-admission or day of admission;
- Establishing a robust pre-operative assessment process to avoid inpatient 'work up' immediately prior to surgery; and
- Agreeing to the admission of elective surgical patients on the day of surgery.

5. Establishing a robust project management infrastructure and detailed project plan.

A Programme Director with executive responsibility is required to manage and troubleshoot the Mid-West implementation programme. One of the first tasks will be to confirm that other relevant national policy programmes, upon which the success of the Mid-West programme is dependent, are delivering on time, including confirming that:

- The current PCCC development programme is delivering according to expectation with reference to today's acute care support needs and that planned developments have the capacity needed to make sure that no patient is admitted unnecessarily to an acute bed or has a delayed discharge;
- The current ambulance programme for the training and operational deployment of APs to emergency front line business, starting in the most 'need' areas of the Mid-West, is delivering according to plan;
- The professional development programme for ANPs and CNSs is proceeding and is aligned with the service plan for nurse led Urgent Care Centres; and
- The national recommendations for the future of laboratory medicine service are in line with the implementation programme.

The HSE senior management team will need to be appraised if remedial action is considered necessary if any of the above programmes are not delivering to expectation, or lack the future capacity to achieve optimal service transformation.

Other steps that the HSE will need to take include:

- Establishing a Mid-West Steering Group and Terms of Reference for overseeing the whole implementation programme;
- Establishing a project implementation team with day to day responsibility;
- Appointing a clinical programme director / lead to oversee and advise upon the clinical dimensions of the implementation plan;
- Establishing an HR group to address the workforce requirements that underpin the implementation programme; and
- Establishing a technology group to develop the necessary clinical information and communication infrastructure to link the clinical networks and 'centres of excellence'.

6. Completing a detailed project plan for transforming services across the Mid-West.

At this stage, it is possible only to describe the definitive high level actions needed for implementation. Each action will need a detailed work programme for its delivery. The implementation plan needs to cover:

- The full implementation of the interim transition programme within the first 12 months, in order to ensure that current services continue to be supported and receive on-going investment to make them as safe as possible within their present circumstances;
- Preparing the Dooradoyle site to fulfil its new role as the regional 'centre of excellence' for acute emergency and complex planned care, including:
 - Releasing acute bed capacity through efficiency and best practice improvements and a programme of progressive transfer of day surgery and other workload e.g. minor injuries, to the local 'centres of excellence';
 - Confirming the planned acute bed capacities to cope with the peaks of acute inpatient demands from across the region, with the development of plans for bed expansion as required;
 - Preparing Dooradoyle for the transfer of obstetrics and elective orthopaedics;
 - Preparing Dooradoyle to become the regional emergency general surgery service;

- Developing a workforce programme to make sure that all the acute emergency specialties are up to 'full strength' for the provision of 24/7 senior and junior 'round the clock' cover, working to rotas that are compliant with the European Working Time Directive;
 - Increasing the critical care capacity to meet the region's demands, with closure of capacity and transfer of resources from elsewhere;
 - Refurbishing hospital facilities as necessary to become the regional 'centre of excellence' and in keeping with infection control protocols; and
 - Ensuring functional, preferably also physical, separation of planned activity from emergency clinical business.
- Preparing a commissioning strategy for the cessation of acute in-patient services from St. John's, Ennis and Nenagh Hospitals and their conversion to new local 'centres of excellence' for the comprehensive delivery of all non-acute services;
 - Preparing Ennis and Nenagh hospitals for their new roles as local 'centres of excellence' including:
 - Rapidly expanding their position as key providers of day surgery;
 - Ensuring that the AP emergency ambulance service is deployed to the most appropriate points in the region;
 - Transferring all current emergency general surgery services to Dooradoyle as soon as it can be safely arranged;
 - Reshaping local services in line with the needs of the local population;
 - Ensuring, through new capital build/refurbishment if necessary, that Ennis and Nenagh are 'fit for purpose' as new local 'centres of excellence';
 - Supporting HSE to achieve its objectives, including:
 - Ensuring that the PCTs and Home Care support services are enabled / resourced to maximise admissions avoidance and early supported discharge, in line with acute initiatives to achieve best practice;
 - Ensuring that the HSE undertakes a fresh study on equity of access in relation to how many local 'centres of excellence' are needed, where they should be sited, what their capacities should be, and what range of services should be offered;
 - Ensuring that local HSE services are aligned so that the optimal configuration of the regional 'centre of excellence' can be achieved i.e. that no patient is admitted to the regional 'centre of excellence', except when active acute clinical management is needed;

- Charging each Local Health Office with revising/developing a fresh locality plan in line with the new acute strategy, general practice opportunities and the HSE Transformation Programme for the integration of PCCC services;
- Ensuring that the HSE capital build programme enables both the functional and physical integration of services around the local 'centre of excellence';
- Ensuring that the HSE diagnostics programme means that no out-patient needs to go to the regional 'centre of excellence' for tests, except specialised ones;
- Establishing a clinical network development group, with a clinical lead for each network⁴⁶ to prepare for the new service configuration;
- Establishing a public relations programme to inform the staff and public about the Mid-West implementation programme and its intended benefits and outcomes;
- Establishing a secure and effective platform for partnership planning and working between the acute services and the PCCC services; and
- Assisting PCCC in securing integrated services across the pre-hospital sector, namely the ambulance service, general practice, primary care, community care, social care and voluntary services.

Resourcing the implementation plan

The capital implications of implementing the transformation programme for the new delivery of care in the Mid-West will require detailed consideration. Further work will need to be undertaken to fully understand and scope the investment requirements. This will include:

- High level business case for the additional capacity for the regional 'centre of excellence' at the Dooradoyle site which will then form the basis of the estates strategy and the site control development plan;
- High level locality business cases to set out the clinical requirements and the impact on workforce plans and estate requirements to cover the development of local 'centres of excellence' within the Mid-West;
- An estates strategy covering new investment costs (buildings and equipment), condition survey and refurbishment requirements for the existing estate, asset valuations for potential site disposal of St. Munchin's Maternity Hospital and St. Nesson's Orthopaedic Hospital, Croom, and HSE policy on funding options for new capital developments;

⁴⁶ Emergency Care, Planned Care, Critical Care, Obstetrics, Cancer, Pathology, Radiology, etc.

- A detailed workforce development plan covering education and retraining, as well as absolute staff numbers;
- A detailed understanding of the current financial commitments within the Mid-West, both capital and revenue; and
- Transitional costs for the implementation programme, including programme management, double running costs and 'pump priming' costs for the delivery of operational efficiency targets.

Potential scale of capital requirements

The areas where capital investment will be required for the implementation programme include:

- Additional build and redevelopment at the Dooradoyle site to support its role as the regional 'centre of excellence' in the Mid-West; this includes providing for a net additional 135 inpatient beds, as well as the relocation of obstetrics and orthopaedics⁴⁷;
- New build to replace the existing A&E, including decontamination and isolation facilities, at the Dooradoyle site to become the regional A&E centre for the Mid-West; and
- Redevelopment/refurbishment of the estate at Ennis, Nenagh and St. John's to undertake their role as local 'centres of excellence'.

Revenue costs of new service models

Areas where revenue costs and potential savings are likely to be incurred in the Mid-West include:

- Additional medical staff to reduce clinical risk and improve patient safety in the immediate future, for example, in A&E with the costs being offset by the existing external staff contract arrangements when no longer required;
- Establishing an adult critical care retrieval team;
- The clinical specification and workforce models for the regional and local 'centres of excellence';
- Network workforce models;
- Academic training plans and access to research and development; and

⁴⁷ it is not known to what extent the development of the co-located private hospital (with 138 inpatient and 34 day case beds, plus 8 critical care beds) will contribute to meeting this net additional requirement of inpatient beds.

- Additional PCCC staffing and home care costs partly covered from current HSE investment plans and partly by staff redeployment.

Achieving the centralisation of acute inpatient services at the new 'centre of excellence' on the Dooradoyle site will result in sufficient consultant staff numbers across the core specialties without the need for further permanent appointments.

The benefits for patients from this new system

The results for patients will be profound. They include:

- **Safe, sustainable, high quality local and regional services, operating to international standards and quality assured;**
- **Patients accessing much more care at home and in their local 'centre of excellence';**
- **Fewer patients going to or spending unnecessary time in the regional 'centre of excellence'; and**
- **Receiving care from a workforce that is much better organised and supported, due to improved teamworking, better facilities and better access to ongoing education, training and research programmes.**

While the service configuration changes proposed for the Mid-West are significant, patients should be assured by the HSE that:

- Current services will be maintained until the new system and services are in place and tried and tested; and
- The changes proposed are geared towards the delivery of a high quality, safe, sustainable, locally accessible and financially sound service.

The benefits which patients are entitled to expect the HSE to deliver from the new system are described below.

For local (non-acute) care:

- More care provided in locally convenient and appropriate settings, including home;
- A wide range of local services meeting the vast majority of the needs of local communities in the Mid-West, supported by outreach services from the regional centre;
- More development of local services, including new Primary Care Teams, Urgent Care Centres, better access to diagnostics and improved emergency ambulance services;
- More resources being available, acknowledging the transfer of patient care from the acute hospital to community and home settings;
- Many more patients being able to safely avoid admission to hospital for their care; and

- Many more patients being able to safely get home sooner from hospital, to continue their care programme in a much more suitable environment.

For regional (acute) care:

- No need to go to the regional 'centre of excellence', except for those services which cannot be safely and sustainably provided locally;
- Good communications and minimal bureaucracy. Seamless patient care and transfer procedures between local and regional centres of excellence; and
- High quality, specialist acute care, available 'round the clock'.

Appendix 1 – Terms of Reference and Steering Group

The review has the following objectives:

1) To evaluate the benefits and risks associated with current provision of acute hospital services on six sites serving a population of approximately 360,000 and to be cognisant of the relationship/role of the Network within the wider Western area.

2) To review the current capacity, usage and deployment of staff, beds, theatres, day case, out-patient, accident and emergency facilities, diagnostic and other facilities in the hospitals in the region and compare them to international norms. To analyse the implications of Medical, Surgical, Anaesthetic and ancillary services providing services on multiple sites in relation to the provision of a safe, sustainable, high quality service.

3) To advise on the optimal governance arrangements which should operate within and between each hospital site in the Mid-West, reflecting the ethos / ownership of the various entities, as well as best practice in relation to hospitals operating in networks. Proposed governance arrangements should include reference to appropriate links to the University of Limerick and other academic/third level institutions. The hospitals are as follows:

- The Mid-Western Regional Hospital Dooradoyle;
- The Mid-Western Regional Obstetric Hospital;
- The Mid-Western Regional Orthopaedic Hospital;
- The Mid-Western Regional Hospital Ennis;
- The Mid-Western Regional Hospital Nenagh; and
- St. John's Hospital, Limerick.

4) To produce a robust evidence based report as outlined in the above deliverables including a high level costed action plan with financial recommendations, setting out the key steps to progress implementation of the recommendations, including assessment criteria to facilitate decision making, where required.

5) To take account of current and projected geographic, demographic, social and epidemiological trends affecting the Mid-West and the likely future health care needs of that population as set out in more detail hereunder with reference to:

- The implications of the move towards regional self-sufficiency in service provision within the four HSE Administrative Areas with the exception of specific tertiary or national specialist services;

- The current and potential contribution of primary care services, including out of hours GP services, pre-hospital emergency care, patient transport and advanced paramedical services etc. to enhance patient care & safety. NOTE; The review is specifically requested to make realistic assumptions about the role of Primary Community & Continuing Care in impacting on acute hospital services in the short, medium and longer term including international trends in best practice and more conventional approaches to the provision of care;
- Changing public expectations of healthcare;
- Health inequalities and other social factors;
- Impacts of HSE objectives and targets such as those to further reduce waiting times;
- Transfers & retrieval of critically ill patients;
- The relationships and boundaries between acute hospital services and primary, community & continuing care;
- Recent and current developments in the way in which health services are provided in Ireland & elsewhere;
- Developments in diagnostic and treatment practice;
- Changes in the provision of support services or shared services;
- Developments in setting clinical standards;
- Developments in medical & health related technology;
- Current initiatives with regards to the regional planning of health services;
- The role of each of the hospitals in undergraduate and post graduate teaching, training and research;
- The clinical service roles played by other HSE Services, other Voluntary Providers and Private Hospitals;
- Any planned revision of governance arrangements for Hospital Networks and the range of individual acute hospitals;
- Existing national strategy and health policy documents;
- National and local reviews, both completed and underway, in relation to acute services, non acute services, development of paediatric services, A&E, governance and resource allocation arrangements (e.g. "Improving Safety and Achieving Better Standards – An Action Plan for Health Services in the North East", "Children's Health First");
- Health Service Transformation Agenda, particularly the targeted expansion of primary care and post acute services, cancer control programme, development of ambulance emergency response services, integrated chronic disease management systems, development of ambulatory day care units / more elaborate day care in OPD, and the recommendations of the A&E Task Force;
- The availability of resources; and

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- Staffing and workforce issues, e.g., the European Working Time Directive, changes in the training and deployment of NCHDs, scope of practice for nursing & professions allied to medicine, new roles, career development, team working and scope for further flexibilities in staffing.

