International comparisons of selected service lines in seven health systems

ANNEX 7 – REVIEW OF SERVICE LINES: EMERGENCY SURGERY

Evidence Report

October 27th, 2014

Executive summary for FNOF/emergency surgery

- Emergency surgery as defined in England d**oes not exist in any other the other regions apart from the United States**
  - All the other regions have surgery specialties focused on a condition or body part, but no emergency surgery specialty
  - Trauma surgery is recognised in many countries
  - In the United States, Acute Care Surgery is a new and evolving specialisation with the first accredited training programmes appearing in the last few years. Thus far, there are only a small number of qualified Acute Care Surgeons
- Many regions **share resources, in terms of surgeons and operating theatres, between elective and emergency** procedures
  - In Canada, service delivery models vary by provider but only some of the more specialist hospitals provide a dedicated acute surgical service
  - While Victoria has recommended the split of emergency and elective surgery services to better provide for emergency cases, this has not yet been implemented or adopted

Emergency surgery spans a range of non-elective surgical procedures. Since the requirements and standards differ by procedure, we have focused our guidelines research one procedure, fractured neck of femur (FNOF). FNOF was selected because it is a high volume emergency procedure. In addition, there are clear operational guidelines for the entire pathway around the procedure (e.g. arrival at the hospital, surgery, rehabilitation). This allows for an international comparison of standards beyond purely clinical best practice, reflecting the general level of guidance for emergency surgery

- England has the **strictest standards for FNOF** in terms of process requirements.
  - It recommends scheduling the procedure on the elective list, an acute orthogeriatric assessment performed pre-op and multi-disciplinary rehab.
  - The only other geography we have looked at which has these types of requirements is Victoria, where standards are being developed based on the NHS recommendations
- Most countries have a **recommended timeline for surgery, but the target varies from 24hrs to 48hrs**.
  - All countries also recognise the **importance of immediate surgery** to attain the best possible outcomes
  - Most have set standards around this, but the actual time frame recommended varies from 24hrs to 48hrs
  - Nonetheless most countries treat around 90% of patients within 48 hours, suggesting that the target has little impact on time to surgery other than reinforcing the ‘as soon as possible’ notion
- In England as well as other countries, there exist **different standards on time to surgery**
  - In the NHS, NICE recommends surgery on day of admission or day after admission, BPT rewards surgery <36hrs and NHFD audit measures surgery <48hrs and <36hrs.
  - In **Sweden and the Netherlands we see a similar confusion**, where the national targets are <24hrs but figures on <48hrs are reported
- **Early mobilisation after surgery is recommended** in most countries, but not all set specific time period requirements.
  - In England, Victoria and Ontario the target is the day after surgery
  - The Netherlands and Germany only recommend early mobilisation
- Many of the countries and regions considered have a **register for hip fractures**, and Australia is in the process of developing one. FNOF surgery times are also widely used as part of hospital quality indicators
- In England, the **Best Practice Tariff** offers financial rewards to hospitals meeting quality standards. The Australian guidelines under development also recommended a similar approach

FNOF – NHS core standards

NHS standards setting bodies

- NICE
- British Orthopaedic Society
- British Geriatrics Society
- Best Practice Tariff for fragility hip (DH, Monitor)
- National Hip Fracture Database (audit of BOA/BGS standards)

Core NHS standards

Access
- Admission to acute orthopaedic ward <4hrs of presentation
- **Surgery on day of admission or day after admission (NICE). BPT rewards surgery <36hrs and NHFD audit measures surgery <48hrs**

Inputs
- **Acute orthogeriatric medical service available pre- and post-op (and orthogeriatric assessment performed pre-op)**

Process
- Patients admitted under joint care of consultant orthopaedic surgeon and consultant geriatrician – with multi-disciplinary management from admission
- Correctable co-morbidities identified and treated to prevent avoidable surgery delays
- **Hip fracture surgery scheduled on a planned trauma list**
- Surgical procedures:
  - Replacement arthroplasty (hemiarthroplasty or total hip replacement) in patients with displaced intracapsular fracture
  - Offer total hip replacements o patients with displaced intracapsular fracture who pre-conditions met (see NICE guidance)
  - Use extramedullary implants in preference to intramedullary nail in patients (see NICE guidance for details)
- **Mobilisation assessment (and daily mobilisation) from day after surgery unless contra-indicated**
- Assessment by geriatrician post-op and <72hrs of admission
- Pressure ulcer prevention strategies in place
- Post-operative MDT geriatric rehabilitation assessment
- Post-operative assessment for secondary prevention:
  - Falls prevention
  - Bone protection medication
- Early supported discharge where patients meet criteria (see guidance)

