

MORECAMBE BAY MEDICAL JOURNAL

Spreading Information – Gathering Interest



Summer 2022

Volume 9

Number 1

MBMJ

MORECAMBE BAY MEDICAL JOURNAL

EDITOR

Ms Shadaba Ahmed (ENT Consultant)

STUDENT EDITOR

Mr Guilherme Movio (4th Year Medical Student)

EDITORIAL BOARD

Dr Lisa Bishop (Clinical Research Scientist)

Dr Phuoc-Tan Diep (Consultant Histopathologist)

Mr Peter Dyer (Maxillofacial Consultant)

Dr Andrew Gallagher (LAMMS Representative)

Dr Tim Gatheral (Respiratory Lead/Consultant)

Ms Emma Higginson (Patient Representative)

Ms Emma Hodgson (Trainee Advanced Clinical Practitioner)

Dr Tammie MacFie (GP)

Mr Guilherme Movio (Student Representative)

Mr Bryan Rhodes (Orthopaedic Consultant)

Mr Ondrej Ryska (General Surgeon)

Mrs Alison Sambrook (Gyn & Obs Consultant)

Dr Andrew Severn (Anaesthetist Consultant)

EDITORIAL TEAM

Mrs Tracey Roberts-Cuffin

Mr Paul Tickner

If you have any submissions or queries, please contact:

Ms Shadaba Ahmed
MBMJ Office in the Library
Royal Lancaster Infirmary
Shadaba.Ahmed@mbht.nhs.uk

The Morecambe Bay Medical Journal is owned, financed and produced by the University Hospitals of Morecambe Bay NHS Foundation Trust.

ISSN 0957-5286 (print) ISSN 2634-0631 (online)

Cover illustration: Zuzanna Nowinka (Medical Student)

Typeset, designed, printed and bound by
Titus Wilson Ltd., Kendal, Cumbria.

This issue has been produced without a laminated cover.
This does mean the spine is more fragile.

INSTRUCTIONS TO AUTHORS

Scope

The Morecambe Bay Medical Journal (MBMJ) is a National Health Service (NHS) funded, peer-reviewed, open-access journal. The journal is published triannually. The aim of the journal is to publish high quality publications on health-care related sciences. The MBMJ is owned, funded, and financed by the University Hospitals of Morecambe Bay NHS Foundation Trust and is aimed at health-care professionals with an interest in locally produced academia.

Submissions using the MBMJ website

Article submissions should be online via the MBMJ website. To make a submission to the journal you will first need to register for an account. Once you have registered select 'New Submission' and follow the instructions.

General Author Guidelines

Articles should be of general interest, to both primary and secondary care

- References should be presented in the Vancouver style. No more than 30 references should be used
- Manuscript should be typed in double spacing
- List all authors with qualifications
- The origin of all photographs must be clearly marked and be acknowledged in the text. All copyright issues have to be addressed by the authors
- The origin of all tables and figures must be clearly marked. If from a source other than the author, the source must be acknowledged in the text
- A structured abstract, of no more than 250 words, is required. Up to five keywords and three key points should be included
- It is the responsibility of the author to gain written permission to use tables, figures and any other material which has been previously published
- Authors are encouraged to suggest a peer reviewer for their article
- It would be preferable for every author to make a clear statement that there is no conflict of interest when submitting their article
- All authors must declare if their article has been published elsewhere
- At the end of each article, every author should clearly write their full name, qualifications and include address for correspondence for the main author
- A letter of acceptance will be sent within 48 hours of receipt of the article. The aim is to have a turnaround time of three to four weeks for peer review
- The journal will be published in April, August, and November each year
- Author assistance in writing, editing, or criticism can be provided via UHMB Library Services.

See inside back cover for further instructions.



Editorial

Dear Reader

I hope like me you thoroughly enjoyed the Platinum Jubilee celebrations? The spectacular displays, the perfect extravaganza of sound and light effects with Buckingham Palace as a back drop were just magnificent. Then we were treated to the iconic, gravity defying, melodious 78-year-old Diana Ross. She sang for an hour in Glastonbury and commented that CV19 had forced her to take a gap year!! On to Wimbledon and a new women's champion emerges; Rybakina. The NHS too has received accolades and has been awarded the George Cross medal by HM The Queen. "Watch that space" takes on a new meaning as the James Webb NASA space telescope relays photographs from the edge of space, in colour!! We live in an amazing era; we can see the future and the past simultaneously. It is the middle that is a muddle sadly. While we rejoice and revel, the cloud of the Ukraine war, the political imbroglio in the UK, and the sad truth about modern day slavery continues to haunt our tempered existence.