The review has been supported by a HSE Steering Group, whose membership comprises John O'Brien, Director of National Hospitals Office and Liam Downey, Chairman of the HSE. Assigned to the HSE Steering Group has been a Project Steering Group, chaired by Professor Paul Finucane, University of Limerick, which has had responsibility for agreeing the terms of reference for the review, and monitoring project direction and progress. Horwath/Teamwork was commissioned to produce a report on an independent basis.

Members of the Project Steering Group include:

- Chairman, Prof. Paul Finucane (University of Limerick);
- Dr. Tessa Greally, A/Director of Public Health;
- Mr. Hugh Flood, Consultant Urologist, MWRH & MWRH Nenagh;
- Nora Irwin O'Rourke, Director of the N.M.P.D.U.;
- Dr. Con Cronin, Consultant Physician, MWRH & St. John's Hospital;
- Mary Jo Biggs, Office of the CEO;
- Dr. Manus Moloney, Consultant Physician MWRH & MWRH Nenagh;
- Fionnuala Duffy, Assistant National Director of Planning and Development, NHO;
- Seamus McNulty, Assistant National Director, HSE West (PCCCD) represented by Dr Ann Hogan;
- Dr. John O'Dea, Consultant Anaesthetist MWRH & MWRH Ennis;
- Alan Moran, Network Manager, West & NW Hospitals Group;
- Dr. Cathal O'Donnell, Consultant in Emergency Medicine, MWRH & MWRH Ennis;
- Dr. Sean Darby, Consultant Radiologist MWRH & MWRH Nenagh;
- Eileen O'Donovan, Planning and Development Unit, National Hospitals Office;
- Niamh O'Grady, Network Managers Office, Mid-West Hospitals Group;
- Elaine Murphy, A/Network Manager, Mid-West Hospitals Group subsequently replaced by John Hennessy; and
- John O'Donovan, Assistant National Director Procurement, Head of Portfolio and Category Management, represented by Deirdre O'Callaghan.

Appendix 2 – Site visits and interviews

During the review, we undertook a number of site visits and fact finding interviews. Details are below.

Site familiarisation visits were undertaken to the following acute hospitals:

- Mid-Western Regional Hospital, Dooradoyle, Limerick;
- Mid-Western Regional Hospital at Ennis, County Clare;
- Mid-Western Regional Hospital at Nenagh, County North Tipperary;
- Mid-Western Regional Obstetric Hospital (St. Munchin's), Limerick;
- Mid-Western Regional Orthopaedic Hospital (St. Nesson's Orthopaedic Hospital), Croom; and
- St. John's Hospital, Limerick.

Site familiarisation visits were also undertaken to the following community hospitals:

- St. Camillus' Community Hospital, Limerick;
- St. Joseph's Community Hospital, County Clare; and
- Hospital of the Assumption, North Tipperary.

Fact finding interviews undertaken include:

- Frank McClintock, Assistant National Director – Pre Hospital Emergency Care, NHO;
- Leo Kearns, Chief Executive Officer, Royal College of Physicians of Ireland;
- Professor Gerry O'Sullivan, President, Royal College of Surgeons of Ireland;
- Professor Arthur Tanner, Director of Surgical Training, Royal College of Surgeons of Ireland;
- Dr. Ailis Quinlan, Clinical Indemnity Scheme;
- Anne Duffy, Clinical Indemnity Scheme;
- John Lamont, Registrar, Chief Officer of the Medical Council;
- Tom Finn, Assistant National Director – Contracts and Utilisation, NHO;
- Fionnuala Duffy, Assistant National Director – Planning and Development, NHO;
- Fionan O'Cuinneagain, Chief Executive Officer, Irish College of General Practitioners; and
- Brian Gilroy, Director of Estates, HSE.

Appendix 3 – Documents provided

The list of documents provided as part of the Review of Acute Hospital Services in HSE Mid-West is presented in Table 19.

We have also received a wide range of operational-level documents, including statistics, details of staff numbers, patient attendances, etc, which are not listed herein.

Table 19: List of documents provided for the review

Document	Sent by:
Submission to Review Group	HSE staff, Dooradoyle
Future Acute Services at Ennis Hospital	Ennis Hospital Medical Board
Report to the Chief Executive Officers of the Health Boards Domiciliary Births Group - Dec 04	HSE staff, MWR Obstetric Hospital
The People of Clare 1991-2002 A Community in Transition	Ennis Hospital Development Committee
Patient Letter	MW Regional Orthopaedic Hospital
Various documents & statistics	Ennis Hospital Development Committee
Infection Control Report Croom Orthopaedic Hospital 2005/2006	Infection Control Team MWRH, Limerick
Mid-Western Regional Obstetric Hospital - Background Documentation	HSE staff, MWR Obstetric Hospital
Review of Patient Journey at Mid Western Regional Hospital Ennis	Organisation Development Unit
Mid Western Regional Orthopaedic Hospital Nursing Submission	HSE staff, Croom
Mid Western Regional Orthopaedic Hospital, Croom - Outline Development Brief	Mid Western Regional Orthopaedic Project Team
Small Hospital, Big Service - Presentation to Mid West Review Team Feb 2007	Nenagh Hospital Action Group
Nenagh Acute Hospital - Physiotherapy Service	HSE staff, Nenagh Hospital
Outline of the Future Hospital System	Report of the Consultative Council on the General Hospital Services
Submission for Acute Hospital Review Pathology Nenagh	HSE staff, Nenagh Hospital
Small Hospital, Big Service - Working Proposal for the Future of Nenagh Hospital	Nenagh Hospital Action Group
Draft Summary Proposal for Development of Orthopaedic Services in HSE mid-West Area - Feb 2007	HSE staff, Croom
St. John's Hospital - Strategic Plan 2006-2010	St John's Hospital
Submission - Review of the Acute Hospital Services in the Mid-Western Region Network 7	HSE staff, Dooradoyle
Brief for the development of St. John's Hospital Limerick	St John's Hospital
Healthcare Risk Management	HSE
Submission to Review Group	Mr Max Madden, Kilrush
Submission to Review Group	Ms Rita McInerney, CEO, Ennis Chamber of Commerce
Review of Acute Hospital Services in HSE Mid West - Theatres	HSE
A Preliminary Evaluation of the ANP, 2005	HSE
A&E Comhairle Report. February 2002	HSE
Acute Hospital Services - Advanced Nurse Midwife Practitioner Posts	HSE
Acute Pain Service	HSE
Cancer in the MidWest	HSE
Cancer Strategy 2006	HSE
Capital Plan 2007-2011	HSE
Cardiology	HSE
Clinicians in Management, OHM	HSE
Comhairle Report on Neurology	HSE
Consultant Schedule MWRH Limerick	HSE
Consultant Staffing 2005. Comhairle Report	HSE

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Document	Sent by:
Consultant Commitment	HSE
Croom Activity	HSE
Croom Development Draft 4	HSE
Current Geriatric Service in Clare	HSE
Dooradoyle pharmacy acute services review Feb 07	HSE
Submission to Review Group	Dr P Fitzgerald, Consultant Anaesthetist
Submission to Review Group	Dr P Hooker, MWRH Nenagh
Elderly care	HSE
Ennis Action Group.	HSE
Establishment of Clinical Nurse Midwife Specialist Posts Intermediate Pathway. 2004	HSE
Evaluation of the effectiveness of the Role of Clinical Nurse and Midwife Specialists 2004	HSE
Haematology services	HSE
Submission to Review Group	Irish Kidney Association
Independent Reconfiguration Panel Report on Hanly Report. 2004	HSE
Individual Reports Bed Capacity - Network 7	HSE
Staffing Posts within HSE MW Acute Services	HSE
Mid-West Data and Information Request	HSE
National Task Force on Medical Staffing. 2003	HSE
Nenagh Action Group email to General Manager, Nenagh	HSE
Nenagh Hospital Action Group Report	Nenagh Hospital Action Group
Nenagh nursing & midwifery Submission	HSE staff, Nenagh Hospital
Nenagh PCCC	HSE
Nenagh Physiotherapy Services	HSE
Supporting your need	NMPDU
Nursing homes and community beds HSE MW	HSE
Older persons strategy	HSE
PCCC and nursing home beds	HSE
Report on the Impact of the Radiotherapy Unit on the Aseptic Manufacturing Unit	HSE
Rheumatology Strategy for the Mid-West	HSE
Submission to Review Group	Senator Brendan Daly
Allied Health Professional Services	HSE staff, Dooradoyle
Strategy and Action Plan for Nursing and Midwifery - Acute Hospital Services	HSE
Proposed Structure for Implementing Acute Hospital Accreditation Process Standards & Guidelines	HSE
Submission to Review Group	Dr John Kellett, Consultant Physician, Nenagh
Submission to Review Group	Senior Nurse Managers, Dooradoyle
IPB Report into 2000-01 Clinical Risk Management Pilot Project at MWR Obstetric Hospital	HSE
Submission re Dooradoyle anaesthetics	Dr John G. Kennedy, Consultant Anaesthetist, Dooradoyle
Strategic Development of Nursing & Midwifery	Regional Steering Group for Strategic Development of Nursing and Midwifery in the Acute Hospital Services, Network 7
Attendances for Admissions, Outpatients and ED	HSE
The Clinical Biochemistry Service Overview	HSE
Theatre Sessions	HSE

Appendix 4 – Current service delivery in the Mid-West

To assess how this model of 'best practice' care fits with the current profile of services and what may need to change, we need to understand the demographics of the population and the delivery of current services⁴⁸.

Resident population

HSE Mid-West covers an area of 7,879 square kilometres and has a resident population of 360,650. This administrative catchment includes the counties of Limerick, Clare and North Tipperary, and Limerick City. The resident population of each county is shown in Table 20. The 2006 population figures show an increase across the whole HSE Mid-West area of 6.2 per cent.

Table 20: Resident Population by County

County	Census 2002	Census 2006	% Change
Limerick City	54,023	52,560	-2.7
Limerick County	121,281	131,303	8.3
Clare	103,277	110,800	7.3
North Tipperary	61,010	65,988	8.2
HSE Mid-West Total	339,591	360,651	6.2

Source: Census 2006 Preliminary Report, Central Statistics Office, July 2006

This table shows that there has been a significant increase in population numbers across all counties in the last four years except for Limerick City where there has been a reduction. County Limerick and County North Tipperary have experienced the largest growth in resident population of over 8 per cent. The Central Statistics Office has forecast to 2021 that the national average annual growth rate in population will increase by 1.4 per cent in Ireland. The growth rate forecast for the Mid-West is lower than this, at 0.8 per cent per annum from 2006 to 2021.

⁴⁸ CAUTION – The assessment of the current acute service delivery is based on available information at a point in time and which is on a consistent basis for all the acute hospital services in HSE Mid-West.

Health needs of the population

A breakdown of the population by county and age band in 2002 is shown in Table 21. The population breakdown shows County Clare has a higher proportion of children whereas County North Tipperary has a higher proportion of persons aged over 65 years. Furthermore, there are a significantly higher proportion of adults within the 15 to 29 age group in Limerick especially in the City area.