Outcomes
- 30 day mortality (measured in audit)
- Return to own home <30 days (measured in audit)

Critical standards

		Level achieved
1	**Admission to acute orthopaedic ward <4hrs of presentation**	50% achieved
2	**Time to surgery (BPT[1] <36hrs; NHFD audit <48hrs; NICE same or next day)**	86% achieved <48hrs
3	**Acute orthogeriatric assessment performed pre-op**	49%
4	**Hip fracture surgery scheduled on a planned trauma list**	Not available
5	**BPT[1] – Combined metrics**	60%
6	**Offer mobilisation on the day after surgery, and at least once a day**	Not available

SOURCE: NICE, The management of hip fracture in adults, CG124, 2011; National Hip Fracture Database National report 2013

FNOF – International standards

Topic of standards	Standard specifics						
	England	**Victoria[1]**	**Ontario**	**Netherlands**	**Germany[2]**	**Sweden**	**Arkansas**
Time to admission	Admission to acute orthopaedic ward <4hrs of presentation	No guideline	90% of patients should be admitted within 4 hours spent in the ED	No standard	No standard	No standard	No standard
Time to surgery	BPT <36hrs; NHFD <48hrs; NICE on the day of or after presentation	On the day of or after presentation	Within 48hrs, also for patients requiring transfer from non-surgical hospital	24hrs recommended, 48hrs/1 calendar day reported by MoH	Within 24hrs	24hrs recommended, 48hrs reported in national hip fracture register	No standard
Pre-operative assessment by specialist	Acute orthogeriatric assessment performed pre-op	Regular orthogeriatrician assessments	No standard	No standard	No standard	No standard	No standard
Scheduling of surgery	Hip fracture surgery scheduled on a planned trauma list	Schedule on planned list / planned trauma list with skilled team available	No standard	No standard	No standard	No standard	No standard
Geriatrician consultantion[3]	BPT requires assessment by geriatrician within 72 hours	No standard	No standard	No standard	No standard	No standard	No standard
Post-surgery mobilisation	Offer mobilisation on the day after surgery, and at least once a day	Offer mobilisation on the day after surgery, and at least once a day	As soon as possible, i.e. within 12 to 24 hours of surgery	Early mobilisation recommended	Early mobilisation recommended	No standard	No standard
Patients arriving in ED seeing orthopedic surgeon in time			90% of patients arriving in ED need to consult with orthopedic surgeon in <2hrs				

1. Australia guidelines currently under consultation; 2. Germany's standards are currently under review; 3. Selected metric from BPT which has second lowest achievement rate after time to surgery, NHFD 2013

FNOF – Comparison of standards

Stricter target than NHS
Same target than NHS
More lenient target than NHS
No target

	England	Victoria	Ontario	Netherlands	Germany	Sweden	Arkansas	NHS strict?
Time to admission	<4 hrs	×	<4 hrs	×	×	×	×	
Time to surgery	<36hrs <48 hrs	<48 hrs	<48 hrs	<24 hrs <48 hrs	<24 hrs	<24 hrs <48 hrs	×	
Pre-operative assessment by specialist	✓	✓	×	×	×	×	×	
Scheduling of surgery	Planned trauma list	Planned trauma list	×	×	×	×	×	
Geriatrician consultantion	<72 hrs	×	×	×	×	×	×	
Post-surgery mobilisation	Day after surgery	Day after surgery	12-24hrs after surgery	Early	Early	×	×	
Patients arriving in ED seeing orthopedic surgeon in time	×	×	<2hrs	×	×	×	×	