George R R Martin once wrote "I have lived a thousand lives and I have loved a thousand loves. I've walked on distant worlds and seen the end of time. Because I read". So dear reader I share with you the summer issue of MBMJ. As always replete with diverse articles, something for everyone: Impact of CV19; obesity; case reports; book reviews; social health policy and much more. Please do read and feedback. Peer reviewers and articles of general appeal are always gratefully received. The spring issue 2023, as detailed inside, will be a special edition with Mr Bryan Rhodes as Editor. The prize for the best article in 2022 will be announced in January 2023. The Lancaster and Morecambe Book Club, which has so generously funded the prize, plan to invite the three shortlisted authors to their annual dinner. The winner will be announced at the event.

The Lancashire and South Cumbria Integrated Care Board (ICB) has been established. It is by the consolidation of eight CCGs and will be responsible for NHS spending in our area. CV19 cases increase and so the mask returns! Periods where staff are required to stay away from the workplace for Covid infection control purposes will no longer be recorded as Covid special leave. The saga of NHS pensions rumbles on. Good news from the Trust Education Centre; it has invested in HoloLens2 (VR headsets) delivered by the HoloHuman app. Absolutely marvellous technology. The HoloLens is Microsoft's version of augmented reality. Using multiple sensors, advanced optics, and holographic processing, these holograms display information from the real world and simulate a virtual world.

I procrastinate; I have to share the outcome of the PubMed application. Regrettably they have requested us to resubmit in two years. In a nutshell their opinion is that most articles do not display adequate scientific rigor. Though I can somewhat understand that comment, my problem as Editor is, that insisting on high quality scientific papers and demanding strict adherence to guidelines, would challenge the very production of MBMJ! The MBMJ in its current format caters to local science, regional development, university submissions, student articles and primary care issues – to convert it into a didactic prescriptive journal might not be in the best interest of the MBMJ. It certainly would be formidable to produce three issues each year. As Editor I do not shy away from my responsibility to improve the MBMJ, but in my limited wisdom, at the moment I think MBMJ delivers on its strap line "*spreading information – gathering interest*". Please do share your thoughts and ideas. I welcome Dr T Macfie GP to the editorial board.

As always Joanne and Bryan contribute enormous time and talent to the final production of each issue. My gratitude to them is boundless. Gui, our Student Editor, though subsumed with final year exams, has produced the Fast Bleeped article. Zuzanna too has shared her artistic talent by producing the cover image.

It is said "if you have a garden and library, you have everything you need" (Cicero). So, I am off to sit amongst the roses and lilies and read. From the MBMJ we wish you a wonderful summer 2022.

THANKS for reading,

Shadaba Ahmed, Editor

THE LANCASTER AND MORECAMBE MEDICAL BOOK CLUB PRIZE FOR BEST PAPER

The Book Club, as part of its 200th anniversary celebrations, is reinstating an annual prize for the best paper. In a break from tradition, this will be for the best paper published in the MBMJ during a calendar year. The winning authors will receive a trophy and a cash prize. All papers published in the journal will automatically be entered. The judging panel will consist of the Book Club President, Secretary, Archivist together with the editor of the journal. Judging of the previous year's papers will take place early the following year.

Obesity – a key issue in Public Health

Adele Quinn

The aim of this article is to review one of the global health problems which societies face today – obesity. The author will focus on obesity in the United Kingdom (UK), although it is a threat to both developed and developing countries.¹ Economic growth and technological advances have enhanced health and life expectancy in a vast number of populations.² However, the obesity trends in the UK are getting worse and it is considered the worst western European country for obesity rates.³ The author will critically review local and national responses to this problem and offer some evidence-based ideas that might help to address the situation.