Table 21: Population Characteristics

County	00-14	15-29	30-44	45-64	65+	Total
Clare	22,874	21,780	23,001	23,402	12,220	103,277
North Tipperary	13,316	12,947	12,851	13,707	8,189	61,010
Limerick City	10,475	15,506	11,062	10,672	6,308	54,023
Limerick County	25,303	30,665	25,842	26,695	12,776	121,281
Mid-West Total	71,968	80,898	72,756	74,476	39,493	339,591
% of Total						
Clare	22.1%	21.1%	22.3%	22.7%	11.8%	100%
North Tipperary	21.8%	21.2%	21.1%	22.5%	13.4%	100%
Limerick City	19.4%	28.7%	20.5%	19.8%	11.7%	100%
Limerick County	20.9%	25.3%	21.3%	22.0%	10.5%	100%
Mid-West Total	21.2%	23.8%	21.4%	21.9%	11.6%	100%

Source: Ireland & Northern Ireland's Population Health Observatory, 2002.

A comparison of the standardised mortality ratios (SMR) across the three counties in HSE Mid-West is presented in Table 22. The standardised mortality ratio compares the actual death rate in an area with the average death rate for the whole of Ireland. The overall SMR for all causes of mortality is 102.2, compared with the Ireland average of 100, this means that there were 2.2 per cent more deaths in the Mid-West than expected.

For cancers the region has a below average death rate, with County Clare being the lowest with an SMR of 90.4. For circulatory diseases (which include stroke and heart disease), there is significantly above average mortality rates for County North Tipperary at 123.2. The death rate for respiratory diseases is highest in Limerick with an SMR of 117.4. For injuries and poisoning it is County North Tipperary again with the highest SMR at 127.4.

Table 22: Standardised Mortality Rates, All Ages

Cause of Death	Measure	Limerick	Clare	North Tipperary	Mid-West Total

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Cause of Death	Measure	Limerick	Clare	North Tipperary	Mid-West Total
All causes of mortality	Deaths	6,899	4,107	3,053	14,059
	SMR	104.3	94.3	109.9	102.2
All malignant neoplasms	Deaths	1,698	966	706	3,370
	SMR	102.2	90.4	103.0	98.7
All circulatory system diseases	Deaths	2,566	1,587	1,378	5,531
	SMR	98.4	90.9	123.2	101.1
All respiratory system diseases	Deaths	1,178	745	354	2,277
	SMR	117.4	109.0	81.0	107.2
All injuries and poisonings	Deaths	373	188	159	720
	SMR	106.9	91.2	127.4	105.9

Source: Ireland & Northern Ireland's Population Health Observatory, 2003.

Overview of local service profile

Acute hospital services are provided from six acute sites and the profile of the activity and facilities for 2006 are shown in Table 23 for the Mid-West.

Table 23: Profile of Acute Hospital Services in the Mid-West

Acute Hospital	Acute Inpatient Beds	Day Case Beds	Inpatient Discharges	Day Case Discharges	ED Attendances	Outpatient Department Attendances
Dooradoyle	375	97	23,803	19,836	54,144	109,922
Ennis	88	6	5,419	1,947	20,164	15,401
Nenagh	75	6	4,670	2,881	14,737	11,358
Obstetrics	99	0	8,039	0	0	15,959
Croom	67	10	1,664	1,873	0	7,586
St John's	96	10	3,873	5,064	19,132	13,259
Total	800	129	47,468	31,601	108,177	173,485

Source: Individual hospital submissions, 2006.

Regional hospital services are provided at the Dooradoyle site, including nephrology, cardiology, haematology and radiation oncology.

In the community, PCCC provide a range of primary, community and social care services. In the Mid-West, there are nine public community hospitals/community nursing units with a capacity of 855 beds (see Table 24 below for a detailed breakdown by county and hospital). The majority of these beds are designated for long stay continuing care patients although a small proportion of beds are for rehabilitation (73 beds, 8.5 per cent).

Table 24: Profile of community services in the Mid-West

County	Community Hospital (CH) /	Bed Type	Total
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		Long Stay	Respite	Rehab	Palliative Care	Psycho Geriatric	
Limerick	St. Camillus CH	178	12	22	0	10	222
Limerick	St. Ita's CH	113	6	14	0	9	142
Clare	St. Joseph's CH	216	10	22	0	0	248
Clare	Regina House CNU	31	6	0	2	0	39
Clare	Ennistymon CNU	22	7	0	2	0	31
Clare	Raheen CNU	23	8	0	2	0	33
North Tipperary	Hospital of the Assumption	51	4	15	2	0	72
North Tipperary	Dean Maxwell CNU	29	4	0	2	0	35
North Tipperary	St. Conlon's CNU	28	3	0	2	0	33
Total Mid-West		691	60	73	12	19	855

Source: Information provided by HSE PCCC office, Mid-West.

The HSE has adopted a Population Health model of health and social care, which takes a more proactive approach on maximising the health and well-being of the population. A key part of this is the development of Primary Care Teams, and this development is a primary strategic aim within PCCC. Primary Care Teams will serve resident populations of between 4,000 to 10,000, and their composition will include General Practitioners, Public Health Nurses, Community Therapists, Social Workers and Home Care Support Workers. These teams will be supported by a Primary and Social Care Network serving catchments of between 30,000 to 50,000, where a broader range of services will be available.

In the community, there is also private nursing home provision and across the 40 homes, there is a total complement of 1,747 beds as presented in Table 25 below.

Table 25: Profile of nursing homes services in the Mid-West

County	Number of Nursing Homes	Bed Capacity
Limerick	19	792
Clare	8	500
North Tipperary	13	455
Total Mid-West	40	1,747

Source: Information provided by HSE PCCC office, Mid-West.

Current service delivery

Regional self sufficiency

Within the National Hospitals Office (NHO), there is a move towards achieving regional self sufficiency and addressing any significant gaps in acute service provision within regions to ensure geographical equity⁴⁹.

Examining the extent to which HSE Mid-West has achieved regional self sufficiency can be seen through an analysis of hospital discharges using HIPE data. This shows that 81.1 per cent of residents in Mid-West use the acute hospital services in HSE Mid-West. Further analysis shows that the residents in County North Tipperary when compared with the other counties are more likely to access services outside of HSE Mid-West, predominantly accessing services in Waterford and Dublin. Only 4.5 per cent of residents in Limerick City access services outwith HSE Mid-West. Table 26 shows a profile of this activity by county.

Table 26: Residents treated within and outwith HSE Mid-West

County	Discharges			% Outflow	Main Areas for outflows and %
	Mid West	Outside	Total		
Limerick City	18,206	849	19,055	4.5%	Limerick: 13.8% = Dublin (8%), Cork (5%), and Galway (1%)
Limerick County	19,566	5,188	24,754	21.0%	
Clare	20,493	4,232	24,725	17.1%	Galway (10%), Dublin (5%), and Cork (2%)
North Tipperary	11,748	6,096	17,844	34.2%	Waterford (14%), Dublin (8%), Midlands (5%), Galway (4%), and Cork (3%)
Total Mid-West	70,013	16,365	86,378	18.9%	

Source: Analysis of HIPE data, 2005.

Given this profile of activity, with 19 per cent of patients travelling outside of HSE Mid-West to access acute hospital services it is reasonable to assume, that in the future, this pattern will continue but at a reduced level.

There is also a proportion of patient activity occurring at acute hospitals in HSE Mid-West which arises from patients who are resident outside of HSE Mid-West. The majority of these patients are resident in the HSE South area. These patients are being admitted for emergency general medicine, emergency general surgery and elective orthopaedics.

Taking into account the inflows and outflows of acute hospital activity for the Mid-West, then there is a net loss in activity as presented in Table 27.

⁴⁹ National Service Plan, Health Service Executive, January 2007.

Table 27: In and Out Flows of Activity for the Mid-West

Movement	Mid-West Discharges
Inflow	2,724
Outflow	16,365
Net Gain/Loss	-13,641

Source: Analysis of HIPE data, 2005.

Hospitalisation rates

The current rates of access to acute hospital services can be examined to assess use and equity of access. Hospitalisation rates (directly age and sex standardised against the European standard population), have been produced for medical, surgical, paediatric and obstetric admissions. This analysis is shown in Table 28.

Table 28: Age and Sex Standardised Hospitalisation Rates (per 10,000 population)

Admission Type	County	Specialty Group				
		Medical	Surgical	Paediatric	Obs/Gynae	Other
Elective	Limerick City	1,746	1,750	415	198	521
	Limerick County	926	923	290	115	501
	Clare	751	1,098	222	194	325
	North Tipperary	896	1,438	163	653	388
Non-Elective	Limerick City	1,203	645	3,221	1,603	23
	Limerick County	571	347	999	702	15
	Clare	877	512	1,145	1,020	17
	North Tipperary	954	688	1,129	747	19
Total Mid-West	Limerick City	2,949	2,394	3,636	1,801	543
	Limerick County	1,497	1,270	1,289	816	515
	Clare	1,628	1,610	1,367	1,214	343
	North Tipperary	1,850	2,126	1,292	1,399	407

Source: Analysis of HIPE data, 2005.

A comparison of hospitalisation rates across counties for medical admissions shows that the rate in Limerick City is significantly higher (2,949 discharges per 10,000 population) than the other counties and almost twice that of Limerick County.

A similar pattern is seen across surgical and paediatric admissions with Limerick City residents having the highest hospitalisation rate. A potential factor contributing to this higher rate of admission from Limerick City residents into acute hospital services is the so called 'distance decay effect', whereby the utilisation of services is inversely related to the distance of patients from hospitals⁵⁰.

It must be borne in mind that the hospitalisation rates are based on discharge information available from HIPE, which includes data relating to public hospital activity only.

Consultant Medical Workforce

The distribution of the consultant workforce across the HSE Mid-West area is presented in Table 29. This shows a consultant workforce of some 110 (104.9 wte) consultants across the area.

Table 29: Distribution of the consultant workforce across the acute hospitals in the Mid-West

Status and working patterns	Consultant numbers	Consultant sessions	Consultants (calculated wte)
Full-time: Single site	53	583	53.0
Full-time: Split site	52	550	50.0
Part-time: Single site	3	12	1.1
Part-time: Split site	2	9	0.8
All	110	1,154	104.9

Source: Individual hospital submissions with updates from the HSE NHO Mid-West area office.

Note: Consultant staff wtes are calculated based on 11 sessions per wte consultant.

There is almost a 50:50 split between those consultants who work on one hospital site only to those who split their sessional time across more than one hospital site.

Nursing workforce

The distribution of the total nursing workforce and also the clinical nurse/midwife specialist posts across the acute hospitals within the Mid-West is shown in Table 30.

Table 30: Distribution of the nursing workforce across the Mid-West

Hospital	Number of Nurses	Nurse (wte)	CNS/CMS (wte) ⁵¹	% CNS/CMS of total nurse wte
Dooradoyle	939	706.3	38	5.4%
Ennis	118	95.4	4	4.2%
Nenagh	154	111.2	3.5	3.1%
Obstetrics	288	226.4	4	1.8%
Croom	105	80.3	4	5.0%
St. John's	180	136.6	11	8.1%
Total Mid-West	1,784	1,356.2	64.5	4.8%

Source: Analysis of individual hospital submissions.

This indicates that there are over 1,350 wte nurses supporting the delivery of healthcare within the acute hospital in the Mid-West, of which some 5% are clinical nurse/midwife specialists.

⁵⁰ Rural Health and Healthcare: a North West Perspective, Institute of Health Research, Lancaster University, January 2004.

⁵¹ Strategy & Action Plan for Nursing & Midwifery, Acute Hospital Services, HSE Mid-Western Area 2005-2008, 1st Annual Progress Report 2006. Health Service Executive, June 2006.

Five areas for the establishment of advanced nurse/midwife practitioners have been identified through a service need analysis undertaken in May 2006. The areas are:

- Accident and Emergency – site preparation underway;
- Oncology – site preparation completed;
- Bereavement and Loss - site preparation completed;
- Colposcopy – site preparation nearing completion; and
- Rheumatology.

These areas have not received approval and therefore there are currently no approved ANP/AMP posts in HSE Mid-West⁵².

Hospital Accreditation

All of the hospitals in HSE Mid-West are participating in the accreditation scheme for monitoring health care quality as administered by the Health Information and Quality Authority (HIQA). The primary purpose of the accreditation process is to help management and staff to identify the strengths of their hospital as well as areas for improvement. With this knowledge, healthcare providers can decide how to use their resources most effectively and develop short and longer-term plans to deliver a higher standard of patient care. The current accreditation status of the hospitals in the Mid-West is shown in Table 31⁵³.

