

What is the future for General Surgery in Model 3 Hospitals?

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Received: 6 August 2016 / Accepted: 25 December 2016
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Abstract

Background General Surgery consultant recruitment poses considerable challenges in Model 3 Hospitals in Ireland.

Aim The aim of this paper is to examine General Surgery activity and consultant staffing in order to inform future manpower and service planning.

Methods General surgical activity in Model 3 Hospitals was examined using the validated 2014 Hospital Inpatient Enquiry (HIPE) dataset. Current consultant staffing was ascertained from hospital personnel departments and all trainees on the National Surgical Training Programme were asked to complete a questionnaire on their career intentions.

Results Model 3 Hospitals accounted for 50% of all General Surgery discharges. In the elective setting, 51.5% of all procedures were endoscopic investigations and in the acute setting only 22% of patients underwent an operation. Most surgical procedures were of low acuity and included excision of minor lesions, appendectomy, cholecystectomy and hernia repair. Of 76 General Surgeons who work

in Model 3 Hospitals 25% were locums and 54% had not undergone formal training in Ireland. A further 22% of these surgeons will retire in the next five years. General Surgical trainees surveyed indicated an unwillingness to take up posts in Model 3 Hospitals, while 83% indicated that a post in a Model 4 Hospital is ‘most desirable’. Lack of attractiveness related to issues regarding rotas, lack of ongoing skill enhancement, poor experience in the management of complex surgical conditions, limited research and academic opportunity, isolation from colleagues and poor trainee support.

Conclusions These data indicated that an impending General Surgery consultant manpower crisis can only be averted in Model 3 Hospitals by either major change in the emphasis of surgical training or a significant reorganisation of surgical services.

Keywords General surgical activity · Manpower · Recruitment · Retention · Model 3 hospital

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Introduction

Over recent years, medical consultant recruitment and retention have posed considerable challenges for many hospitals in Ireland. This issue is multifactorial in nature as it relates to salary reductions imposed on new entrants to the consultant body introduced during the financial recession and to poor morale within the medical workforce leading to an unwillingness of medical graduates to return from abroad [1].

Within smaller hospitals (Model 3 Hospitals), General Surgery as a specialty has become particularly unpopular because of the onerous rotas, reduction in the number of high calibre non-consultant hospital staff and permanent

consultant colleagues and the inability for successful surgical trainees to practice their chosen sub-specialty on appointment. This latter point has been compounded by the collateral effects of the National Cancer Strategy, which while timely in terms of improving cancer care, inappropriately enshrined the term ‘centre of excellence’ and removed the management of many surgical cancers to tertiary referral centres (Model 4 hospitals) without substitution [2]. The current, on-going National Trauma Review is also likely to further remove a cohort of complex patients from some peripheral hospitals to other centres.

The provision of general surgical care, particularly in the acute setting, plays an important role not only in the care of General Surgical patients but also in support of other specialties including emergency medicine, acute medicine, critical care, obstetrics and gynaecology as well as the other surgical specialties. Furthermore, there is an increasing realisation that patients who fall within this sphere of acute surgical care can often be critically ill and evidence from abroad indicates that outcomes are frequently poor and vary greatly between different centres [3]. Hence, there is a pressing need to examine acute general surgical care provision within smaller hospitals in Ireland and identify policies which may allow a better and more sustainable service particularly within the emerging Hospital Groups.

The aim of this paper is to examine the general surgical workload and consultant staffing in Model 3 Hospitals. In addition, the results of a survey of the attitudes of current general surgery trainees to working in Model 3 Hospitals are presented. The purpose of this report is to initiate discussion aimed at designing more sustainable solutions for the provision of acute surgical care in Model 3 Hospitals.