Obesity develops when an individual's caloric intake surpasses their energy expenditure over time.⁴ The World Health Organisation (WHO)¹ also offer a similar description. Obesity is defined as a disease in which excess body fat has accumulated to the point where one's health is put at risk. Governments and healthcare professionals are worried about the rising prevalence of overweight and obese people, the worry is also shared by the people who are overweight due to the health problems which develop as a result of excess weight.⁴

According to Pearson,⁴ the current climate in the UK supports high calorie consumption whilst also encouraging low levels of activity. Our current environment is often referred to as an 'obesogenic' environment encouraging this behaviour; less healthier choices are the default. The above factors interact with behavioural, genetic and other issues such as inequality in some population groups, for example, those who are socially deprived, on low income or with low levels of education. These groups of people are more at risk of becoming obese;⁴ although WHO¹ states 'obesity is a complex condition that affects virtually all age and socioeconomic groups.' Moreover, Pearson⁴ states that it is not possible to identify a single factor as the cause of obesity.

Public Health England (PHE)⁵ reported in 2015 that around two-thirds of adults (63%) in England are overweight (a body mass index (BMI) of over 25) or obese (BMI of over 30); obesity has grown by almost 400% in the last 25 years. Obesity has now surpassed smoking as a greater cause of cancer.³ The associate levels of sickness will put huge strains on the national health service (NHS), some estimates suggest that obesity-related disease costs the NHS £6 billion per year.⁵ The overall cost of obesity to the wider society is estimated at £27 billion. By 2050 the NHS costs attributed to overweight and obesity are projected to reach £9.7 billion, with the wider costs to society estimated to reach £49.9 billion per year.⁵

In some estimations, today's generation of children will be the first for over a century for whom life-expectancy falls.⁶ PHE is working to significantly reduce childhood obesity, contributing to the delivery of the Government's Childhood Obesity Plan.⁵ Wilson and Mabhala⁷ argue that whilst the prevalence of obesity is steadily rising, dieting is also increasing, mostly among young women, leading to eating disorders. There needs to be careful consideration of how health promotion advice is given out. In particular, during adolescence and early adulthood.

Thirty thousand premature deaths a year in England can be linked to obesity, it has been estimated that obesity shortens lives by nine years.⁴ Even if an individual can lose 10% of their weight, there is evidence that it produces important health benefits such as reducing the risk of coronary heart disease.⁵

Pearson,⁴ highlights that the body mass index (BMI) measures an individual's weight and defines overweight and obesity. It provides the most useful population level measure of obesity but there are drawbacks to using this measurement. Firstly, the measure does not take into account gender or age and secondly it does not distinguish between weight associated with muscle and weight associated with fat.⁴

As a society we may be able to change some factors that contribute to obesity. Over the past 50 years there has been a decline in physical activity. People in the UK are around 20% less active now than in the 1960s. If current trends continue, we will be 35% less active by 2030.⁵ Occupational work has generally become more sedentary, leisure time activities such as television viewing has replaced more active pastimes.¹ There has been a growth in the use of convenience foods such as fast-food restaurants. There is an increased consumption of fat and decrease in carbohydrate.⁴

Some factors that contribute to gaining weight cannot be changed, such as an individual needing to take certain medications, such as insulin, which can promote weight gain. Genetic factors such as endocrine disorders like hypothyroidism can also cause weight gain.⁴ Obesity affects an individual's health and well-being both physically and emotionally WHO.¹ Sometimes this is a vicious circle; an individual who is obese may find it harder to exercise thus put more weight on, likewise if individuals are feeling low in mood, they may want to eat food high in fat and sugars to improve their low mood.

Pearson⁴ talks about how health inequalities pose a particularly high risk to certain populations. This view is shared in the Marmot review⁸ which highlights the social gradient of health inequalities, the lower one's social and economic status the poorer one's health is likely to be. Those on low incomes often live in socially deprived situations. For example, Pearson⁴ states a person who is on a low income may have poorer access to shops and transport so have to rely on smaller local shops which are more expensive. Eating healthy is usually not their top priority, they need to feed their families with the cheapest foods available. On average, there are more fast-food outlets in deprived areas than in more affluent areas⁵ which may encourage unhealthy eating.

