[1]Elective Report Anaesthetics Glasgow Royal Infirmary, May 2017

Introduction

I spent six weeks at Glasgow Royal Infirmary, rotating around different placements in anaesthesia. Most of my time was spent in general and orthopaedic theatres, but I also had days in maternity, bariatric and plastic surgery theatres as well as days in the Intensive Care Unit. I was able to observe and practise skills involved in airway management, arterial line placement and local and regional anaesthesia, whilst also encountering techniques entirely new to me, including the use of cell salvage devices and bispectral index depth of anaesthesia monitoring.

Objective 1.

Understand the local healthcare structure in the context of NHS Scotland.

Glasgow Royal Infirmary (GRI) is operated by NHS Greater Glasgow and Clyde (GGC) Health Board, one of fourteen regional boards in Scotland. The board is directly funded and accountable to the Scottish Government, and also commissions primary care services. (see diagram below)

GRI has over 1000 beds and provides a wide range of specialist surgical services including regional services for plastics and burns. GGC provides services for over 20% of the Scottish population.[2]

In NHS Scotland, Health and Social care management have recently been integrated (see below),[3] in an effort to avoid unnecessary admissions, and delays to discharges in the population over 75. This has been done by the creation of community health partnerships. I was aware of few delays and cancellations of theatre lists during my time at Glasgow; this might have been due to better funding and resources. I couldn't help reflecting that integration of health and social care might benefit some of the trusts at which I had studied in the South-East of England, but the difference in the relationship between primary and

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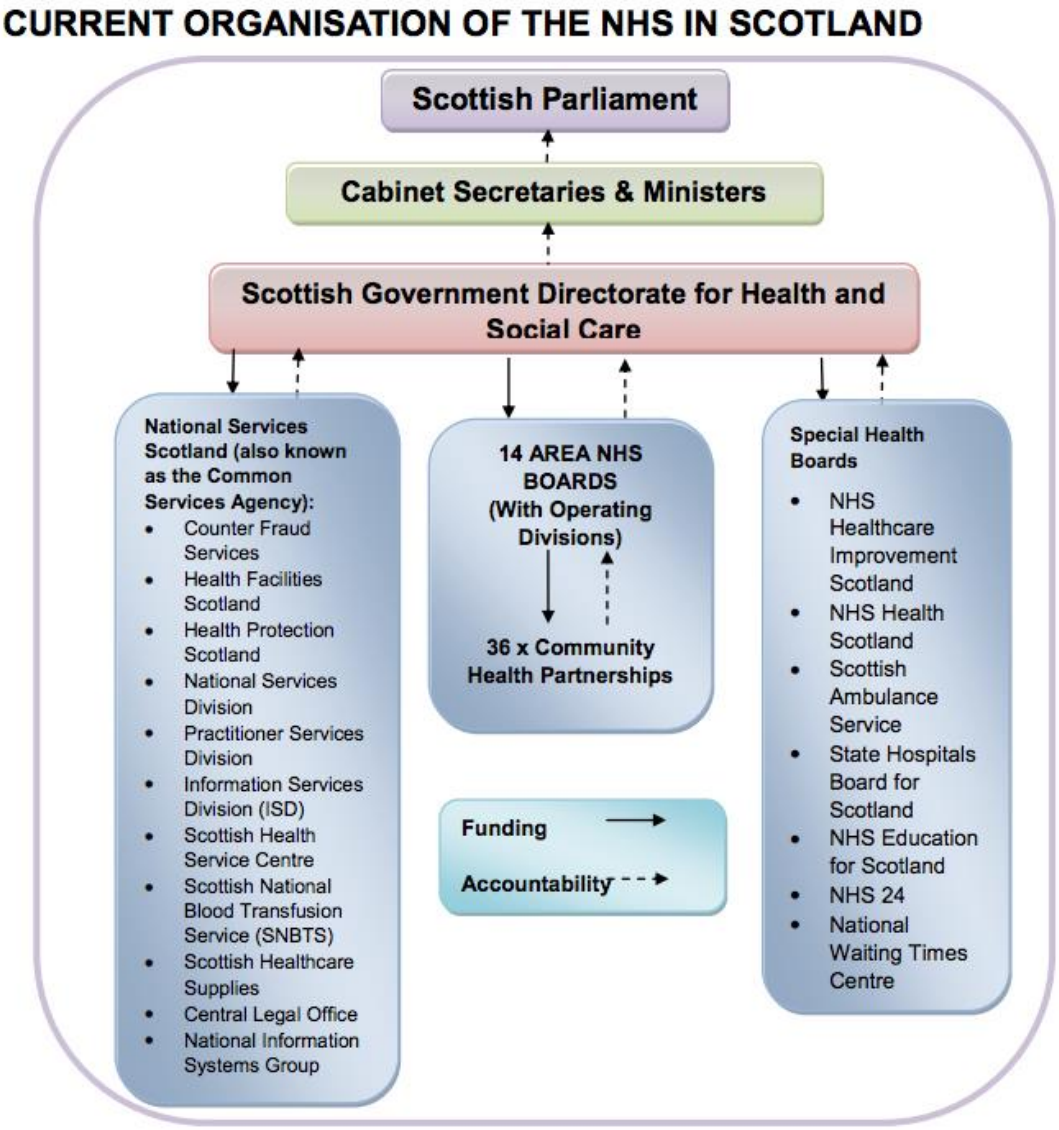
[1] Title picture from https://upload.wikimedia.org/wikipedia/commons/0/09/Glasgow_Royal_Infirmary_-rear_of_buildings_21y2007.jpg accessed May 2017