The organisation of general surgical services in Ireland

The Report of the Acute Medicine Programme defined four generic hospital models [4]. Model 1 hospitals are community/district hospitals and provide no surgical care. Model 2 hospitals admit low acuity medical patients and have a range of ambulance bypass protocols in place. They commonly have a daytime Medical Assessment Unit (MAU) and a Minor Injuries Unit and day care surgery is performed. These hospitals have evolved as a consequence of the Health Information and Quality Authority (HIQA) reports on Ennis and Mallow Hospitals [5, 6]. In addition to Ennis and Mallow, a Model 2 designation has also included the following hospitals: Dundalk, Roscommon, Nenagh, Navan, St. Colmcille’s (Loughlinstown) and Bantry. The operational design of these smaller hospitals was set out in the 2013 publication, ‘Securing the Future of Smaller

Hospitals: A Framework for Development’ [7]. St. John’s Hospital, Limerick and South Infirmary Victoria University Hospital, Cork are sometimes referred to as Model 2S hospitals as the complexity of surgery is above that of day case surgery as they are close and accessible to a Model 3 or 4 hospital and patients may be admitted overnight, or for a limited stay.

Model 3 hospitals admit undifferentiated acute medical and surgical patients. They have an Acute Medical Assessment Unit (AMAU), 24 h ED and Intensive Care Unit (ICU) facilities.

Model 4 hospitals also admit undifferentiated acute medical and surgical patients, accept tertiary referrals from other hospitals and have Category 3 ICU facilities that offer multi-organ and multispecialty support.

All hospitals that provide surgical care, acute or planned, in Ireland are listed in Table 1.

Activity analysis of general surgery managed patients in Model 3 Hospitals

The 17 Model 3 Hospitals which provide both elective and acute general surgical services are also shown in Table 1.

Just under 50% of all General Surgical activity nationally occurred in Model 3 Hospitals. Table 2 shows surgical activity for both day case and inpatient care, based on the validated 2014 HIPE dataset. We divided inpatient care into patients who had an operative surgical procedure and those who did not have surgery.

It should be noted that the Model 3 Hospitals generally had a greater proportion of patients who were admitted and did not have surgery (53.4% Model 3 versus 30% Model 4). The reasons for this were probably multifactorial and reflected demographic, social and community issues and the ‘generalist’ nature of community surgical practice in Model 3 hospitals. Of further note was the observation that 43.3% of all patients undergoing surgery nationally were treated in Model 3 Hospitals. Surgical patients in Model 3 Hospitals accounted for 49.2% of all surgical bed days used nationally.

Tables 3 and 4, respectively, show in more detail acute and elective surgical activity performed by general surgeons mapped to Model 3 Hospitals. A small proportion of activity was coded to sub-specialty procedures other than commonly recognised ‘General Surgery’ procedures reflecting the sub-specialty spectrum of surgical activity performed by General Surgeons in Model 3 Hospitals. In the elective setting, it was apparent that a major component of surgical activity related to GI endoscopy. In the acute setting, non-surgical procedures and patients discharged without any operative procedure or the performance of any coded was common (38.4%). It is likely that this latter

Table 1 Model 2, 3 and 4 hospitals in Ireland providing surgical care, listed within their respective hospital group