Furthermore, obesity rates are higher in certain ethnic groups such as people of South Asian origin⁴ as they often have lower socioeconomic status. Pearson⁴ argues that obesity has been connected with low levels of education, although not solely. Whereas, Dixon³ argues that obesity is not due to a deficit in knowledge. The prevalence of obesity is similar among men and women; however, men are more likely to be overweight.⁵ There is a strong relationship between deprivation and childhood obesity, PHE⁹ are working with local authorities to help make local environments healthier. Our metabolic control systems that govern regulation of our body weight are often influenced by social and environmental factors.⁴

Obesity increases the likelihood of an individual developing a vast amount of illness and diseases.⁵ Obese people are at an increased risk of certain cancers, for example obese people are three times more likely to develop colon cancer. Overweight and obese individuals are more than 2.5 times more likely to develop high blood pressure and five times more likely to develop type 2 diabetes;⁵ along with other health consequences such as back and joint pain.

Furthermore, obesity can damage people's prospects in life; people are less employable,³ obesity reduces a person's self-esteem and can harm their mental health.⁵

The National Service Frameworks (NSF) for coronary heart disease, diabetes and mental health¹⁰ address the prevention and treatment of obesity as well as the national strategies for cancer. However, this has not led to effective strategies for tackling obesity.⁴ Prevention of obesity needs to be challenged at many different levels. Communities, government policies, commercial influences and many other factors shape our ability to be healthy.³

Local health services need to work closely with education and leisure services, public transport and food provision outlets to ensure that the public can be motivated to be more active and eat healthier.⁴ There are particular measures local authorities can employ to help; for example, they can decline planning permission for a new food outlet if they can show that the outlet will have an adverse impact on the health and wellbeing of the local population and also if the outlet will undermine the local authority's plan to tackle obesity.⁵ Some local councils have restricted the opening of new hot food takeaways close to schools, leisure centres and other places frequently used by children. The school environment can have a powerful influence on a child's eating habits. Some children have a school lunch as their main meal, this meal is intended to provide a critical nutritional safety net. The PHE toolkit outlines the role schools can play to encourage healthy eating. For example, they can adopt a cashless system to speed up food service and reduce the need for the money to be spent outside of school.⁵ Some exercise initiatives have been taken on board at some schools such as the 'daily mile' which has been piloted in some areas such as Scotland.³

PHE⁵ has several national marketing campaigns that can be used locally to encourage the population to improve their lifestyle behaviours, such as the Change4life campaign. In the UK in 2018, there was the introduction of a 'sugar tax' on sweetened drinks.¹¹ Drinks containing more than 8g of sugar per 100ml faced a tax rate equivalent to 24p per litre. Either the levy cost was paid by the manufacturer or it was passed onto consumers. All revenues raised through the levy will directly fund new sports facilities in schools as well as healthy breakfast clubs. It is argued that the UK Treasury Department will benefit from this increase in revenue;¹¹ however, it is also an incentive for the industry to reformulate their beverages to bring them below the threshold for the tax. If industries choose to do this, the UK Treasury may not benefit as much as was predicted.¹¹ If this was the case, it could be conceived that the health of the population would improve and hospital admissions would decline for conditions such as diabetes; consequently, saving the NHS money.

Last year (2021) the NHS Digital Weight Management Programme was launched.¹² It has been backed by government funding and is designed to offer free online support via general practice (GP) and primary care teams for adults who have been referred as living with obesity and who also have a diagnosis of either diabetes, high blood pressure or both conditions. The aim of the programme is to help manage their weight and improve their health. A GP's involvement in these healthy strategies is one of the most effective interventions to reduce obesity.³ To coincide with this, the Government is also providing £30 million of new funding to councils across England to roll out expanded management services for adults living with obesity. This service may be more accessible to some as the service can be delivered face to face, in addition

to digitally. However, this service requires individuals to sign up for this themselves through their primary care services. However, this puts the responsibility onto the individual to become motivated to take this action. Furthermore, services will include only 12 weeks of sessions; after this 12-week period individuals would need to be motivated to maintain their healthier lifestyle. Marmot⁸ advises in order to address health inequalities, conditions need to be created to allow people to take control of their own lives. The neo-liberal ideological perspective asserts that individuals should take responsibility for their health, make their own choices and not to be told what to do by a 'nanny state'.¹³