FNOF – Reasoning behind the critical standards

Topic of standards	Why critical?
Time to admission	▪ Outcomes against this standards are monitored and reported nationally and internationally ▪ Hospitals with smaller orthopaedic wards may struggle to deliver on this target
Time to surgery	▪ Time to surgery is an important indicator as it is directly linked to outcomes ▪ This indicator is reported on nationally and internationally ▪ To meet the target, the presence of a consultant for preoperative assessment as well as a specialised operating team is required, which may be more difficult to manage at lower scale ▪ This indicator is part of the Best Practice Tariff and will therefore directly impact earnings
Pre-operative assessment by specialist	▪ Smaller and more rural hospitals may have more difficulty recruiting specialised acute orthogeriatric consultants ▪ Smaller hospitals may have too little volume to warrant the employment of a specialised acute orthogeriatric consultant
Scheduling of surgery	▪ Dedicated theatre space for emergency surgery has significant cost implications, in terms of facilities (theatre space) and staffing (fully staffed theatre team including anaesthetics etc.)
Geriatrician consultantion[3]	▪ This indicator is part of the Best Practice Tariff and will therefore directly impact earnings ▪ After the time to surgery, it is the second most difficult target to achieve[1]
Post-surgery mobilisation	▪ Mobilisation the day after surgery requires the hospital to have access to physiotherapists and other ancillary services ▪ Smaller hospitals may have too little volume to warrant the employment of those specialists
Patients arriving in ED seeing orthopedic surgeon in time	▪ A time target for seeing an orthopedic surgeon requires an hospital to have such a specialist on call during A&E opening times ▪ For smaller hospitals this may be a significant investment

1 National Hip Fracture Database National report 2013

SOURCE: Research team's analysis of why these standards are critical

FNOF – Sources

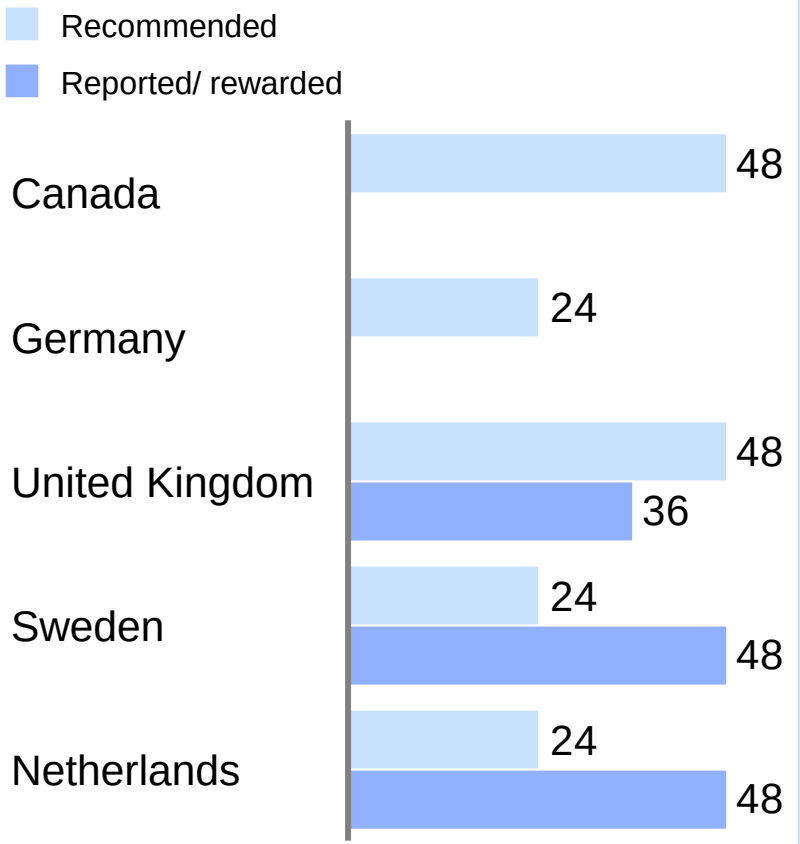
	Sources for standards
England	▪ NICE - The management of hip fracture in adults ▪ National Hip Fracture Database National report 2013 – Summary
Victoria	▪ Australian and New Zealand Guideline for Hip Fracture Care – For public consultation, 2013
Ontario	▪ Quality-Based Procedures Clinical Handbook for Hip Fracture – Health Quality Ontario & Ministry of Health and Long-Term Care, 2013
Netherlands	▪ Nederlandse Vereniging voor Heelkunde – Behandeling van de proximale femurfractuur bij de oudere mens 2008
Germany	▪ Deutschen Gesellschaft für Unfallchirurgie e.V. (DGU) & Österreichischen Gesellschaft für Unfallchirurgie (ÖGU) – Leitlinien Unfallchirurgie Schenkelhalsfraktur des Erwachsenen (currently being reviewed and updated)
Sweden	▪ Rikshöft – Årsrapport 2012 ▪ http://rikshoft.se/hip-fracture/
Arkansas	▪ N/A