Hospital group	Hospital name	Model
Dub MidL	ST. JAMES'S HOSPITAL, DUBLIN	M4
Dub MidL	TALLAGHT ADULT	M4
Dub MidL	MIDLAND REGIONAL HOSPITAL, PORTLAOISE	M3
Dub MidL	MIDLAND REGIONAL HOSPITAL, TULLAMORE	M3
Dub MidL	NAAS COUNTY HOSPITAL	M3
Irl Est	MATER MISERICORDIAE, DUBLIN	M4
Irl Est	ST. VINCENTS UNIVERSITY HOSPITAL	M4
Irl Est	MIDLAND REGIONAL HOSPITAL, MULLINGAR	M3
Irl Est	ST. LUKE'S HOSPITAL, KILKENNY	M3
Irl Est	WEXFORD GENERAL HOSPITAL	M3
Irl Est	OUR LADY'S HOSPITAL, NAVAN	M3
Irl Est	ROYAL VICTORIA EYE & EAR, DUBL	M2
Irl Est	ST. COLMCILLE'S, LOUGHLINSTOWN	M2
Irl Est	ST. MARY'S HOSPITAL, CAPPAGH	M2
Irl Est	ST. MICHAEL'S, DUN LAOGHAIRE	M2
MidWest	REGIONAL, (DOORADOYLE) LIMERIC	M4
MidWest	ENNIS COUNTY HOSPITAL	M2
MidWest	NENAGH COUNTY HOSPITAL	M2
MidWest	REGIONAL ORTHOPAEDIC, CROOM	M2
MidWest	ST. JOHN'S HOSPITAL, LIMERICK	M2
Pead	OUR LADY'S HOSPITAL, CRUMLIN	
Pead	Tallaght Child	
Pead	TEMPLE ST. CHILDREN, DUBLIN	
RCSI	BEAUMONT HOSPITAL, DUBLIN	M4
RCSI	CAVAN GENERAL HOSPITAL	M3
RCSI	CONNOLLY HOSPITAL, BLANCHARDSTOWN	M3
RCSI	OUR LADY OF LOURDES, DROGHEDA	M3
RCSI	LOUTH COUNTY HOSPITAL, DUNDALK	M2
RCSI	MONAGHAN GENERAL HOSPITAL	M2
RCSI	ST JOSEPHS HOSPITAL RAHENY	M2
Saolta	REGIONAL (UCHG), GALWAY	M4
Saolta	LETTERKENNY GENERAL	M3
Saolta	MAYO GENERAL HOSPITAL	M3
Saolta	PORTIUNCULA, BALLINASLOE	M3
Saolta	SLIGO GENERAL HOSPITAL	M3
Saolta	ROSCOMMON COUNTY HOSPITAL	M2
SouthSW	CORK UNIVERSITY HOSPITAL	M4
SouthSW	WATERFORD REGIONAL (ARDKEEN)	M4
SouthSW	KERRY GENERAL HOSPITAL	M3
SouthSW	MERCY HOSPITAL, CORK	M3
SouthSW	SOUTH TIPPERARY GENERAL HOSPITAL, CLONMEL	M3
SouthSW	BANTRY GENERAL HOSPITAL	M2
SouthSW	MALLOW GENERAL HOSPITAL	M2
SouthSW	ORTHOPAEDIC HOSPITAL, KILCREEN	M2
SouthSW	SOUTH INFIRMARY/VICTORIA, CORK	M2
SouthSW	ST. MARY'S ORTHOPAEDIC, GURRAN	M2

group mostly represented patients admitted for observation, for un-coded diagnostic tests and/or for medical treatments. Gastrointestinal (GI) endoscopies, in terms of volume of

procedures carried out, accounted for 54% of all national surgical day case and inpatient activity performed in Model 3 Hospitals.

Table 2 Elective and acute inpatient and day case discharges are shown for Model 2, 3 and 4 hospitals for 2014

Hospital model (M)	M2	M3	M4
Had a surgical procedure			
Inpatients	2545	12,149	14,274
Day cases	10,666	17,347	11,098
Sub-total (%)	13,211 (19.4%)	29,506(43.3%)	25,371 (37.3%)
No surgical procedure			
Inpatients	1684	24,506	14,874
Day cases	19,228	42,777	22,885
Sub-total (%)	20,922(16.6%)	67,283 (53.4%)	37,759 (30%)
Grand total (%)	34,133 (12.6%)	96,789 (49.9%)	63,130 (32.5%)

Table 3 Elective discharges under the care of general surgeons in Model 3 Hospitals in 2014 with procedures broken down by surgical sub-specialty

Elective	Inpatients		Day cases	
	Nos.	Bed days used	Nos.	% Day/total
Had a surgical procedure				
Surgical sub-specialty				
Breast	68	142	243	78.1
Colorectal	778	7762	311	28.6
General surgical	3026	6860	10,429	77.5
Upper GI—HPB	204	1373	26	11.3
Vascular	303	1051	761	71.5
Other	542	2230	5330	90.8
Sub-total	4921	19,418	17,100	77.7
No or non-surgical procedures				
Non-surgical procedures (≥ 20 p.a.)	663	7960	5545	89.3
GI endoscopes	664	1936	31,642	97.9
Other procedures or no procedure	484	1485	1682	77.7
Sub-total	1811	11,381	38,869	95.5
Grand total	6732	30,799	55,969	89.3

As shown in Tables 2, 3 and 4, a major component of Model 3 Hospital surgical activity is non-operative. Figure 1 shows the operative and non-operative surgical activity nationally while Table 5 shows the most common HIPE codes performed in both these groups.