Table 31: Hospital Accreditation Status

Hospital	Current Accreditation Status
MWRH, Dooradoyle	Pending
MWRH, Ennis	Pending
MWRH, Nenagh	Pending
MWR Obstetric Hospital	Pending
St. John's Hospital	Accreditation with focused visit

Source: HIQA website (www.hiqa.ie/functions_hcq_accred.asp) updated as of 3rd May 2007.

Clinical Resource Utilisation

Day Case Rates

Based on Hospital In-Patient Enquiry (HIPE) system data for 2005, an analysis of day case rates by speciality is shown in Table 32.

⁵² Acute Hospital Services, HSE West (Limerick, Clare & Tipperary Nth), Advanced Nurse/Midwife Practitioner Posts, NMPDU, 12th February 2007.

⁵³ Health Information and Quality Authority (HIQA) incorporating the former Irish Health Services Accreditation Board. www.hiqa.ie/functions_hcq_accred.asp.

Table 32: Day Case Rates by Specialty

Hospital	General Surgery	Urology	Orthopaedics	Ophthalmology	ENT
Dooradoyle	76.1%	83.8%	23.4%	59.9%	59.7%
Ennis	82.8%	96.8%			
Nenagh	84.8%	93.8%			
Croom			43.9%		
St. John's	63.4%				
Total	76.9%	86.8%	42.0%	59.9%	59.7%

Source: Analysis of HIPE data, 2005.

For general surgery, the day case rate is from 63 per cent at St. John's Hospital to 85 per cent at Nenagh. For urology the highest rate is achieved by Ennis.

This comparison of day case rates at a specialty level provides a useful reference point for further, more detailed analysis, since, differences in casemix may account for some of the variation observed at a specialty level. An indicative analysis based on the 2004 HIPE data compares day case rates for some surgical procedures as shown in Table 33.

Table 33: Day Case Rates by Procedure

Hospital	Excision of Breast Lump	Haemorrhoid-ectomy	Extraction of Cataract	Myringotomy	Reduction of Nasal fracture
Dooradoyle	83.1%	90.1%	19.5%	86.6%	74.7%
Ennis	94.1%	96.1%			
Nenagh	50.0%	91.9%			
St. John's	69.5%	92.2%			
Total	73.1%	91.6%	19.5%	86.6%	74.7%

Source: Analysis of HIPE data, 2004.

As reported at specialty level, there are still differences between hospital sites for individual procedures, the most significant of these being excision of breast lump which varies from 94% at Ennis to 50% at Nenagh.

Length of stay

A comparison of average length of stay (ALoS) for medicine, surgery and orthopaedics across the hospital sites is shown in Table 34.

Table 34: Average length of stay (ALoS)

Hospital	Elective Inpatient			Non Elective		
	Medicine	Surgery	Orthopaedics	Medicine	Surgery	Orthopaedics
Dooradoyle	6.92	6.40	4.29	8.35	6.65	5.24
Ennis	7.83	4.96		6.78	5.25	
Nenagh	5.51	4.11		6.82	4.81	
Croom			6.91			13.67
St. John's	6.62	4.71		9.31	6.60	

Hospital	Elective Inpatient			Non Elective		
	Medicine	Surgery	Orthopaedics	Medicine	Surgery	Orthopaedics
Total	6.82	5.41	6.58	7.75	5.85	5.25

Source: Analysis of HIPE data, 2005 - Based on the limited subset of data submitted to HIPE.

For elective medicine a higher than average LoS is evident at Ennis, whereas for non-elective medicine it is highest at St. John's Hospital. The situation for both elective and non-elective surgery shows the highest ALoS at Dooradoyle. This may reflect the higher complexity of patients being treated at Dooradoyle when compared to the other sites.

Occupancy

A comparison of bed occupancy levels has been undertaken using HIPE data, 2005 and current bed availability, Table 35.

Table 35: Bed occupancy levels

Hospital	Available Acute Inpatient Beds	Average Occupied Beds	Average % Occupancy
Dooradoyle	375	329	87.7%
Ennis	88	91	103.8%
Nenagh	75	71	95.0%
Obstetrics	99	69	69.8%
Croom	67	32	48.3%
St. John's	96	50	52.1%
Total	800	643	80.4%

Source: Based on analysis of HIPE 2005 data and individual hospital submissions.

Occupancy levels are on average over 85 per cent at Dooradoyle, Ennis and Nenagh hospitals, with the highest occupancy levels at Ennis at over 103 per cent.

Use of theatre facilities

The profile of theatre facilities available across the acute hospital sites in the Mid-West is shown in Table 36. This indicates that only 79 per cent of the possible annual theatre sessions are available and therefore 21 per cent of the theatre estate is currently not being utilised. The theatre session availability is highest at Ennis and lowest at St. John's.

The actual productivity per session is shown for both the actual available sessions and those that should be available based on the physical estate capacity.

Table 36: Use of Theatre Facilities

Hospital	Number of Theatres	Annual sessions available	Actual annual sessions available	% sessions available	Surgical procedures	Procedures per session	
						Possible	Actual
Dooradoyle (1)	14	6,440	5,290	82%	21,522	3.3	4.1
Ennis (2)	2	920	920	100%	2,464	2.7	2.7

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Nenagh	2	920	874	95%	2,321	2.5	2.7
Obstetrics	2	920	736	80%	4,680	5.1	6.4
Croom (3)	3	1,380	1,058	77%	3,443	2.5	3.3
St. John's (4)	4	1,840	989	54%	2,460	1.3	2.5
Total	27	12,420	9,867	79%	36,890	3.0	3.7

Source: Analysis of HIPE data 2005, individual hospital submissions and validation discussions with individual hospital theatre/business managers on 28th June 2007.

Notes: Annual available sessions are derived based on an average availability from Monday to Friday, 10 sessions per theatre for 46 weeks of the year.

(1) includes 2 day surgery, 3 endoscopy and 2 ophthalmology theatres.

(2) includes 1 endoscopy theatre.

(3) includes 1 minor surgery theatre.

(4) includes 1 day surgery and 1 endoscopy theatre.

Based on the actual available sessions, the relative utilisation of each hospital's theatres can be assessed against the volume of surgical procedures identified in HIPE. Overall, this shows that, on average, each theatre session undertakes just under four procedures. The range is between 6.4 procedures at the Regional Obstetric Hospital and 2.5 procedures at St. John's Hospital.

It is important to recognise that whilst this analysis provides an initial indication of productivity, a more in-depth analysis would need to be undertaken, examining the relative casemix between sites, the type of theatre facilities and appropriateness to undertake the surgical workload for the site before any definitive conclusion can be drawn.

Diagnostic Procedures

Another useful analysis is examining the proportion of diagnostic procedures which are recorded in the HIPE data as shown in Table 37. Potentially, these types of diagnostic tests could be performed in alternative locations, either in local hospitals or in community settings. This shows that there is considerable variation across the sites, with the highest proportion of diagnostic procedural related admissions at Nenagh General Hospital.

Table 37: Diagnostic Procedures Undertaken

Hospital	Diagnostic Procedures	Total Procedures	% Diagnostic
Dooradoyle	6,814	28,336	24%
Ennis	1,158	3,622	32%
Nenagh	1,656	3,977	42%
Obstetrics	0	4,680	0%
Croom	19	3,462	1%
St. John's	1,242	3,702	34%
Total	10,889	47,779	23%

Source: Analysis of HIPE data, 2005.

Use of Emergency Department facilities

Across the HSE Mid-West, there were over 108,000 Emergency Department attendances in 2006, and details of which are presented in Table 38. This shows significant variation in the number of attendances across sites with the Dooradoyle site having attendances in excess of 50,000, compared with the other sites which see between 15,000 and 20,000 patients.

Table 38: Emergency Department Attendances

Hospital	Total ED Attendances	New ED Attendances	Admissions from ED	ED Admissions as % of New Attendances
Dooradoyle	54,144	48,963	16,666	34%
Ennis	20,164	17,559	4,973	28%
Nenagh	14,737	10,371	3,494	34%
St. John's	19,132	17,155	1,553	9%
Total	108,177	94,048	26,686	28%

Source: Hospital submissions for 2006.

The proportion of Emergency Department attendances which are subsequently admitted also varies considerably, from about 30 to 35 per cent at all hospital sites except for St. John's Hospital which has a rate of some 9 per cent.

However, caution will need to be taken in interpreting these proportions since each hospital has different arrangements for 'streaming' patients for assessment on arrival, particularly medical and paediatric patients and for recording patient attendances. This is the case at St. John's Hospital where the ED attendances are streamed into majors and minors. The minors are treated in Minor Injuries Unit, which treats around 9,000 of the 19,000 ED attendances annually.

Use of Outpatient Department facilities

Across HSE Mid-West, there were in excess of 170,000 outpatient attendances recorded for 2006. The overall ratio between New and Return attendances is 1:3.4, and the detail by hospital site is presented in Table 39.

Table 39: Outpatient Return to New Ratios

Hospital	Outpatient Return to New Ratios			
	New	Return	Total	Ratio
Dooradoyle	24,655	85,267	109,922	3.5
Ennis	3,806	11,595	15,401	3.0
Nenagh	3,014	8,344	11,358	2.8
Obstetrics	3,480	12,479	15,959	3.6
Croom	1,155	6,431	7,586	5.6
St. John's	3,454	9,805	13,259	2.8
Total	39,564	133,921	173,485	3.4

Source: Hospital submissions, 2006.

The ratios for the majority of acute hospitals are between 2.8 and 3.6 return attendances per new attendance. Although the volume of attendances is quite low, it should be noted that the Orthopaedic Hospital at Croom has the highest ratio of Return to New attendances at 1:5.6.

Some of this variation may be a result of differences in case complexity of referrals and sub-specialisation between the acute hospital sites although further investigation should be undertaken to ensure consistency of referral protocols and treatment pathways.

Primary, community and continuing care

The profile of current service provision predominantly comprises GPs, community nursing services, community hospital facilities, nursing homes and home care packages. Care is managed and organised at Local Health Office level of which there are three in HSE Mid-West.

A comparison of the availability of GP and Public Health Nurses (PHNs) per resident population is shown in Table 40. This shows that in Limerick, there are more GPs available than in either the counties of Clare or North Tipperary/East Limerick, 7.94 per 10,000 population compared with 3.85 and 5.4 per 10,000 population, respectively. The availability of PHNs, is highest in County Clare.

Table 40: Availability of GPs and PHNs in HSE Mid-West

Local Health Office Area	Population	Number of GPs	Number of PHNs	GPs per 10,000	PHNs per 10,000
Limerick	140,273	105	41	7.49	2.92
Clare	106,467	41	60	3.85	5.64
North Tipperary/ East Limerick	118,560	66	48	5.57	4.05
Total	365,300	212	149	5.80	4.08

Source: PCCC Mid-West submissions and information from LHO Roadmaps for the Mid-West, 2006.

In relation to bed capacity, Table 41 provides a profile of community hospital and nursing home beds in each Local Health Office. This shows that the highest number of Community Hospital beds and Nursing Home beds is in Limerick. However, when compared with the population over 65 years County Clare has the highest number of community hospital beds per 1,000 population aged over 65 years and Limerick has the highest rate of nursing home beds at 36.1 per 1,000 population aged over 65 years.

Table 41: Profile of Community and Nursing Home Beds

Local Health Office Area	Population >65	Community Hospital (CH) Beds	Nursing Home (NH) Beds	CH Beds per 1,000 Pop > 65 years	NH Beds per 1,000 Pop > 65 years
Limerick	21,929	364	792	16.6	36.1
Clare	18,249	351	500	19.2	27.4

North Tipperary/ East Limerick	13,288	140	455	10.5	34.2
Total	53,466	855	1,747	16.0	32.7

Source: PCCC Mid-West submissions.

Findings

Whilst it is widely understood that comparing clinical resource utilisation is not without its flaws and weaknesses, not least of which is ensuring that comparisons are being made across similarly provided services (hence the difficulty with national and international comparators), this section has provided an initial assessment of current service provision and shown that there are significant differences in the availability and utilisation of resources across HSE Mid-West, which are worth further, more detailed analysis. Most notable of these differences, are hospitalisation rates, bed occupancy, and the distributed nature of the consultant medical workforce.

The hospitalisation rates show that the closer a resident lives to a large acute hospital, the more use that is made of that facility. In Limerick City, the hospitalisation rate for non-elective medical admissions is more than twice rate for Limerick County. This is referred to as the 'distance decay' relationship between residents and hospital location.