Emergency surgery – Standard setting context

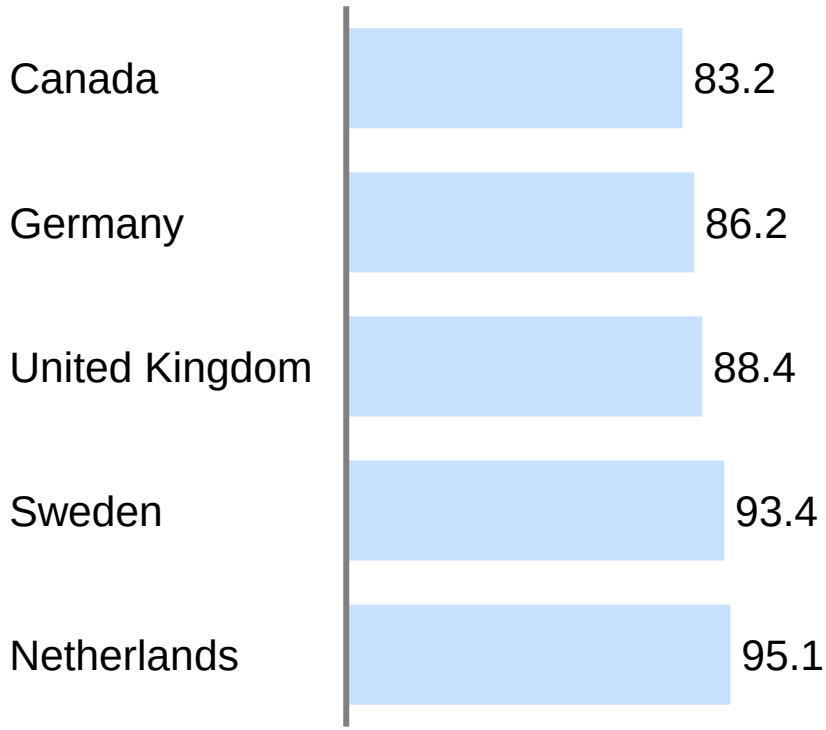
	Standard setting context
England	▪ For emergency surgery in general, the Royal College of Surgeons (and related professional bodies) and NHS England publish standards that hospitals are expected to meet. Monitoring and enforcement is mixed but generally quite high profile and a significant source of pressure for hospitals and commissioners. ▪ For specific conditions England has a Best Practice Tariff, which rewards hospitals who meet certain standards: e.g. FNOF
Victoria	▪ Australia, together with New Zealand, is in the process of developing FNOF standards based on the UK standards ▪ They are recommending a financial incentive, like the best practice tariff, to be introduced there as well ▪ Victoria has published an emergency surgery framework in 2012 which lays out principles to delivering safe and high quality emergency surgery, but these guidelines are not enforced or monitored
Ontario	▪ Hospital accreditation is a voluntary process managed by Accreditation Canada a self-funded regulatory body ▪ LHINs can manage quality and outcomes through contractual agreements but there is no established framework for this ▪ Professional bodies publish non-mandatory guidance on how to manage specific acute conditions and pathways
Netherlands	▪ The Inspection for Healthcare (Inspectie voor de Gezondheidszorg) monitors the operative processes in hospitals through Toezicht Operatief Process – however this does not focus on emergency surgery in specific ▪ Based on outcomes from the Toezicht Operatief Process the Inspection can initiate further investigation ▪ There exist no general guidelines for emergency surgery, but condition-specific clinical guidelines are published by the respective medical association
Germany	▪ The Deutschen Gesellschaft für Unfallchirurgie e.V. (DGU) & Österreichischen Gesellschaft für Unfallchirurgie (ÖGU) publish guidelines on ‘accident surgery’, but only by condition ▪ The FNOF standards, Leitlinien Unfallchirurgie Schenkelhalsfraktur des Erwachsenen, are currently being reviewed and updated ▪ There is no monitoring of these standards
Sweden	▪ Swedish Surgical Society and the Swedish Orthopaedic Association publishes guidelines within their respective clinical areas ▪ In specific areas (like FNOF) national audits review quality of care
Arkansas	▪ Standards are set through state-level hospital accreditation requirements (Rules and Regulations for Hospitals and Related Institutions in Arkansas). These regulations set out the level of facilities and governance arrangements (e.g. that a suitably qualified physician should be responsible for patient care) that are required. Accreditation is reviewed regularly. ▪ Professional bodies may publish clinical guidelines for specific procedures, these are not mandatory or monitored, but compliance may be routine in many settings due to professional expectations