Model 3 Hospitals accounted for 53% of non-surgical activity. By far the greatest group of patients are those without any HIPE-coded procedure who were likely admitted for non-coded tests, observations or medical management.

Of the ten most common operative codes listed, Model 3 Hospitals accounted for 52.1% of all operations performed by General Surgeons nationally. The majority of the most frequent operations were of low acuity and included the removal of skin lesions, appendicectomies (laparoscopic and open), cholecystectomies and hernia repairs. The proportions of the last three that were performed in Model 3 Hospitals were, respectively, 50.4, 55.2 and 46.6% of those cases performed nationally.

Sub-specialty surgical activity in areas, such as colorectal and vascular surgery, took place in Model 3 Hospitals accounting for 33.2 and 20.6% of all national colorectal and vascular primary procedures, respectively. The majority of Model 3 Hospitals carried out colonic resectional surgery, which was complex in a small number of cases. In only one Model 3 Hospital did complex vascular surgery take place.

Consultant staffing in Model 3 Hospitals

In July 2014, The Royal College of Surgeons in Ireland (RCSI) produced an Interim Report of a Working Group on Surgical Service Delivery and Workforce Planning [8]. This looked at consultant numbers in all surgical specialties. This 2014 database was updated by contact with all hospital manpower managers between October and December 2015 to determine the level of General Surgery consultant staffing in all Model 3 Hospitals.

Table 4 Acute discharges under the care of general surgeons in Model 3 Hospitals in 2014 with procedures broken down by surgical sub-specialty

Acute	Inpatients		Same day discharges	
	Nos.	Bed days used	Nos.	% Same day/total
Had a surgical procedure				
Surgical sub-specialty				
Breast	2	19	19	90.5
Colorectal	443	8937	3	0.01
General surgical	5938	27,081	132	2.2
Upper GI—HPB	14	362	2	0.01
Vascular	110	1971	1	0.01
Other	720	5143	100	12.2
Sub-total	7227	43,513	257	3.4
No or non-surgical procedures				
Non-surgical procedures (≥ 20 p.a.)	9397	54,295	840	8.2
GI endoscopes	2865	14,598	217	7.0
Other procedures or no procedure coded	10,271	26,051	2835	21.6
Non specified activity	163	1762	16	8.9
Sub-total	22,696	96,706	3908	14.7
Grand total	29,923	140,219	4165	12.2

Fig. 1 Graph bars representing the number of patient discharges of elective inpatients and day cases and emergency (acute) inpatients and same day discharges for those who had or did not have a surgical procedure in Model 4, Model 3 and Model 2 and other hospitals in 2014. Average lengths of stay are represented by circles (elective) and diamonds (emergency), respectively