The Marmot report⁸ identifies local government as a fundamental partner in addressing the social determinants of health inequalities. Local governments welcome the transfer of responsibility for public health from the NHS to local government.⁸ Further initiatives to halve the number of children living with obesity by 2030 are to focus on commercial drivers such as restricting advertising of products high in fat, salt and sugar being shown on TV and online before 9pm. Another strategy aims to restrict promotions of unhealthy food and drink in retail stores and to introduce calorie labelling in places such as restaurants and takeaways.⁹ There has been an increased consumption of the population eating meals away from home; which has been identified as an important factor contributing to increasing levels of obesity.⁵ Government strategies need to be supportive rather than nannying,³ the Government are more aware of this type of strategy.

The Whitehall studies show that there is a gradient in health not just a divide between rich and poor; a criticism, found in the Whitehall studies, of many public health interventions is that the interventions target downstream factors as mentioned above.⁸ For example, a person eating food high in fat and salt may only be doing so due to socio-economic factors (upstream factor) and despite having the right information regarding health and nutrition would still eat a diet high in fat and salt as this was the only option available to them on their budget. Therefore, giving information that such a diet is unhealthy is unlikely to change the individual's behaviour to eat more healthily. The upstream factor of their socio-economic status is frequently beyond the control of the individual. The gap amongst class is widened as educated people with money have more options to change their dietary lifestyle when given new health advice.⁸

To conclude, action on health inequalities needs to be carried out across all the social determinants of health, including education, occupation, income, home and community. Action places an emphasis on the role of local and national government, as well as the voluntary and private sector. Local needs should be identified to support targeting of the healthy recommendations, in order to achieve sustained behavioural changes. PHE's plan to tackle obesity includes looking at behaviour change relating to healthier eating and increasing physical activity as part of a whole systems approach.⁵

Something more radical has to happen to reduce the current obesity trends. The Covid-19 pandemic has made people aware that individuals living with obesity are twice as likely to die from Covid-19.³ Dixon³ explains that the Covid-19 pandemic has changed the way that people in the UK view the Government's role in improving our health. The pandemic has moved tackling obesity higher up the Government's agenda. A stronger focus is needed to improve obesity rates to protect the NHS and we have all been made aware of how important it is to protect the NHS during the pandemic. It is more vital

than ever to make it easier for people to move towards a healthier weight.⁹

Correspondence to:
Adele.Quinn@mbht.nhs.uk

REFERENCES

1. World Health Organisation. Obesity: preventing and managing the global epidemic. Geneva: WHO; 2000.
2. Kinnon CM. World trade: bringing health into the picture. World Health Forum, 1998;19(4):397-406.
3. Dixon, J. What should nanny do next? The government and obesity. 2000. Available at: www.health.org.uk/news-and-comment/podcast (Accessed on 5th January 2022).
4. Pearson D. Key topics in public health. Essential briefings on prevention and health promotion. Oxford: Elsevier; 2005.
5. Public Health England. Guidance, health matters: obesity and the food environment. 2017. Available at: www.gov.uk/government/publications/health-matters-obesity-and-the-food-environment/health-matters-obesity-and-the-food-environment-2 (Accessed 6th December 2021).
6. House of Commons Select Committee. Obesity, 2004. London: Stationery Office. Available at: <http://www.parliament.the-stationery-office.co.uk/pa/cm/cmhealth.htm> (accessed 1st December 2021).
7. Wilson F, Mabhala M. Key concepts in public health. London: Sage; 2009.
8. Marmot M, Goldblatt P, Allen J, et al. Fair society, healthy lives (The Marmot Review). Available at: <https://www.instituteofhealthequity.org/resources-reports/fair-society-healthy-lives-the-marmot-review> (accessed on 2nd January 2022).
9. Public Health England. New services launched to help people achieve a healthier weight and improve wellbeing. 2021. Available at www.gov.uk/government/news/new-services-launched-to-help-people-achieve-a-healthier-weight-and-improve-wellbeing (accessed on 6th December 2021).
10. Department of Health and Social Care. National Service Frameworks. Available from: <https://www.gov.uk/search/all?keywords=national+service+frameworks&order=relevance> (accessed on 26th May 2022)
11. Thornton J. The UK has introduced a sugar tax, but will it work? 2018. Available at: <https://www.lshtm.ac.uk/research/research-action/features/uk-sugar-tax-will-it-work> (accessed on 1st December 2021).
12. NHS England. The NHS digital weight management programme. Available at: <https://www.england.nhs.uk/digital-weight-management/> (accessed 26th May 2022).
13. Toward S. In: Porter E, Coles L. Policy and strategy for Improving health and wellbeing. London: Learning Matters Ltd; 2011.