The recommended time to surgery does not seem to have a major impact on achieving the 48hr target

Guidelines on time to surgery, hours



Actual operated within 48hrs, %



SOURCE: OECD Health Care Quality Indicators

Emergency surgery in the Netherlands

Service line definition

- Emergency surgery is not defined as a specialty in the Netherlands; however trauma surgery does exist
- Emergency surgery is provided by general surgeons, orthopaedic surgeons or surgeons with another specialty such as oncology, stomach-intestinal-liver or vascular surgery

Service delivery model

- There exist collaborations between hospitals around specific acute surgeries
  - In the Netherlands there are 11 trauma centres across the country, providing specialised care by major trauma
  - In Amsterdam, three hospitals are part of one vascular surgery centre, sharing surgeons and providing 24/7 specialised care
- Some requirements for emergency surgery are linked to the A&E
  - Even hospitals with only a basic A&E are required to have access to an operating team and anaesthesesiologist
  - However, this is only required during opening hours of the A&E, which does not need to be 24/7

Comparison to NHS

- Contrary to the NHS, emergency surgery is not a specialty nor a clearly defined service line in the Netherlands
- There do exist specialised surgeons and services for trauma, like in England

SOURCE: Nationale Zorgatlas; Gezondheidsraad: De basis moet goed, 2012

Emergency surgery in Ontario

Service line definition

- There is no clear service line definition for general emergency surgery in Ontario
- Patients requiring acute surgery may be managed in a number of different specialty departments with relatively few hospitals (13 across all Canada in 2010) providing a dedicated acute surgery service

Service delivery model

- Service delivery models vary by provider with only a small number of larger and more specialist hospitals providing a dedicated acute surgical service
  - Sunnybrook and St Michael's Hospital within the Central Toronto and Central East Ontario LHIN districts have dedicated on-call consultant surgeons with no elective activities booked
  - The majority of hospitals will manage emergency surgery within schedule elective theatre time re-prioritising and cancelling elective patients as required to treat emergency patients

- Care for some specialist emergency surgery – e.g. trauma, neurosurgery, cardiac surgery – is only available at a very limited number of designated specialist providers

Comparison to NHS

- Compared to the NHS, general emergency surgery in Ontario is generally less well-developed with relatively few hospitals offering a dedicated service (with dedicated fully-staffed operating theatres etc)

SOURCE: Morad Hameed et al, General surgery 2.0: the emergence of acute care surgery in Canada, 2010, Can J Surg. Apr 2010; 53(2): 79–83

Emergency surgery in Sweden

Service line definition

- Trauma surgery is a sub-speciality within surgery, but emergency surgery is not
- At Karolinska Hospital's trauma centre three levels of traumas are defined. Smaller hospitals often categorize traumas as big (level 1 and 2) or small (level 3)