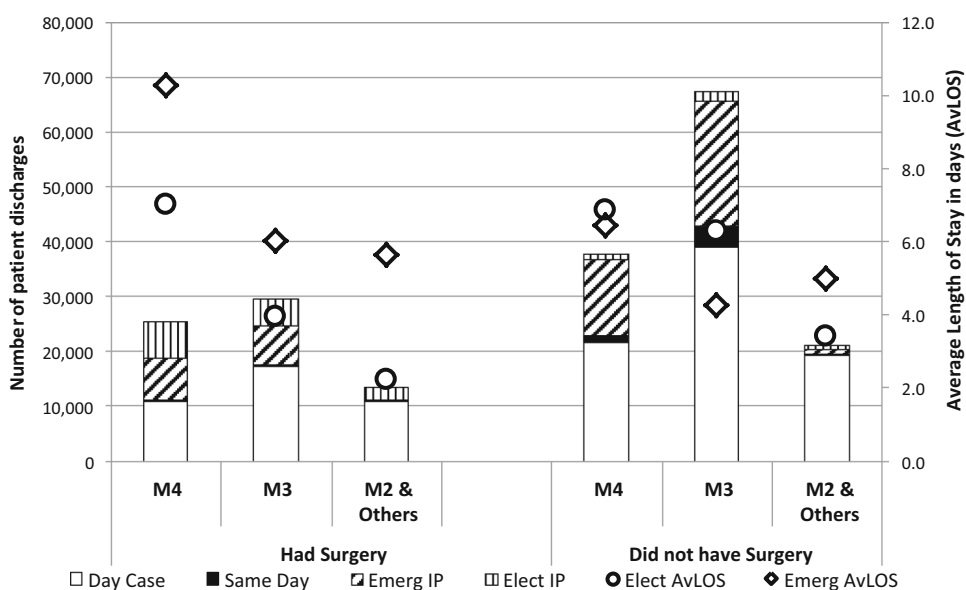


Table 6 lists the general surgical consultant numbers for the 17 Model 3 Hospitals providing both acute and elective General Surgical services at these sites. Locum numbers, retirements within five years and the number of surgeons who had not undergone formal training in Ireland are also shown.

Consultant manpower analysis indicated that 76 General Surgeons were working in Model 3 Hospitals at the time of the study. Of these, 19 (or 25%) were in locum posts. Age profiles indicated that a further 17 surgeons will retire

within five years. Of the cohort of 76 surgeons, 41 (54%) had not undergone formal training in Ireland. We do not have the data to indicate whether these surgeons had undergone formal training in another country.

These data indicate that if consultant General Surgeon recruitment and retention fail to improve within the next five years then locum numbers could increase to 47% and those without formal training in Ireland might increase to 76%, respectively, of all general surgeons in Model 3 Hospitals.

Table 5 Most frequent non-surgical and surgical procedures 2014

Top 15 procedures with no code or non-surgical procedure (ICD 10 Code)	Elective		Acute		Day cases	Total discharges
	Inpatients	AvLOS	Inpatients	AvLOS		
No coded procedure	438	2.8	10,271	2.5	4407	15,116
CT abdomen and pelvis with IV contrast (5650700)	19	8.3	2155	4.6	95	2269
CT of brain (5600100)	21	24.3	970	4.4	265	1256
Rubber band ligation of haemorrhoids (3213500)	18	2.2	19	4.4	1027	1064
CT of abdomen and pelvis (5650100)	13	8.6	932	3.9	112	1057
Sclerotherapy for haemorrhoids (3213200)	3	1.2	24	2.9	819	848
Allied health intervtn, physiotherapy (9555003)	116	15.8	693	8.0	20	829
CT of abdomen (5640100)	2	4.0	642	4.2	63	709
Anorectal examination (3217100)	13	1.4	31	6.2	515	559
Allied health intervention, pharmacy (9555009)	11	17.1	460	4.2	36	507
Top 10 surgical procedures (ICD 10 code)						
Excision(s) of SSCT*, site unspecified (3120500)	40	1.8	12	2.1	4223	4275
Laparoscopic appendectomy (3057200)	44	1.6	2339	2.9	26	2409
Laparoscopic cholecystectomy (3044500)	1,194	1.8	370	4.4	783	2347
Repair of inguinal hernia, unilateral (3061402)	541	1.6	80	4.1	6E8	1309
Wedge resection of ingrown toenail (4791500)	6	1.0	4	2.0	1094	1102
Appendectomy (3057130)	6	2.5	960	3.3	4	968
Excision of lesion(s) of SSCT, leg (3123503)	17	3.8	2	1.0	946	964
Excision lesion(s) of SSCT, neck (3123501)	3	1.0	1	1.3	825	834
Repair of umbilical hernia (3061700)	138	1.5	38	3.9	271	447
Incision and drainage of abscess of SSCT (3022301)	6	6.8	384	2.7	45	435

* Skin and subcutaneous tissue

Survey of surgical trainee career intentions

In December 2015, all general surgical trainees on the National Surgical Training Programme were asked by the National Clinical Programme in Surgery to complete a questionnaire on their career intentions. Thirty-nine out of 80 trainees responded giving a 46% response rate, the results of which are summarised in Table 7.