[2] 1,137,930 people: Ch 1, Greater Glasgow and Clyde 'Director of Public Health Report 2015-2017' accessed http://www.nhsggc.org.uk/your-health/public-health/the-director-of-public-health-report/dph-report-2015-2017/ May 2017

[3] Public Bodies (Joint Working) (Scotland) Act 2014

secondary care in England, might make achievement of this more complicated than in Scotland.



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Objective 2

Understand what is meant by the 'Glasgow Effect'

Glasgow and the surrounding area is widely reported to have the lowest life expectancy in the UK.[5] There is a wide variation in life expectancy and quality of across the GGC area, with male life expectancy in one of the most deprived areas of the city being just 66 years.[6] The population served by GGC is largely White Scottish, with 7.5% of a black and ethnic minority background. Whilst Glasgow City's population is relatively young- with a higher than average proportion of people under 45[7], residents of the surrounding areas tend to be

[4] Image from https://mapmedtech.com/demo/scotland/ accessed May 2017

[5] National Records of Scotland 'Life Expectancy for Areas within Scotland 2013-2015 ,Edinburgh, Crown Copyright, November 2016

[6]Nixon, R 'Comparisons of aspects of Glasgow's 56 neighbourhoods' Glasgow Centre for population Health' February 2016

[7] National Records of Scotland 'Glasgow City Factsheet' Crown Copyright, 2017

older;39% of the population served by GGC are in the bottom fifth of the country in terms of deprivation. [8]

High levels of deprivation , alcohol abuse[9], smoking, drug misuse, violence and increasingly obesity (and related conditions) have been cited as causes for Glaswegians' poor public health; however these conditions are not unique to Glasgow. The *Glasgow effect* is the term used to describe the observation that, even when accounting for lifestyle factors and deprivation, Glasgow experiences *excess mortality* when compared like for like with similar post-industrial cities in the UK[10]. There is an unknown element causing more deaths than expected. This effect is present across all socioeconomic groups, and all causes of death, although the excess mortality is most significant when looking at causes of death in the working age population (typically more influenced by alcohol, drugs and suicide).
Various theories have been advanced, including a lack of social capital, social and historical vulnerability that makes Glaswegians more prone to despair, and within the last fifty years a brain drain occurring in the 1970s as a result of the construction of new towns.[11] Measures taken to tackle this issue recognise that public health and social well-being are fundamentally interlinked. They range from community music projects[12] to campaigns increasing civic participation and volunteering in certain communities.[13] , as well as other more traditional health promotion campaigns.
In terms of my experiences on placement in anaesthetics I did not observe a direct impact of the Glasgow effect, but from talking to patients it was clear that some had very different expectations of their own health as they aged, to my own expectations.

Objective 3
Examine the challenges of working in Glasgow in anaesthetics, and some of the demographic and public health factors that pose problems in the area.