Book review

In Stitches: The highs and lows of life as an A&E doctor

By Dr Nick Edwards. Friday Project Limited; 2007

Review by Emma K Hodgson, Advanced Clinical Practitioner, Lancaster Medical Practice

In stitches is an exploration of Dr Nick Edward's A&E work during his time as a registrar, highlighting the emotional, personal, professional and political impacts encountered. Many of the emotions and situations encountered are relatable for many of us, either in our current roles, or roles undertaken during training. The book was born through his compassion for the NHS alongside the frustrations encountered, coped with through the expression of what he sees with humour. Compassion and support for the NHS is shared by many of us and has been seen by the rainbows from the public in the Covid-19 pandemic. These themes of compassion and politics are debated throughout the book, leading to the question, are these shared dilemmas others encounter? The likely answer is yes, as we have seen other medics produce books about their experiences with a desire to share a realistic viewpoint.

Honesty is often presented with sensitivity by Edwards, describing situations where patients would be better suited to being treated in another setting, whilst understanding that this is not the fault of the patient, but acknowledging wider system flaws and communication within management and/or politics. However, this does provide a transparency that is open to all to access. This could lead to the question, is this the right forum? Could the impact of politics and policy be better communicated? Yet, the realism and empathy of Edwards is evident through the collection of experiences. Rather than traditional chapters of a book, Edwards uses a delightful and extensive range of short scenarios with

headings that give a flavour of what is to come such as 'even more hospital inefficiencies' or 'this job is hard'.

Communication could be defined as a key theme throughout the book, from communication to patients when signposting to the 'Department of Diagnostic Imaging' also known as x-ray, to reasoning with patients who are under the influence of alcohol or drugs and teamwork in a cardiac arrest situation. Edwards underlines many examples of conversation we are all familiar with. Nevertheless, he is not afraid to talk about those more difficult conversations relating to complaints or misdiagnosis; examples include forgetting to give local anaesthetic before suturing a wound and missing a wrist fracture. Written in an empathetic manner it shows we all deal with a degree of uncertainty every day and by sharing his own doubts, fears and mistakes Edwards brings warmth to scenarios encountered.

Alongside the political humour, Edwards includes heart breaking and often sad situations to bring sincerity to the book. This highlights the reality and need for emotional intelligence to enable clinicians to cope with the job. One example included a lady in her 70s who presented unconscious and acutely unwell who was found to have a perforated bowel; emergency surgery led to a full recovery. One of these more difficult scenarios was talking about a 13 year old presenting with abdominal symptoms, all the tests were normal but on further investigation it turned out she had watched her mother die only a few months ago. Edwards shows how A&E deals with highs and lows, which could be arguably transferred to many medical settings.

Edwards ends with some rather reflective thoughts, which are more sincere than the political humour carried through the rest of the book. I would recommend this book to those who would like a reflective, humorous and relatable read, or perhaps those outside the medical profession who are interested in what really happens in A&E from the eyes of the medics.

Speeding up head and neck cancer assessment and treatment initiation: what can we do?