When asked about career intentions following training, a post in a Model 4 Hospital was considered most desirable by 83% of the trainees. In contrast, a post in a Model 3 Hospital was considered most desirable by only 3% of trainees. A varying degree of support was demonstrated for a joint position between a Model 3 and 4 Hospital. The reasons supporting these decisions were related to posts offering the opportunity for further training and skills enhancement, research and academic involvement and, most importantly, the supporting structure and resources of the post and the opportunity to manage complex surgical conditions. Interestingly, work-life balance, lifestyle, cost of living, location and geographically issues appeared to be of little importance to surgical trainees. When asked about the negatives of working in a Model 3 Hospital the reasons listed included burdensome rota issues, limited work schedules, isolation from colleagues and lack of peer

support, limited academic opportunities and uncertainty regarding the future of this hospital type.

Trainees were questioned regarding inducements for taking up a post in a Model 3 Hospital. The use of retention bonuses for staying in a post for a certain number of years, entry on a higher point of the salary scale (level 3 or 4) and a defined on-call rota (1:5 or 1:6), contractually protected academic, teaching and research time within the Hospital Group and the attachment of a senior trainee to the post were all considered favourable. A shortened duration of training for a Model 3 Hospital post was not an attractive option for the majority of trainees. A variable response was seen with the offer of a funded, foreign fellowship

Table 7 also shows the elements of a Model 3 Hospital post which would be appealing to trainees. These include guaranteed beds, theatre time and endoscopy sessions. Joint appointment with Model 4 Hospitals and guaranteed connectivity to the Hospital Group network were also considered desirable.

Discussion

These studies examined the surgical activity, consultant manpower levels and general surgical trainee attitudes to a career in a Model 3 Hospital. Our data show that, in the

Table 6 List of General Surgical consultant numbers for the 17 Model 3 Hospitals providing both acute and elective general surgical services in each Hospital Group

Hospital group	Hospital name	Number of surgeons	Number of locums	Retiring within 5 years	No formal training in Ireland
Dub MidL	MIDLAND REGIONAL HOSPITAL, PORTLAOISE	3	1	0	3
Dub MidL	MIDLAND REGIONAL HOSPITAL, TULLAMORE	4	1	1	1
Dub MidL	NAAS COUNTY HOSPITAL	4	1	2	0
Irl Est	MIDLAND REGIONAL HOSPITAL, MULLINGAR	5	2	0	3
Irl Est	OUR LADY'S HOSPITAL, NAVAN	4	2	1	3
Irl Est	ST. LUKE'S HOSPITAL, KILKENNY	5	3	1	4
Irl Est	WEXFORD GENERAL HOSPITAL	5	2	2	4
RCSI	CAVAN GENERAL HOSPITAL	4	0	0	2
RCSI	CONNOLLY HOSPITAL, BLANCHARDSTOWN	4	2	1	2
RCSI	OUR LADY OF LOURDES, DROGHEDA	9	1	2	5
Saolta	LETTERKENNY GENERAL	6	3	2	5
Saolta	MAYO GENERAL HOSPITAL	3	0	1	1
Saolta	PORTIUNCULA, BALLINASLOE	4	1	1	0
Saolta	SLIGO GENERAL HOSPITAL	4	0	1	2
SouthSW	KERRY GENERAL HOSPITAL	4	0	2	1
SouthSW	MERCY HOSPITAL, CORK	5	0	0	5
SouthSW	SOUTH TIPPERARY GENERAL HOSPITAL,	3	0	0	0
Total		76	19	17	42

acute setting, a high volume of low acuity and non-operative surgical activity occurs in Model 3 Hospitals whereas in the elective setting a significant proportion of all the national general surgical and GI endoscopy workload is performed in these hospitals.

The consultant manpower analysis showed a system under considerable strain with a high proportion of posts filled with locum consultants and posts being filled with surgeons who have not undergone formal surgical training in Ireland. Highlighting the high locum rates and lack of national formal training should not be considered a criticism of the current Model 3 General Surgical consultants in post as many currently provide comprehensive surgical care to a significant proportion of the population, often under difficult circumstances, and have done so for a considerable time. This staffing profile, however, is far from ideal and will undoubtedly be compounded in the coming years in the face of predicted retirements that are due to take place within the current Model 3 Hospital general surgical consultant population.