Bed occupancy levels vary across sites. There would appear to be a number of acute hospitals which are experiencing least bed pressures, particularly in the St. John's Hospital.

The profile of the consultant medical workforce indicates that there are as many split site posts, as there are posts based on a single hospital site in the Mid-West.

Current governance arrangements for hospitals

Under present circumstances, the management of the five acute hospital facilities owned by the HSE (the MWRH sites at Dooradoyle, Ennis and Nenagh, and the orthopaedic and obstetric hospitals) comes under the jurisdiction of the National Hospitals Office (Mid-West). A General Manager, based at Dooradoyle, has lead responsibility for operational service delivery, and is supported by locally-based managers/administrators in each of the other locations.

Although the Clinicians in Management initiative was introduced at the MWRH site at Dooradoyle in the late 1990s, there is currently no functioning, formalised arrangement such as an Executive Management Board for clinicians and managers at this hospital to work together on management issues such as budget setting, resource allocation, planning and so forth. Whilst informal arrangements and liaison mechanisms between managerial and clinical staff do operate at Dooradoyle, there are no clinical directorates in operation, nor is there a medical director with overall responsibility and accountability for medical affairs throughout the hospital.

This absence of formal governance structures also relates to key topics such as hospital quality assurance, clinical audit, outcomes measurement, and performance review. This is not to say that these topics are being ignored at Dooradoyle, but rather that there is no collaborative governance framework between managers and clinicians (of various professional disciplines) to co-ordinate and oversee such work in a cohesive fashion.

A similar situation pertains at the smaller acute sites in HSE Mid-West, where there are no Executive Management Boards, no clinical directorates, and no formalised clinician involvement in management processes. However, the relatively small size of these hospitals provides a ready opportunity for close interaction between the local hospital manager/administrator and senior clinical staff on various operational and service-related issues.

At all sites, clinical leadership tends to operate along traditional, hierarchical lines, although this is focused mostly on clinical and patient care issues and on professional development, rather than on managerial issues.

At St. John's Hospital, which although 80% funded by the HSE is an independent, voluntary hospital, the situation regarding governance is significantly different, reflecting its separate status and ownership.

St. John's was involved in the Clinicians in Management initiative from an early stage, and has successfully implemented many of its key features, including an Independent Board of Governors; a Management Committee, which provides a forum for lead consultants, nursing management, and executive management; a separate Medical Board (advisory in nature) and Ethics Committee; a Chief Executive Officer; an Integrated Management Structure involving managers, clinicians and allied health professionals; and Integrated Management Units (similar in functional role to clinical directorates).

Other features of governance at St. John's include structured arrangements for clinical audit and research, risk management, patient focus groups and a patient partnership forum.

Appendix 5 – The latest international best practice

Moving acute care near to or at the patient's home

Globally, many countries and health care systems have recognised the need for a fundamental change in the way in which services are configured and delivered, with an increased emphasis towards providing more care at home or as close to home as possible, with people being admitted to hospital only where necessary and appropriate.

This strategic direction of health service reform is evident in countries including Australia^{54 55}, Canada^{56 57}, New Zealand^{58 59}, and the UK^{60 61 62 63}. Consistent themes arising from these reforms are:

- Developing a greater emphasis on preventing illness and improving the overall health and well-being of the population;
- Managing those people with long term chronic conditions at home or in the community, through improved primary care services, and preventing the likelihood of hospitalisation; and
- Providing safe and high quality acute hospital services, through evidence based best practice care, with specialist and complex care provided in fewer, larger centres to maximise clinical benefit and manage clinical risk.

⁵⁴ Planning for the Future, New South Wales, 2025.

⁵⁵ Directions for your health system, Metropolitan Health Strategy, State of Victoria, 2003.

⁵⁶ Common vision for the Canadian Health System, 2004.

⁵⁷ Commission on the Future of Health Care in Canada, 2002.

⁵⁸ The New Zealand Health Strategy, New Zealand Government, December 2000.

⁵⁹ Implementing the New Zealand Health Strategy, 2005.

⁶⁰ Our health, our care, our say: a new direction for community services, UK Government White Paper, January 2006.

⁶¹ Building a Health Service Fit for the Future, NHS Scotland, 2005.

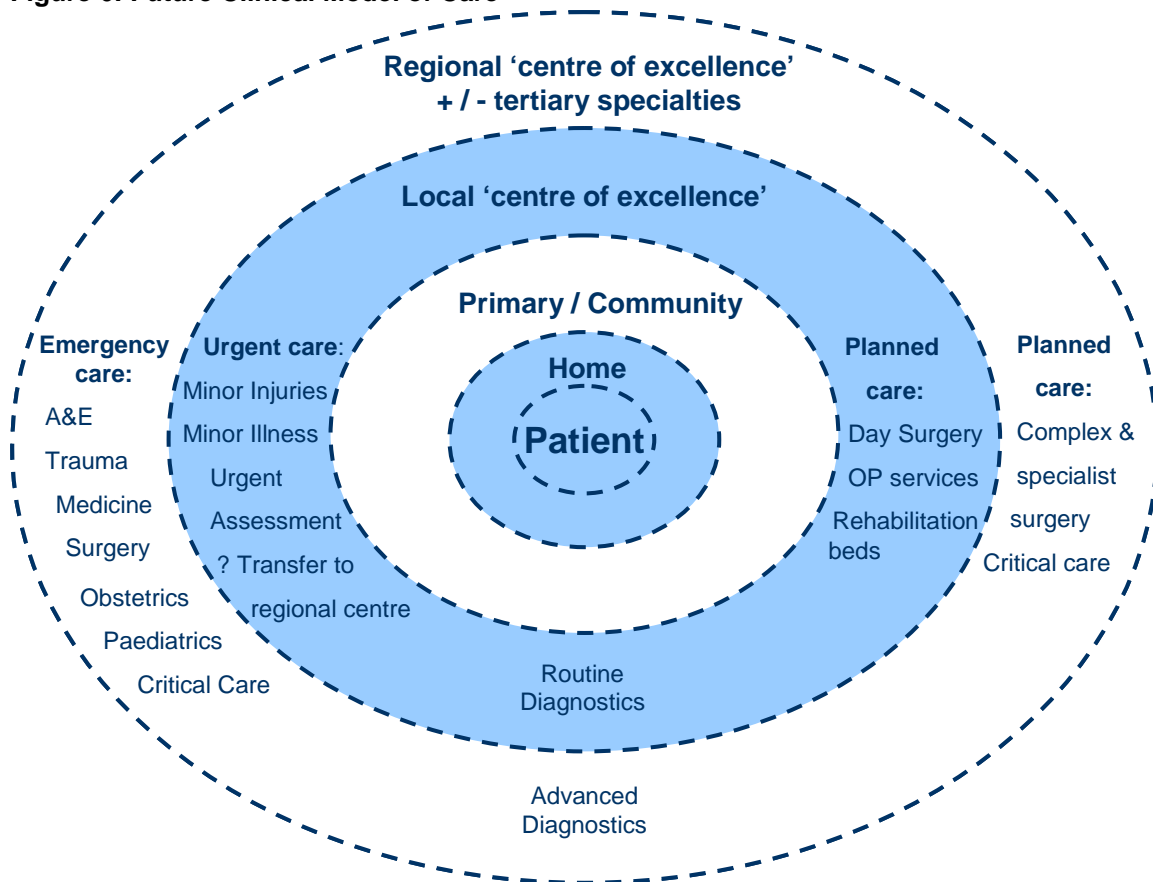
⁶² Designed for Life: Creating world class Health and Social Care for Wales in the 21st Century, Welsh Assembly Government, May 2005.

⁶³ Developing Better Services: The Model for Future Health Care Services, Northern Ireland Government, February 2003.

Future clinical model of care

Based on international best practice, the diagram below, Figure 6, shows the future clinical model of care.

Figure 6: Future Clinical Model of Care



Patient self care

This model assumes a person centred approach to the delivery of health care, providing support for patients and their carers to manage their own health care needs. Recently, much work has been done to support patients to become more independent and responsible for managing their own care.

An example of this is the Expert Patient Programme (EPP) developed in the UK⁶⁴. This programme provides an ‘opportunity to people who live with long term chronic conditions to develop new skills to manage their condition better on a day-to-day basis’. This programme is based on evidence-based research from the USA and the UK, which shows that people living with these conditions are often best at knowing how to manage their own condition, supported with the necessary self-management skills.

The patient at home

Underpinning this process of self-care management is access to a range of services provided in the patient’s own home, available on a 24 hour basis throughout the year. Traditional examples of these services include primary care, community care, social care, and social housing schemes. However, new and developing services for maintaining the independence of the ‘at risk’ elderly will include home telecare^{65 66 67 68 69 70 71 72} and ‘smart’ homes^{73 74}.

Where there is an acute emergency, the call for help will be triaged so that an Emergency Medical Technician⁷⁵ can respond, undertake a clinical assessment and any appropriate investigations as required, and arrange, if possible, the next steps in order to keep the patient out of hospital safely without the need for automatic hospital referral and/or admission.

⁶⁴ Expert Patient Programme developed in April 2002. DH website www.dh.gov.uk.

⁶⁵ National Telemedicine System. DOH Republic of South Africa 1998.

⁶⁶ Delivering 21st Century IT support for the NHS. DOH 2002.

⁶⁷ Public Sector National Report Assistive Technology. ‘Independence and Well Being’. Audit Commission, February 2004.

⁶⁸ Assistive Technology and telecare: Forging effective solutions for independent living. Policy Press 2003.

⁶⁹ The use of ICT to support independent living for older and disabled people. DOH UK 2002.

⁷⁰ Strategic Plan. VA Midwest Health Care Network. Department of Veterans Affairs 2006-2010.

⁷¹ National Telemedicine and Telecare Strategy. Department of Health and Children & Health Board Executive, Ireland 2005.

⁷² Grisby B. et al. Report on U.S. Telemedicine Activity. Association of Telehealth Service Providers. 1999.

⁷³ Smart Homes and Beyond, Chris Nugent and Juan Carlos Agosto, June 2006.

⁷⁴ Smart Homes. In Principle and Practice of Geriatric Medicine, 4th Edition, Professor Roger Orpwood, Director of Bath Institute for Medical Engineering.

⁷⁵ Defined as a health-care specialist with particular skills and knowledge in pre-hospital emergency medicine.

The patient at the local 'centre of excellence'

The trend is for local services to provide the following⁷⁶:

Emergency Care

- An emergency ambulance service, staffed by front line advanced paramedics [Emergency Medical Technicians-A], skilled and competent in the delivery of:
 - Emergency assessments and definitive treatment in the home, with selective transfer to hospital only as clinically necessary; and
 - Immediate emergency resuscitation, stabilisation and triage to the nearest appropriate regional service.
 - In rural and remote locations, it should be recognised that the local first responders may not be in traditional ambulances, and may utilise other rescue services, including fire and mountain rescue teams^{77 78};
- Specialist nursing teams, based in the local 'centre of excellence', will provide:
 - A minor injuries and illness service, including an observation unit for the urgent assessment and initial management of selected adults and children^{79 80}. Urgent Care Centres (UCCs) are being developed, which can act as a 'one stop shop' for patients who require urgent need and potentially reduce duplication in service provision and avoid unnecessary emergency admissions. UCCs are available out of hours (at least 12 hours a day, 7 days a week) and can be integrated into the network of other out of hours services, including primary care and ambulance. The concept of UCCs can be developed for both urban and rural settings. Many urban based UCCs are co-located with an A&E department, whilst rural UCCs are being established as stand alone facilities^{81 82 83}; and

⁷⁶ Standards of Accessibility and Guidelines for Provision of Sustainable Acute Care Services by Health Authorities, Ministries of Health Services and Health Planning, British Columbia, February 2002.

⁷⁷ Comments on Academy of Medical Royal Colleges Centralisation and Specialisation of Hospital Services – Bigger is not Necessarily Better for Rural and Remote Communities; Working Group of Medical Royal Colleges and Rural Forum, March 2006.

⁷⁸ The National Framework for Service Change in NHS Scotland, Rural Access Action Team, Final Report, 2005.

⁷⁹ West Cornwall Hospital: Urgent Assessment, Diagnostic and Treatment Hospital, Department of Health, 2003.