Whilst the *Glasgow Effect* plays a part in excess mortality, certain widespread health behaviours are responsible for the vast majority of morbidity and mortality. The high rates of alcohol excess (with over 60% of men and 50% of women exceeding weekly limits and the highest rate of alcohol related deaths in Scotland); drug use (double the Scottish average) and smoking (a third of all adults) stood out as complicating factors[14]. Obesity, however,

[8] NHS Greater Glasgow and Clyde 'Population of Greater Glasgow and Clyde, Director of Public Health Report 2015-2017' accessed http://www.nhsggc.org.uk/your-health/public-health/the-director-of-public-health-report/dph-report- accessed May 2017
[9]Walsh D., McCartney G., McCullough S., van der Pol M., Buchanan D., Jones R. Exploring potential reasons for Glasgow's 'excess' mortality: results of a three-city survey of Glasgow, Liverpool and Manchester. Glasgow Centre for Population Health, June 2013

[10] McCartney G., Collins C., Walsh D., Batty G.D. Accounting for Scotland's Excess Mortality: Towards a Synthesis. Glasgow Centre for Population Health, April 201
[11] Walsh D., McCartney G., Collins C., Taulbut M., Batty G.D. History, politics and vulnerability: explaining excess mortality in Scotland and Glasgow. Glasgow: Glasgow Centre for Population Health; 2016

[12] Harkins, C 'Evaluating Sistema Scotland: evaluation plan' Glasgow centre for population health, June 2014

[13] Glasgow Centre for Population Health website: work themes at:
http://www.gcph.co.uk/work_themes/theme_2_urban_health/civic_participation acced May2017
[14] Understanding Glasgow, The Glasgow indicators project at
http://www.understandingglasgow.com/indicators/lifestyle/overview access May 2017

was by far the most common condition I encountered in the patients I met during my placement, and the one that I witnessed causing complications most frequently.

Example: Anaesthetic complications of Obesity

24% of adults in Glasgow are obese; this rate is actually around the national average, but is rapidly increasing.[15] High obesity levels cause problems for staff working in both the operating theatres and in critical care; however the specialty where I witnessed the most complications was in maternity.

Obesity can cause problems with a patient's airway: obstructive sleep apnoea is more common in obese individuals, and can result in many long-term complications, but can also cause obstruction in the post-operative period. In terms of breathing, increased oxygen demand and decreased chest wall compliance cause increased work of breathing. There is also a reduction in functional residual capacity. These two factors mean than there is a higher risk of rapid desaturation in obese individuals, and thus good preoxygenation is essential.

Cardiovascular problems, such as hypertension, ischemic heart disease and arrhythmias occur at higher rates in obese individuals. There are also higher rates of infection, thromboembolic events, reflux and post-operative nausea and vomiting in obese patients.

Aside from risks to the patient, there are practical difficulties involved in the anaesthetic care of an obese patient: there is a higher rate of failed intubation in such cases.[16] Other problems include a difficulty in establishing venous access, identifying landmarks for local and regional anaesthesia and simply getting the patient into the correct position. On more than one occasion operations were delayed because of this, particularly in Plastics, where surgical sites were often on the back, or the side of the patient. It is important to take into account different volumes of distribution and protein binding in the metabolism of anaesthetic agents - some agents such as in epidural and spinal anaesthesia require lower doses than in individuals of a healthy BMI.

Whilst anaesthetics may not have an obvious role in public health, I was impressed by the role the pre-operative assessment had in addressing some of the patients' health behaviours. The anaesthetists I met encouraged patients to make changes to their lifestyle and educate them on the benefits of healthier habits.

Conclusion

The focus on physiological parameters in many areas of anaesthesia means that it is a specialty particularly affected by harmful health behaviours. In areas where problems such as obesity, smoking and alcohol abuse are so common, anaesthesia becomes additionally challenging. These lifestyle problems are not only found in Glasgow, but this placement

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[15] Scottish Government ' Scottish Health Survey, 2011'http://www.gov.scot/Topics/Statistics/Browse/Health/scottish-health-survey

[16] Kristensen MS' Airway Management in morbid obesity' Eur J Anaesthesiol. 2010 Nov;27(11):923-7. doi: 10.1097/EJA.0b013e32833d91aa.

brought home to me the importance of understanding these complications, and the importance of public health in an increasingly underfunded NHS.