In addition to these issues, other pressures will continue to add further stress to the system. These include the protracted development of properly functioning Hospital Groups and the unhelpful configuration of some of them as well as the unaligned Community Healthcare Organisations; the lack of capacity within the system limiting reconfiguration; and the political and societal reluctance to

financially commit to redesigning and reorganising medical services. It is the opinion of the National Clinical Programme in Surgery (NCPS), however, that failure to put in place a sustainable solution to address these difficulties will lead to a growing inability to implement the NCPS Models of Care and compromise the provision of good quality, safe and accessible General Surgical services for patients nationally. Despite these numerous challenges, various solutions are worthy of consideration.

Two obvious approaches could be considered. The first approach is to redesign the training scheme to make it 'fit for purpose' in producing surgeons suitably trained, for approximately half the national consultant General Surgical posts required nationally, to staff Model 3 hospitals. Currently, all General Surgical trainees subspecialise which many would argue discourages appointment to these 'generalist' posts in smaller hospitals. Redesigning the current training scheme to produce 'generalists' would require major discussion within the Royal College of Surgeons of Ireland and the Joint Committee for Surgical Training, the intercollegiate body which has oversight of surgical training with representatives from all the Surgical Colleges in Great Britain and Ireland [9]. However, even if this was to occur there is still no guarantee that trainees would apply for such a training scheme or apply for posts in Model 3 Hospitals on completion of training.

Table 7 Summary result of the National Surgical Trainee Survey on Consultant Appointments, December 2015

What would be your preferred appointment?						
	Most desirable (%)	Desirable (%)	Less desirable (%)	Least desirable (%)		
A consultant post in a M3 Hospital	3	21	26	50		
A consultant post in a M4 Hospital	73	19	3	5		
Joint appointment between a M3 & M4 Hospital	11	36	42	11		
Working abroad	15	21	24	41		
What are the reasons for your choice?						
	Most relevant (%)	More relevant (%)	Relevant (%)	Somewhat relevant (%)	Less relevant (%)	Least relevant (%)
Work-life balance	9	9	12	21	32	18
Lifestyle and cost of living	0	15	6	15	24	41
Training and skills enhancement	18	26	32	18	6	0
Research and academic opportunity	18	26	15	21	9	12
Location and geographical issues	12	12	18	15	24	18
Structure and resources or the post and access to complex cases	49	16	16	11	3	5
What would make a Model 3 appointment more appealing?						
	Very appealing (%)	Appealing (%)	No impact on decision (%)			
Guaranteed endoscopy sessions linked to post	55	18	27			
Joint appointment with a M4 hospital	39	45	15			
Having protected theatre sessions	70	24	6			
Guaranteed connectivity to MDTs and Grand Rounds in M4 Hospital	50	29	21			
Having protected beds	58	36	6			

The other approach to redesigning General Surgical services is to improve the attractiveness of posts which would have the added benefits of rationalising our current fragmented surgical service. Regional solutions within Hospital Groups could allow appropriate reorganisation of General Surgical services enabling complete separation of the acute and elective general surgical streams as envisioned in the NCPS Acute Model of Care [10]. This would lead to improved rotas, better connectivity and an improved working environment for surgeons while at the same time providing higher quality, sustainable acute and elective general surgical services for patients. Such a process would also allow greater movement of surgeons between the different models of hospitals which would in turn lead to an increase in more appropriate surgical activity in each of the three hospital model sites.

Additional benefits from such a reorganisation would require the early identification of acutely ill surgical patients who require complex critical care. Clear referral pathways would be required for the transfer of these vulnerable patients who frequently have poor and variable outcomes. The international surgical literature and NCPS data indicate the persistent and high mortality associated

with emergency general and colorectal surgery [11]. In addition, evidence from the UK indicates considerable variation in survival for patients undergoing emergency laparotomy and it is likely that this outcome variability is similar in Ireland [3].