⁸⁰ The National Framework for Service Change in NHS Scotland, Rural Access Action Team, Final Report, 2005.

⁸¹ Urgent Care Centres, Meeting Notes of London Workshop, October 2005.

⁸² Draft Emergency Care, September 2005, www.investinyourhealth.org.uk.

- 'Hospital at Home'^{84 85} service to safely avoid admission to acute care or allow earlier discharge from acute care.

Planned care

- Out-patient clinics, with all major specialties providing an outreach service from the regional hospital⁸⁶;
- Physiotherapy, occupational therapy and podiatry services;
- Admissions avoidance services for chronic disease and long term conditions including mental health liaison and outreach;
- Minor surgery under local anaesthetic. GP trained surgeons may undertake this range of procedures;
- Day surgery/23 hour surgery led by visiting consultants from the regional hospital, for conditions suitable for local or regional anaesthesia⁸⁷. Provision of a day surgery theatre needs to ensure that it can generate sufficient workload for appropriate and effective use. In rural localities serving larger populations, there is potential to develop General Practitioners with a specialist interest, particularly, for specialties such as ENT, ophthalmology, dermatology and musculoskeletal medicine, who can accept referrals and provide advice and support. The roles of nurses and allied health professionals can also be extended to provide and support rural service provision⁸⁸; and
- Ambulatory services for a range of conditions, for example, chemotherapy and blood transfusion.

Local non-acute bed base

- A local bed base, providing short term care for:

⁸³ The Future Hospital, The Progressive Case for Change, Joe Farrington-Douglas and Richard Brooks, Institute of Public Policy Research, January 2007.

⁸⁴ Montalto M et al. Acceptability of early discharge, hospital at home schemes. Treatments that can be safely managed at home need to be defined. *BMJ* 1998;317:1116-52.

⁸⁵ Richards SH et al. Randomised controlled trial comparing effectiveness and acceptability of an early discharge hospital at home scheme with acute hospital care. *BMJ* 1998;316:1796-1801.

⁸⁶ The Future Hospital, The Progressive Case for Change, Joe Farrington-Douglas and Richard Brooks, Institute of Public Policy Research, January 2007.

⁸⁷ Suitable procedures include superficial hernia, selected laparoscopic cholecystectomy, cataracts, and simple foot operations.

⁸⁸ The National Framework for Service Change in NHS Scotland, Rural Access Action Team, Final Report, 2005.

- Specialist rehabilitation⁸⁹, for example, stroke and trauma management after an episode of critical care in the regional hospital;
- Step down, for the early transfer of patients nearer to home after receiving acute care at the regional hospital;
- A selected range of conditions that, at present, are routinely admitted to acute hospitals. For rural and remote localities, senior accessible medical cover for these patients could be provided by local GPs with additional training and skills in acute medicine or by specialists in providing remote general hospital services^{90 91}; and
- The issue is to provide rehabilitation capacity in the community wherever there is sufficient need for the service. Therefore, rehabilitation/step-down care beds can be provided from a number of locations, including local hospitals, community hospitals and nursing homes with enhanced nursing and therapy staff support.

Diagnostics

Local services will be supported by a wide range of diagnostics, including near patient testing, plain X-ray, ultrasound, basic physiological measurement tests, etc.

- CT scanning, MRI (either fixed or mobile) and contrast X-ray service; and
- Routine diagnostic endoscopy services for gastroenterology, urology, orthopaedics, gynaecology, chest medicine, including gastroscopy, flexible sigmoidoscopy, colonoscopy, flexible cystoscopy, flexible bronchoscopy, colposcopy, hysteroscopy, etc.

This guide list covers today's approach to invasive diagnosis. With the increasing trend to less invasive diagnostic modalities, it is predicted that best practice in diagnostics will change rapidly in the next 5 to 10 years.

⁸⁹ The National Framework for Service Change in NHS Scotland, Rural Access Action Team, Final Report, 2005.

⁹⁰ Comments on Academy of Medical Royal Colleges Centralisation and Specialisation of Hospital Services – Bigger is not Necessarily Better for Rural and Remote Communities; Working Group of Medical Royal Colleges and Rural Forum, March 2006.

⁹¹ The National Framework for Service Change in NHS Scotland, Rural Access Action Team, Final Report, 2005.

Key role of primary, community and social care in delivering care at or close to home

The development of primary and community teams need to deliver a range of services to support admissions avoidance and early supported discharge including assessment and rehabilitation.

Discharge criteria for community services need to be robust to ensure that patients length of stay is dependent on interventional need

All users of and referrers to community services should be signposted to the most appropriate service via one access point to maximise use of all services

There is recognition of the need to develop fully integrated multi-professional teams to deliver care closer to home

Teams should be supported with an appropriate infrastructure to support them in the delivery of care pathways closer to home including referral rights, access to diagnostics including radiology and pathology with timely turnaround of results, access to in-reach assessment facilities including OT and physiotherapy gyms in community settings as well as access to appropriate specialist opinion

Community services are increasingly developed as nurse and therapy led models with access to medical opinion or review when necessary.

It is essential that as care is delivered closer to home, the skills and competencies of community staff reflect the changing acuity and profile of patients.

Community services should have an in-reach component to their structure, with communication and information sharing capability with acute hospitals to ensure patients can be transferred to an appropriate community setting as early as possible.

Centralising specialist acute services

The patient at the new regional 'centre of excellence'

There is a clear international trend towards the centralisation of specialist acute services to ensure there is a sufficient concentration of a 'critical mass' of patient volumes to optimise the provision of safe, effective and high quality services through a well resourced and highly trained workforce⁹².

Typically, acute regional 'centres of excellence' will provide co-located 24/7 services for:

- Major accidents and emergency;
- Trauma;
- Emergency medicine, including cardiology, gastroenterology, respiratory medicine, endocrinology, rheumatology;
- Emergency surgery, including general, trauma, urological, vascular, ENT and ophthalmology;
- Complex planned surgery, applicable to all acute surgical specialties;
- Critical care;
- Cancer services;
- Obstetrics;
- Acute psychiatry;
- Paediatrics; and
- Neonatology.

These acute services will have a full range of 24/7 clinical support services, in particular, 'high tech' diagnostics and pathology services.

⁹² The Future Hospital, The Progressive Case for Change, Joe Farrington-Douglas and Richard Brooks, Institute of Public Policy Research, January 2007.

Planned care will be streamed separately from unscheduled care. This reduces cancellations, achieves a systematic and predictable workflow, and improves the quality of service to patients. However, patient safety needs to be at the forefront of any proposal that involves elective care being delivered at a distance from critical care. An analysis undertaken by the Department of Health in the UK, identified that 98 per cent of elective care by volume requires a critical care stay in fewer than 1 per cent of cases⁹³. Therefore, there is an argument that regional centre inpatient based services can be separated into those which are critical care dependent and those which are not, and both need not necessarily need to be located on the same site.

The European Working Time Directive is dictating the minimum number of consultants in a team needed to deliver a continuous 24/7 commitment that complies with the regulations, and the minimum workload required to justify a team of that size being grouped together in that manner.

Therefore, the acute teams in the regional centres of the future, for A&E, medicine, surgery, trauma, etc., will be based upon this consultant profile of 8 or more in the specialty grouping. The critical mass argument will be considered next when we come to consider regional centres and the evidence surrounding what size of catchment population they need in order to deliver best acute healthcare.

In turn, the regional centre may provide, or be supported by, tertiary, highly specialised services, with individual services including neurosurgery, cardiac surgery, transplantation surgery, plastic surgery and certain children's services.

Catchment populations for acute regional services

Catchment populations provide a proxy for ensuring a sufficient critical mass of patient volumes to provide safe and viable services staffed by specialist and sub-specialist consultants and medical staff working in sustainable rotas.

The Royal College of Surgeons in Ireland has identified that the minimum number of general surgeons required within a unit is 12 allowing for sub-specialty interests and suitable rota cover. Assuming a ratio of 1 general surgeon per 25,000 of the population, this derives a catchment population of 300,000 for a regional centre⁹⁴. A review of medical staffing workforce undertaken by a national task force in Ireland modelled consultant numbers on a catchment population of between 350,000 and 500,000⁹⁵.

⁹³ Building a Health Service Fit for the Future, A National Framework for Service Change in the NHS in Scotland, 2005.

⁹⁴ The Future of Surgical Specialties in Ireland, Royal College of Surgeons in Ireland, April 2004.

⁹⁵ Report of the National Task Force on Medical Staffing, June 2003.

Published literature in the United Kingdom does suggest that catchment populations for specialist acute centres should, in the future, be larger than the catchments currently being served by hospitals providing a range of inpatient acute services.

Recommendations made by the Royal College of Surgeons in England⁹⁶ is that the preferred catchment population size for an acute general hospital providing the full range of facilities, specialist staff and expertise for both planned and emergency medical and surgical care would be a minimum of 450,000-500,000. However, it accepts that the majority of acute hospitals in England are serving a catchment population of 300,000 and that this is likely to continue in the near future. For those hospitals currently serving populations of 150,000 or less, it recommends that these hospitals work in close partnership with adjacent services to make use of those services not available on site.

NHS Scotland, in its report on the future of health care provision⁹⁷, stated that a minimum of 10 consultants per specialty would be needed in order that high-volume specialties such as acute medicine, general surgery or orthopaedics could be sustained on a 24/7 basis and secure compliance with the European Working Time Directive.

The framework for health services developed by the Welsh Assembly Government⁹⁸ identified the need to consolidate major planned and emergency services, allowing for the development of sub-specialisation, higher clinical standards and improved training opportunities. This anticipates the need for consolidation within fewer centres, which are strategically located to serve catchment populations, some of which are substantially rural. The framework identifies 10 centres which would provide acute and/or specialised and critical care services, some of which may also provide tertiary and highly specialised services. Given the projected population of Wales in 2013 of just over 3 million residents⁹⁹, this would suggest that the catchments to be served by these specialist centres are around 300,000.

The population catchment must also be balanced with the availability of projected future medical staffing workforce. The more regional hospital units required in the future, the greater the requirement for medical staff.

From the available international evidence, it would appear that the catchment population for a regional centre ranges from 350,000 to 500,000.

A comparison across countries of the ratio of recommended consultant staffing levels per population are presented in Table 42.

⁹⁶ Delivering High-quality Surgical Services for the Future, A Consultation Document from the Royal College of Surgeons of England Reconfiguration Working Party, The Royal College of Surgeons of England, March 2006.

⁹⁷ Building a Health Service Fit for the Future, NHS Scotland, May 2005.

⁹⁸ Designed for Life: Creating world class Health and Social Care for Wales in the 21st Century, Welsh Assembly Government, May 2005

⁹⁹ 2003 Based National and Sub-National Population Projections for Wales, National Assembly for Wales, October 2005

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Table 42: Comparison of ratio of consultant per population across countries

Specialty	British Columbia ¹⁰⁰	New Zealand ¹⁰¹	UK Royal Colleges ¹⁰² <small>103 104 105 106 107</small>	Australia ¹⁰⁸ (range dependent on urban or rural location)	Royal College of Surgeons in Ireland ¹⁰⁹ , The Institute of Obstetricians & Gynaecologists ¹¹⁰	National Task Force on Medical Staffing ¹¹¹
A&E			1:12,000 attendances annually	1: 25 – 100,000	1:14,000	1:45,000
General Medicine **	1:7,600 – 8,400	1: 14,285-20,000	1:5,200*			1:10,000
Cardiology			1:50,000	1: 40-60,000		1:78,000
General Surgery	1:9,500 – 10,500		1:25,000	1: 10-20,000	1:25,000	1:10,000
Ophthalmology	1:28,200 – 31,100		1:70,000		1:70,000	1:78,000
Trauma & Orthopaedics	1:26,100 – 28,900		1:25,000	1:22-30,000	1:25,000	1:34,000
Otolaryngology	1:43,400 – 48,000		1:50,000	1:50-60,000	1:40-70,000	1:71,000
Urology	1:49,400 – 54,500		1:50,000	1:55-100,000	1:80-100,000	1:82,000

¹⁰⁰ Standards of Accessibility and Guidelines for Provision of Sustainable Acute Care Services by Health Authorities, Ministries of Health Services and Health Planning, British Columbia, February 2002.

¹⁰¹ General Physician Numbers (New Zealand), Discussion Paper prepared by the IMSANZ NZ Executive at the request of the RACP (NZ) Office.