Service delivery model

- Some specialised hospitals have an emergency stream within the A&E, where specialised physicians handle emergency medicine and surgery
  - In Stockholm, Karolinska Solna and Sodersjukhuset have an emergency stream within their A&E, including emergency medicine and surgery, and emergency surgery and orthopaedics respectively[1]
  - The other hospitals do not have a separate emergency medicine flow[1]
- Categorization according to the METTS scale occurs in the ambulance and determines management upon the patients arrival
- The emergency care for most specialties (including surgery and orthopaedics) are generally operated by resident physicians with a consultant always on call (does not have to be on-site)
  - Trauma levels 1 and 2 are handled by a trauma team consisting of a surgeon (possibly also a neurosurgeon for trauma level 1), an anaesthesiologist, an orthopaedist and a radiologist together with nurses
  - All patients are treated according to ATLS (Advanced Trauma Life Support)

Comparison to NHS

- Emergency surgery as defined in England does not exist in Sweden
- Instead, emergency surgery as a service line forms part of the A&E and the surgery department

SOURCE: Expert interviews conducted by research team; 1. Stockholm Country Council: Genomlysning av Stockholms fem stora akutmottagningar, Slutrapportering, 2013

Emergency surgery in Germany

Service line definition

- Emergency surgery does not exist in Germany as a specialty

Service delivery model

- Emergency surgery is provided by specialist or general surgeons
  - General surgeons are becoming fewer but they still exist and do all types of surgery
- There exist no difference in practice between elective and emergency surgery
  - Surgeons in each specialty are trained in both elective and emergency procedures
  - Operating theatres are shared between the two

Comparison to NHS

- While in England we recognise and treat emergency surgery as a specialty separate from elective procedures, Germany does not have this distinction

SOURCE: Expert interviews conducted by research team

Emergency surgery in Arkansas

Service line definition

- Acute Care Surgery is a new and evolving specialisation within the United States with the first accredited training programmes appearing in the last few years. Thus far, there are only a small number of qualified Acute Care Surgeons
- As a specialty, it includes elements of emergency surgery, trauma surgery and critical care

Service delivery model

- Emergency surgery may be provided by certified general and/or specialist surgeons and surgical hospitalists, depending on the setting, the clinical context and the competence and training of the physician
- Individual hospital policies and protocols, specialist accreditation requirements, and litigation threat, will also determine service provision
- There is no standardised organisational model for provision of emergency surgery within a hospital

Comparison to NHS

- The US is beginning to address issues of timely access to high-quality emergency surgery and the Acute Care Surgeon model of care is emerging as a recognised specialty
- There is as yet no standardised model for delivery of emergency surgery

SOURCE: Rules and Regulations for Free-Standing Birthing Centers, and Rues and Regulations for Hospitals and Related Institutions in Arkansas 2007, Arkansas Department of Health (http://www.healthy.arkansas.gov/aboutADH/Pages/RulesRegulations.aspx)

Emergency surgery in Victoria, Australia

Service line definition

- Emergency surgery, as defined by Victoria in the Framework for Emergency Surgery, is surgery where, in the opinion of the treating clinician, the admission or procedure cannot be delayed. This is inscribed with varying degrees of urgency[1]
- Emergency surgeon does not exist as an official specialty[2]