However, such a reorganisation will not be geographically possible in some regions of the country such as the northwest, in which case transfer of patients between Hospital Groups and possibly also to hospitals within Northern Ireland would be necessary to allow access to appropriate surgical care. With any remodelling of surgical services, capacity issues would clearly need to be addressed. Previous experience with reconfiguration of smaller hospitals indicates the need for proactive community engagement to address understandable societal concerns.

A further additional benefit from such structural changes would be to support the Elective Model of Care with improved access to pre-admission processes and elective/scheduled care in an appropriately protected setting. Local solutions vary depending on catchment population, geographical location and capacity issues within the supporting Hospital Group. Model 2 and 3 Hospitals in general have a better track record of protecting day bed facilities

and supporting integrated pre-admission, day and community care for surgical patients. Such arrangements already exist in some Hospital Groups and could be expanded nationally.

The data presented here should encourage a more global consideration of General Surgical service redesign. As highlighted, a considerable volume of surgical care in Model 3 Hospitals is non-operative in the acute setting and in the elective setting involves substantial amounts of GI endoscopy. Many of these patients are currently poorly served with a lack of continuity of care as surgeons frequently do not have the skill base to provide the integrated medical care that many of these patients who are frequently elderly and have significant comorbidities and diverse health care needs. In many other health care systems, care for such patients would not be provided for by surgeons. This questions whether surgeons are best placed to provide all these services in Ireland.

With appropriate service planning, much of the current workload performed by General Surgeons in Model 3 Hospitals could be performed by other specialty groups. For example, we would argue that Care of the Elderly physicians would provide better quality comprehensive care for many within the cohort of acutely admitted surgical patients who do not undergo surgery. In the elective setting, medical gastroenterologists could care for many of the patients who undergo endoscopy. Clearly changes in the management of these patient groups would require long-term strategic planning and dialogue with the appropriate specialists groups.

The National Clinical Programme in Surgery has the underlying capability to understand and map capacity and demand modelling so as to examine and fully understand the patient shifts that would result from such fundamental changes in the provision of acute surgical services. It is our contention that, in the long-term, changes of this nature would provide a more efficient use of valuable surgical

skills and deliver improved long-term integrated patient care for our increasingly elderly population.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

References

1. McCraith Report: Strategic review of medical training and career structure, Department of Health 2014: <http://www.lenus.ie/hse/bitstream/10147/317460/1/SRMTCSCareerStructureReportFINAL.pdf>
2. A strategy for cancer control in Ireland, Department of Health 2006: <http://www.cancerscreening.ie/publications/CancerControlStrategy2006.pdf>
3. National Institute of Academic Health Service Research Centre. Anaesthesia National Emergency Laparotomy Audit (NELA) reports. <http://nela.org.uk/reports>
4. Report of the Acute Medicine Programme <https://www.hse.ie/eng/services/publications/hospitals/AMP.pdf>
5. Report of the investigation into the quality and safety of services and supporting arrangements provided by the Health Service Executive at the Mid-Western Regional Hospital Ennis 6 April 2009. https://www.hiqa.ie/system/files/HIQA_Ennis_report_09042009.pdf
6. Report of the investigation into the quality and safety of services and supporting arrangements provided by the Health Service Executive at Mallow General Hospital 13 April 2011. <https://www.hiqa.ie/system/files/Investigation-Mallow-report.pdf>
7. Securing the Future of Smaller Hospitals: A Framework for Development. <http://health.gov.ie/wp-content/uploads/2014/03/SecuringSmallerHospitals.pdf>
8. The future of surgical specialties in Ireland, RCSI https://www.rcsi.ie/files/surgery/docs/20100928014305_Forum%20on%20the%20future%20of%20surgica.pdf
9. Joint Committee for Surgical Training: www.jcst.org
10. Model of care for acute surgery, National Clinical Programme in Surgery (2013) https://www.rcsi.ie/files/surgery/docs/20131030121710_RCSI_Model_of_Care_for_Acute_S.pdf
11. Symons NR, Morrthy K, Almoudaris AM et al (2013) Mortality in high-risk emergency general surgical admissions. *Br J Surg* 100:1318–1325