¹⁰² Developing a Modern Surgical Workforce: A Report from the Royal College of Surgeons of England, January 2005.

¹⁰³ The Future Role of the Consultant, A Working Party Report, Royal College of Obstetricians and Gynaecologists, December 2005.

¹⁰⁴ Quality Development Programme, Guidance for Clinical Governance in Ophthalmology, Royal College of Ophthalmologists, April 1999.

¹⁰⁵ Paediatric Medical Workforce Model, Royal College of Paediatrics, April 2001.

¹⁰⁶ Way Ahead 2005, British Association for Emergency Medicine and The College of Emergency Medicine, 2005.

¹⁰⁷ Consultant Physicians Working with Patients, Royal College of Physicians, 2005.

¹⁰⁸ Sustainable Specialist Services: A Compendium of Requirements, Australian Medical Workforce Advisory Committee, August 2004.

¹⁰⁹ The Future of Surgical Specialties in Ireland, Royal College of Surgeons in Ireland, November 2003.

¹¹⁰ The Future of Maternity & Gynaecology Services in Ireland 2006 – 2016, The Institute of Obstetricians & Gynaecologists, December 2006.

¹¹¹ Report of the National Task Force on Medical Staffing, June 2003.

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Specialty	British Columbia ¹⁰⁰	New Zealand ¹⁰¹	UK Royal Colleges ¹⁰² <small>103 104 105 106 107</small>	Australia ¹⁰⁸ (range dependent on urban or rural location)	Royal College of Surgeons in Ireland ¹⁰⁹ , The Institute of Obstetricians & Gynaecologists ¹¹⁰	National Task Force on Medical Staffing ¹¹¹
Obstetrics & Gynaecology	1:18,100 – 20,000		1:27,000		1:20,000	1:21,900
Paediatrics	1:16,800 – 18,500		1:12,350			1:35,000
Neonatology						1:87,000

Source: Teamwork analysis

Note: ** Includes all general medical sub-specialties except cardiology and geriatric medicine

Catchment population for tertiary services

Tertiary services are highly specialised services, including, for example:

- Specialist Cancer;
- Plastic surgery and burns;
- Neurosurgery;
- Transplantations; and
- Specialist children's services.

The catchment populations for these services will be much larger than for regionally based services but there needs to be a balance between centralisation of these services and critical mass issues, with the needs of local communities and the expectations of patients, families and carers.

In Wales, there are two Welsh centres identified for providing a range of tertiary services together with a single specialist cancer centre and additional tertiary centres based in England. Assuming that the majority of the population will access the two Welsh centres, this would result in a catchment population for these services of 1.5 million each.

As part of the National Framework for Service Change in NHS Scotland¹¹², a review was undertaken concerning the future configuration of neurosurgical services. Currently, services are provided from four sites but following an appraisal of future options against specific criteria, the preferred direction of travel was for a single centre of neurosurgical intervention, serving a population of 5 million, as part of a service model that would provide local outpatient, rehabilitation, and pre- and post-operative care and diagnosis. This intervention service would be co-located on a university teaching hospital site with other neuroscience specialties and be integrated, using a managed clinical network approach, across specialist, secondary and primary care. The review also concluded that paediatric neurosurgery should be concentrated on one site co-located with paediatric intensive care.

For these highly specialised, low volume specialties, a viable and sustainable workforce dictates, to a greater or lesser extent, the catchment population they serve. Whilst additional consultant and medical staff could be employed to provide multiple service provision, the need for these services would be insufficient to support maintenance of skills and competencies of these staff.

Guidelines for ratios of consultant staff per population have been produced across a number of countries, and indeed, Ireland has also made recommendations regarding recommended consultant staffing levels for tertiary services.

For example, for neurosurgery, the Royal College of Surgeons in England¹¹³ (RCSE) recommends 5-6 surgeons per 1,000,000 population and in Australia, a viable specialist service with a minimum of 2 consultants requires a catchment between 200-250,000¹¹⁴. In Ireland, the Royal College of Surgeons (RCSI)¹¹⁵ has set a target ratio of consultant to population of 1:258,000. Similarly, for paediatric surgery, the RCSE recommends a ratio of 1:250,000 and in Ireland, the RCSI has set a ratio of 1:500,000. In Australia, the population catchment for a viable service is between 250,000 and 500,000, dependent on whether the centre is serving an urban or rural population.

A comparison across countries of population catchments required to provide sustainable specialised services is presented in Table 43.

¹¹² Building a Health Service Fit for the Future, A National Framework for Service Change in the NHS In Scotland, NHS Scotland, May 2005.

¹¹³ Developing a Modern Surgical Workforce, A Report from the Royal College of Surgeons of England, January 2005.

¹¹⁴ Sustainable Specialist Services: A Compendium of Requirements, Australian Medical Workforce Advisory Committee, August 2004.

¹¹⁵ The Future of Surgical Specialties in Ireland, Royal College of Surgeons in Ireland, November 2003.

Table 43: A comparison of specialist services across countries

Specialty	Royal College of Surgeons of England	Australian Medical Workforce Advisory Committee	Centre for Rural and Northern Health Research, Canada ¹¹⁶	Royal College of Surgeons in Ireland
Oral and Maxillofacial Surgery	1 consultant per 150,000 population			1 consultant per 148,000 population
Plastic Surgery	1 consultant per 100,000 population		1 consultant per 107,938 population	1 consultant per 103,000 population
Cardiothoracic Surgery	1 consultant per 150,000 population		1 consultant per 128,793 population	1 consultant per 258,000 population
Vascular Surgery		4 consultants per 500,000 population		3 consultants per 500,000 population
Neurosurgery	5-6 consultants per 1,000,000 population	Minimum of 2 consultants serving 200-250,000 population	1 consultant per 165,791 population	1 consultant per 258,000 population
Paediatric Surgery	1 consultant per 250,000 population	Viable service serves a catchment of between 250-500,000		1 consultant per 500,000 population

Source: Teamwork analysis

These highly specialised services may be provided from one or more regional hospital campuses or volumes may dictate the requirement to provide the service sub-regionally or even nationally.

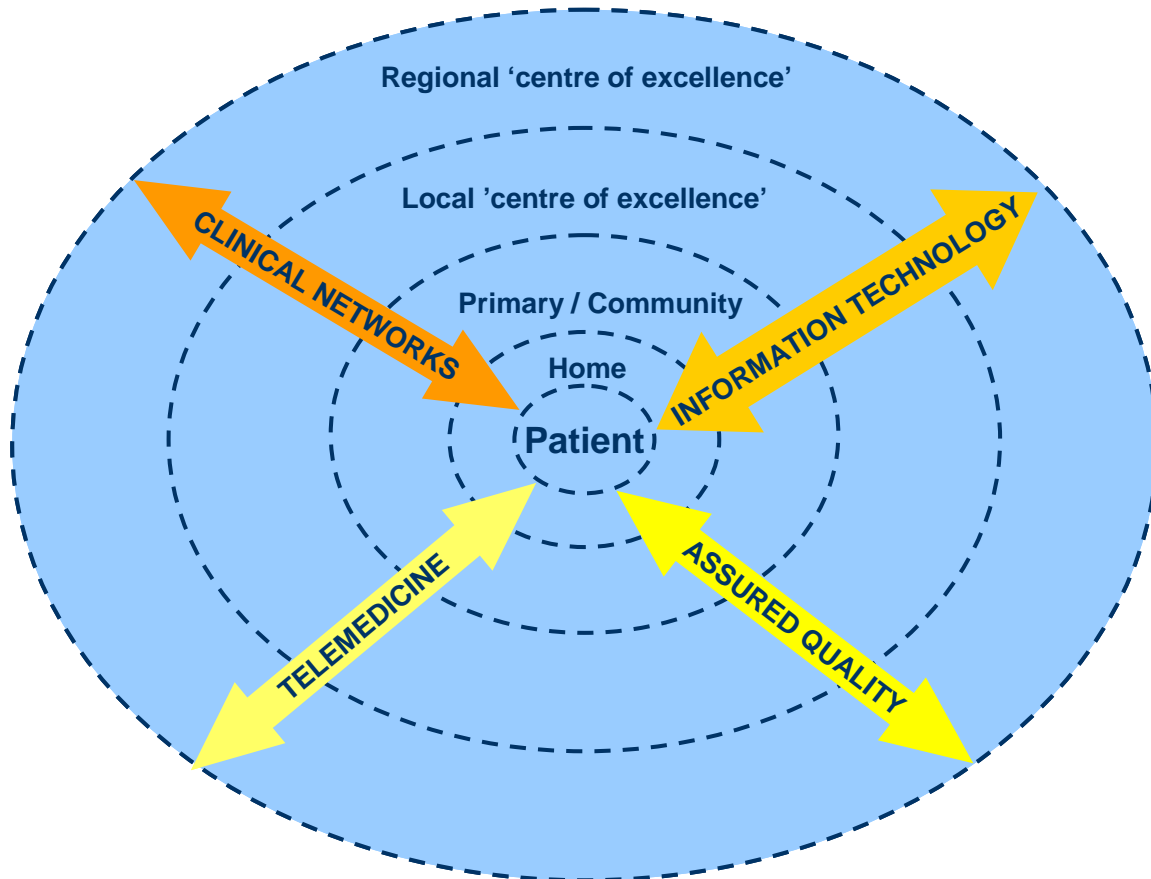
Infrastructure to enable healthcare delivery

To support this model requires a new infrastructure (see Figure 7) which brings together those elements of healthcare delivery identified above. This infrastructure includes:

- Clinical networks;
- Assured quality;
- Tele-medicine; and
- Information and communication technology.

¹¹⁶ Geographic Distribution of Physicians in Canada, Centre for Rural and Northern Health Research, Laurentian University, Canada, 1999.

Figure 7: Supporting Infrastructure for New Model of Care



Clinical networks

Redesigning acute services for best acute care, therefore, needs to take account of critical mass, the combination of grouping sufficient numbers of consultants together and making sure they have sufficient workload to justify that grouping. This balance is no longer achievable in the traditional small and medium sized hospital.

The international research and practice highlights the central role of managed clinical networks as key to engaging and empowering frontline staff, developing new skills and roles, providing the engine room for quality clinical improvement and the redesign of service and clinical pathways, including:

- Whole system integration of hospitals, general practitioners, community teams, social care, patients and carers; and

- Whole system diagnostics and other clinical support services including more locally based diagnostics, recognising both technology advances in the tests themselves, changes in processing, and the potential to separate the processing of the test from the reporting of the results.

While these requirements may appear comparatively straightforward, they provide both the opportunity through the managed clinical networks and the 'glue' through diagnostics and information and communications to support a fully integrated healthcare system, without which best practice will be unable to achieve its full potential.

Clinical networks will be developed for services, including emergency care, critical care, planned care, and cancer and more detail of how these will function will be discussed later.

In addition, regional hospitals across the country would be part of a regional hospital network, each regional hospital providing some highly specialised service(s) to patients outside of its regional boundary.

Emergency Care Network (Adult and Children)

The emergency care network will be the primary network running the emergency element of acute care services. It will liaise formally with its close partners, the critical care network and the planned care network^{117 118 119 120 121}.

¹¹⁷ Acute Services Review. Scottish Office 1998.

¹¹⁸ Building a Health Service Fit for the Future. A National Framework for Service Change NHS Scotland 2005.

¹¹⁹ The provision of emergency surgical services: an organisational framework, Senate of Surgery of Great Britain and Ireland, 1997.

¹²⁰ Reconfiguration of surgery, accident and emergency and trauma services across the UK. Senate of Surgery of Great Britain and Ireland, 2004.

¹²¹ The future of surgical services in Ireland. Royal College of Surgeons of Ireland, 2004.

There are excellent examples of emergency care networks being developed in numerous countries^{122 123 124 125}, concentrating developments around clinical integration, networks, workforce development and expanding the role of the emergency ambulance services. The UK has 12 national pilot sites under development. For example, the Coventry & Warwickshire Ambulance Services is developing a new front-line workforce of 130 emergency care practitioners to cover its population of over 800,000, with plans for formal networking across all the acute services.