Service delivery model

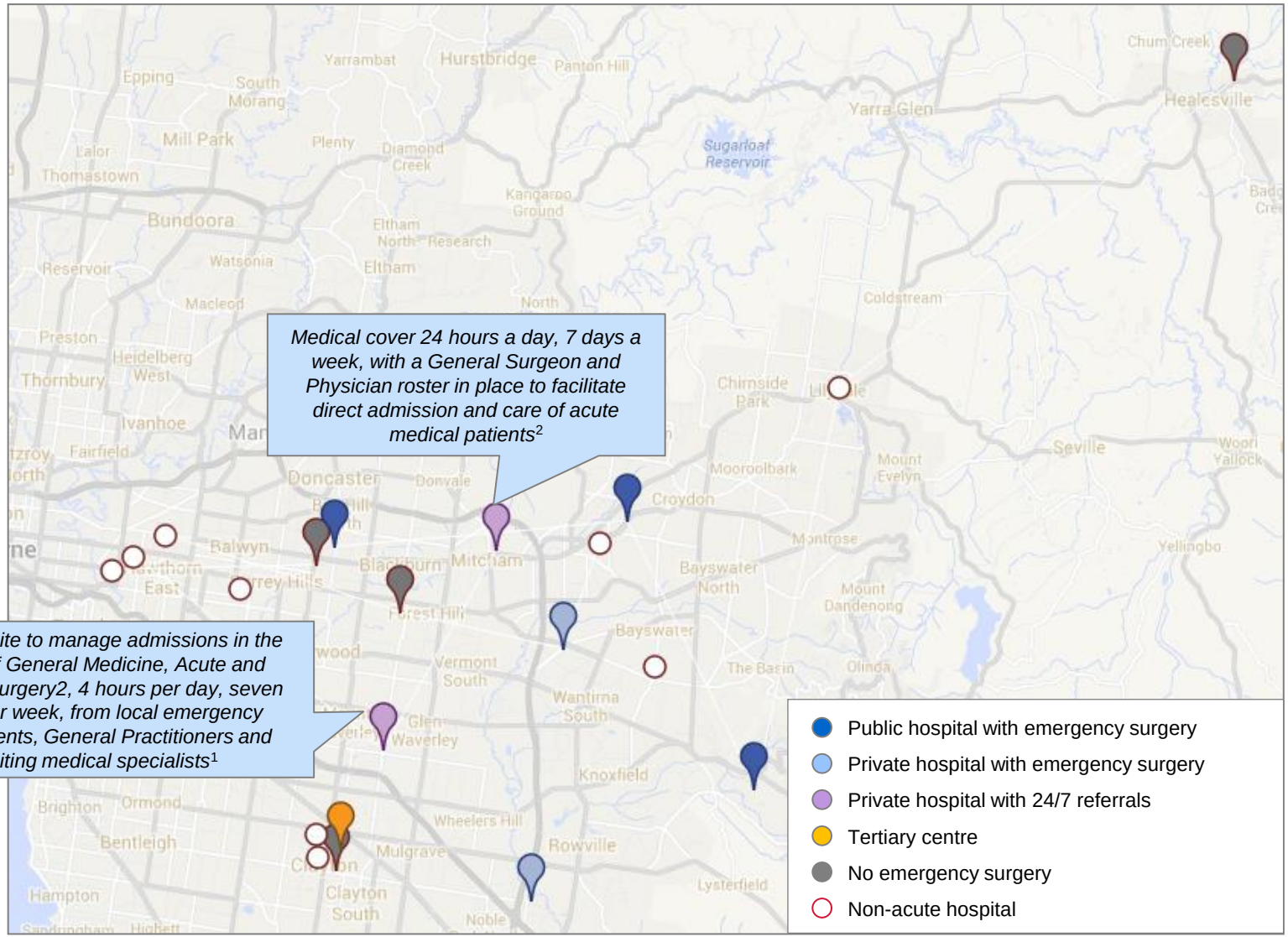
- A key challenge in Victoria is balancing elective and emergency surgery demand
  - In many providers, both elective and emergency caseloads share the same operating theatres, surgeons and teams
  - Separation of elective and emergency surgery streams, like in the NHS, is recommended in the Framework but is not widely implemented yet
- Contrary to elective surgery, almost all emergency surgeries are provided by public hospitals[3]
  - Around 60% of all elective surgeries take place in private hospitals[3]
  - In contrast, nearly 90% of emergency surgeries are done in public hospitals[3]

Comparison to NHS

- Victoria is currently looking to create a separate emergency surgery stream, like in the NHS
- While in other service lines Victoria has a number of private providers, emergency surgery is almost fully provided by public hospitals, similar to England

SOURCE: 1. Victoria Department of Health: A framework for emergency surgery in Victorian public health services, 2012; 2. Medical Board of Australia: List of specialties, fields of specialty practice, and related specialist titles; 3. Victoria Department of Health: Patient-centred surgery – Strategic directions for surgical services in Victoria's public hospitals 2010–2015;

While most emergency surgeries are done in public hospitals, some private hospitals do admit emergency surgery patients



SOURCE: Eastern Health 2022 - The Strategic Clinical Service Plan 2012–2022; Victoria Department of Health; hospital websites; 1. http://www.waverleyprivate.com.au/Our-Services/clinical-services.aspx; 2. http://www.mitchamprivate.com.au/Our-Hospital/default.aspx