The Health Service Executive strategy for the development of ambulance services reflects international service development in pre-hospital services. Their implementation plan includes:

- One integrated ambulance service for the whole of Ireland, managed via four control centres;
- A workforce development programme for 'Advanced Paramedics', with a view to some 40 per cent of staff eventually being trained to that level. Nationally, there are now 100 staff who have completed the training and there is capacity to produce 48 new trained staff per year; and
- A research and development programme to test the feasibility of closer working and formal integration between the general practitioner out-of-hours services and the emergency ambulance service.

¹²² Taking Healthcare to the Patient – Transforming NHS Ambulance Services, DOH June 2005.

¹²³ Roadside to Bedside: A 24 hour clinically integrated acute management system for New Zealand 1999.

¹²⁴ Building a Health Service Fit for the Future. A National Framework for Service Change NHS Scotland 2005.

¹²⁵ Improving access to emergency services: A system commitment. A report of the Hospital Emergency Department and Ambulance Effectiveness Working Group. Ministry of Health & Long Term Care, Ontario July 2005.

Critical care network

The recognised 'direction of travel' in adult critical care is towards regionalisation and development of formal clinical networks in order to concentrate the expertise and resources necessary to deliver high quality Level 3 care^{126 127 128 129 130 131}. These regional networks are now being added to, with work in progress on developing two complementary programmes designed to reduce the demand and the pressures on Level 3 care^{132 133}:

- A proactive 24/7 outreach service to prevent 'at risk' patients from deteriorating to the point of needing critical care; and
- A critical care rehabilitation programme to improve recovery and the final clinical outcome.

Planned care network

Planned care encompasses those healthcare services where the patient is scheduled for an appointment or admission and includes day surgery, planned inpatient, endoscopy services, diagnostic testing and outpatients. Local hospitals would serve a new role of providing a range of ambulatory care and diagnostic services^{134 135 136}.

There is international evidence for how best these services should be provided, which ensures the provision of locally accessible services and maintenance of formal networking¹³⁷¹³⁸ and adherence to quality standards.

¹²⁶ Critical to Success: The place of efficient and effective critical care services within the acute hospital. Audit Commission, UK 1999.

¹²⁷ Comprehensive critical care: A review of adult critical care. DOH, UK May 2000.

¹²⁸ An acute problem? A report of the National Enquiry into Patient Outcome and Deaths in relation to critical care services, 2005.

¹²⁹ Intensive care services in New Zealand. Ministry of Health, 2005.

¹³⁰ Standards for adult critical care in Wales: All Wales Critical Care Development Group 2003.

¹³¹ Final report of the Ontario critical care steering committee. Ministry of Health & Long Term Care March 2005.

¹³² Critical care outreach: Modernisation Agency, DOH, UK October 2003.

¹³³ Quality Critical Care: Beyond 'Comprehensive Critical Care'. DOH, UK September 2005.

¹³⁴ Day Surgery – National and International. From the Past to the Future, L Roberts, Australian Academy of Medicine & Surgery, February 2005.

¹³⁵ Assessing the impact of ambulatory care, G Mould and JA Bowers, Department of Management and Organisation, University of Stirling.

¹³⁶ Ambulatory surgery centres, Encyclopaedia of Surgery: A Guide for Patients and Caregivers, R Frey, 2006.

¹³⁷ Clinical Networks, NHS Confederation, 2002.

Assured quality

The key requirements for ensuring assured quality of future healthcare delivery are as follows:

- Sufficient, appropriately trained and accredited workforce which is able to:
 - Engage in redesigning and delivering services through new patterns, locations and times of delivering healthcare with new technologies;
 - Develop new extended roles for nurses and allied health professionals, while recognising the significant time lag often present in retraining;
 - Meet European Working Time Directives on maximum working hours through appropriately staffed and designed rotas;
- A formal system of clinical governance and peer review to ensure an effective quality of patient and staff safety through a cycle of audit, feedback and improvement. This includes the balance of safety, quality, volume, risk and evidence about better clinical outcomes from higher volumes, for example for specialist procedures such as paediatric surgery, some cancers, certain types of trauma and vascular surgery;
- Having access to systematic and routine horizon scanning for the impact of service and clinical developments across therapies, procedures, drugs, imaging and devices, including:
 - Diagnosis and treatment on a minimally invasive basis;
 - Surgery being replaced by drugs and other interventions;
 - Implantable devices;
 - New less invasive imaging technologies; and
 - Genetic testing supporting individual specific drug treatments.

¹³⁸ Health Department Letter 69: Promoting the Development of Managed Clinical Networks in NHS Scotland, Scottish Executive, September 2002.

Tele-medicine

Telemedicine has been around for a very long time and is well established, particularly in the USA where a 1999 survey recorded 132 active programmes, with activity in 48 states in over 1,450 telemedicine equipped facilities¹³⁹. It cannot yet be considered mainstream in service delivery but it is being increasingly seen as an important tool to support the way that health services will need to change in the future in order to be sustainable.

Telemedicine and telecare is now addressed at the national level in some countries and is an element of most new regional service strategies under development^{140 141 142 143 144 145 146}. Telemedicine and telecare are regarded as a key enabler of clinical networks, bringing together the clinical expertise, specialist advice and decision making between services delivered locally and those services delivered regionally.

Many hospital and community services are now using telemedicine for teleconsultation, teliagnostic, telemonitoring, telecare and tele-education purposes. Most progress has been made in radiology, dermatology, pathology and ophthalmology, where the imaging aspects lend themselves to electronic transmission. Other specialties under development, include cardiac medicine, paediatrics, neonatology, neurology, psychiatry, oncology, ENT, general surgery, and all specialties are now taking telemedicine on board and testing it as a mechanism to improve their current service provision.

There is now evidence that the burden of chronic disease management on acute care services can be significantly lessened through telemonitoring to decrease the number of visits to the A&E department and admissions to hospital^{147 148 149}.

¹³⁹ Grisby B. et al. Report on U.S. Telemedicine Activity. Association of Telehealth Service Providers. 1999.

¹⁴⁰ National Telemedicine System. DOH Republic of South Africa 1998.

¹⁴¹ Delivering 21st Century IT support for the NHS. DOH 2002.

¹⁴² Public Sector National Report Assistive Technology. 'Independence and Well Being'. Audit Commission, February 2004.

¹⁴³ Assistive Technology and telecare: Forging effective solutions for independent living. Policy Press 2003.

¹⁴⁴ The use of ICT to support independent living for older and disabled people. DOH UK 2002.

¹⁴⁵ Strategic Plan. VA Midwest Health Care Network. Department of Veterans Affairs 2006-2010.

¹⁴⁶ National Telemedicine and Telecare Strategy. Department of Health and Children & Health Board Executive, Ireland 2005.

¹⁴⁷ Meyer M et al. Virtually healthy: chronic disease management in the home. *Dis Manag* 2001; 5:5-12.

¹⁴⁸ Vaccaro et al. Utilisation reduction, cost savings, and return on investment for Pacificare Chronic Heart Failure Programme, 'Taking Charge of your Health' *Dis Manag* 2002; 4:131-42.

¹⁴⁹ Wiecha J. et al. The interdisciplinary eHealth team: chronic care in the future. *J Med Internet Res* 2004; 32:31-8.

Of particular interest in this review of best practice in acute services is that there are many examples of real time telemedicine being used to support and unify the emergency response between regional A&E centres, minor injuries services and the ambulance services^{150 151 152}
153 154 155

More recently, in keeping with the global strategy of keeping patients out of hospital and transferring care closer to home, or at home, strategies have been developed to stimulate the development of home telecare services to monitor the 'at risk' elderly safely at home, thus avoiding an acute admission to hospital or to institutional care^{156 157 158 159 160}.

Information, communication & technology

There is a requirement for a fully wired network with an information and communications system enabling a real time, high quality, team-working approach to acute care through the use of:

- Electronic patient records including prescribing, pathology, radiology and other test results;
- Clinical telemedicine, telediagnosics, telecare and smart home services;

¹⁵⁰ Lambrecht CJ. Telemedicine in trauma care. *Telemed. J.* 1997; 3:265-8.

¹⁵¹ Brennan JA et al. Telemedicine in the emergency department: a randomised controlled trial. *J Telemed Telecare* 1999; 5:18-22.

¹⁵² Ferguson J et al. Minor injuries telemedicine *J Telemed Telecare* 2003;9 (Suppl 1):14-16.

¹⁵³ Brebner EM et al. Evaluation of an accident and emergency teleconsultation service for north east Scotland. *J Telemed Telecare* 2004; 10:16-20.

¹⁵⁴ The Grampian Telemedicine Initiative links Aberdeen Royal Infirmary to 14 A&E departments across the region.

¹⁵⁵ Pedley DK et al. Mobile telemetry for pre-hospital thrombolysis: problems and solutions 2005; 11 (Suppl 1): 78-80.

¹⁵⁶ Building telecare in England, DoH, July 2005.

¹⁵⁷ Telecare project: West Lothian Council, Scotland: A programme for the over 75s, the benefits of telecare so far, from 1200 homes being monitored are: reduced hospital admissions (savings equivalent to 9 acute beds), 50% reduction in the rate of delayed discharge, 50% reduction in average stay in nursing homes, and 10% of users staying at home as opposed to 'institutional' care.

¹⁵⁸ Active Living Project: 'Promoting security, independence and Quality of Life'. Kent County Council, UK. The county population is 1.34 million, the largest in the UK. The home monitoring project, launched in 2004, is an initial £2.25 million investment for the over 75s targeted to reduce the rate of admission to hospital.

¹⁵⁹ Columba project: Surrey Primary Care Trust: Telecare is being incorporated into an overall Managed Care Framework to deliver a population wide active prevention programme. This has 3 elements, supported self care for patients with 'well-controlled' conditions, Disease management for those with 'high risk' and Case management for the 'highly complex' patients.

¹⁶⁰ Strategic Plan VA Midwest Health Care Network. Department of Veterans Affairs 2006-2010.

- Picture archiving and communication systems (PACS);
- Electronic prescribing;
- Electronic booking;
- Patient access via broadband to their electronic patient record; and
- Official websites to develop self-care and health promotion.

The key to the development of effective systems and technology to support clinical service delivery is the implementation of an integrated approach to information management. This includes the development and use of a unique patient identifier covering the entire patient pathway of acute, primary, community, and continuing care services.

This will ensure that the services are patient centric and not service specific and will allow seamless intervention by a wide variety clinical staff providing services to an individual patient.

Appendix 6 - Modelling assumptions

Key assumptions in the approach used for modelling the capacity requirements for 2010 include:

- **Applying admission avoidance** assumptions that represent the percentage of admissions that typically could be avoided if appropriate alternative care provision was provided either within a home setting or within primary and community services. The focus is on chronic disease management conditions.

For example, an assumption is made that one third of all emergency admissions for chronic obstructive pulmonary disease can be avoided. This assumes early identification of COPD/asthma in primary care together with the development of programmes for self-care and self management, automatic recall review and reassessment in primary care, and the provision of pulmonary rehabilitation for patients at an earlier stage of the disease on-set. Evidence shows that the provision to general practitioners of spirometers has resulted in a reduction in admission rates for COPD of up to 50% within two years.

- **Increase in day case rates**, based on our clinical panel assessment, the UK Audit Commission basket of day case procedures and the transfer of all planned short stay inpatient admissions of zero and one day length of stay;
- **Reducing delayed transfers of care**. Patients with an excess length of stay are often either waiting for assessment and/or a place within nursing and residential homes and/or are due to inefficiencies within the hospital system such as delays in diagnostics, therapy assessments, or receiving senior medical opinion¹⁶¹. By ensuring that systems within hospital are streamlined and that sufficient resources are available within primary, community and social care services, then assumptions can be made regarding the potential reduction in these excess lengths of stay; and
- **Faster clinical throughput and shorter length of stay**. Assumptions have been made regarding improvements in length of stay by 2010. Firstly, it is assumed that where the length of stay by DRG is longer than the current national average for Ireland, then by 2010, all patient lengths of stay will achieve this level. Secondly, where international best practice can be identified, a further reduction is applied for particular DRGs.

For example, best practice evidence for primary hip replacements indicates an acute length of stay currently being achieved for 4 days, through robust practice guidelines

¹⁶¹ HSE: Acute Hospital Bed Review: A review of acute hospital bed use in hospitals in the Republic of Ireland with Emergency Departments, PA Consulting and Balance of Care, 4 May 2007.

and clinical pathways coupled with educational sessions for patients undergoing joint replacement surgery. This represents the acute segment of care and any post-acute rehabilitation would be provided separately.