Daniel J Taylor, MRes (Fifth year medical student), Shadaba Ahmed, FRCS-ORL/HNS

INTRODUCTION

The COVID-19 pandemic continues to have a profound effect on surgical wait times, with over 6.4 million patients currently waiting for consultant-led care.¹ A patient cohort for whom lengthy wait times are of particular concern is those referred with suspected cancer. Once referred, these patients should be seen by a specialist within 14 days, have cancer ruled in or out within 28 days and commence treatment within 62 days.² In December 2021, only 67% of patients with cancer referred under the urgent pathway received treatment within 62 days. This figure may also be set to worsen, as many patients did not access NHS services during the course of the pandemic, between 240,000 – 740,000 patients requiring urgent cancer referral are estimated to have not yet presented to primary care.³ To combat this unprecedented increase in wait times, in February, 2022 the NHS published its 'Delivery plan for tackling the COVID-19 backlog of elective care'.⁴ Specifically for cancer patients, this included goals to increase diagnostic capacity, improve local awareness of cancer symptoms and expand some screening campaigns, with ambitions to improve the proportion of patients for which cancer is ruled in or out within 28 days. However, while this document represents a commendable effort to improve the care of all urgently referred NHS patients, its roadmap to recovery falls short of addressing some of the unique requirements from evaluation of certain cancers, such as those of the head and neck.

Head and neck cancer (HNC) is the sixth most common cancer globally and despite recent advancements in diagnosis and management strategies, long-term prognosis remains poor, with five-year survival rates ranging from 28% – 67%, depending on cancer type.⁵ As both functional outcomes and survival for HNC are negatively affected by prolonged wait times,^{6,7} timely assessment, diagnosis and treatment initiation are all crucial for effective patient management. The traditional patient assessment involves a thorough history and clinical examination which may include flexible trans-nasal endoscopy. Beyond this, patients may require ultrasound investigation with fine needle aspiration (FNA) or core biopsy, operating room biopsy and a combination of magnetic resonance and computed tomography imaging. This multidisciplinary pathway requires input from various healthcare professionals just to reach a diagnosis, including, but not limited to, ear, nose, and throat (ENT) surgeons, pathologists, sonographers, and radiographers. At every stage of this diagnostic process is the potential to introduce delays and prolong patient wait

time. In response, some centres have adopted 'one-stop' clinics, in which patients receive an initial assessment, endoscopy and ultrasound examination +/- FNA or core biopsy all on the first day of specialist assessment. However, one stop clinics are not standard practice, and many continue to be disrupted by the COVID-19 pandemic.

As is the case for many hospital trusts, HNC represents a significant workload for cancer services at University Hospitals of Morecambe Bay (UHMB). Prior to the pandemic, UHMB received 15,550 urgent referrals for suspected cancer annually (2018/19 financial year), of which 1185 (7.6%) were for suspected HNC. The most recent data (2021/22 financial year) has shown a universal increase in urgently referred patients (n = 21,047), with a disproportionate increase in patients referred for suspected HNC (n = 1938, representing 9.2% of all urgent referrals) (table 1). Of these patients referred to HNC services within the most recent year, 84% had cancer ruled in or out within 28 days, which is higher than the Trust average of 79% across all specialties. However, only 41% of HNC patients received treatment initiation within 62 days, compared with the Trust average of 61%.

As streamlining the patient journey for those urgently referred with suspected HNC may improve both patient outcomes and the ability of ENT departments to cope with the increasing demand on surgical services left in the wake of the COVID-19 pandemic, it follows that interventions targeted at doing so may be of value. The aim of this scoping review was, therefore, to assess current evidence for interventions aimed at reducing wait time from initial referral to either diagnosis or initiation of treatment for patients urgently referred to ENT services with suspected HNC.

METHODS

A literature search was conducted in May 2022 covering the following databases: Medline Complete, AMED and CINAHL (search terms detailed in appendix). To retain relevance for current best practice guidelines, only articles published within the last ten years were considered. Articles which did not assess intervention efficacy against routine standards of care were also excluded. A title and abstract review of the search results was undertaken, with a subsequent full article review of potentially relevant results. Ethical approval was not required as no original research was conducted.

Year	Total Urgent Referrals	HNC Urgent Referrals	Proportion of Referrals for HNC
2016/17	12 725	1069	8.4%
2017/18	12 622	1050	8.3%
2018/19	15 550	1185	7.6%
2019/20	16 677	1385	8.3%
2020/21	15 720	1543	9.8%
2021/22	21 047	1938	9.2%

UHMB, University Hospitals of Morecambe Bay; HNC, Head and neck cancer

Table 1: Summary of UHMB referrals for HNC services.

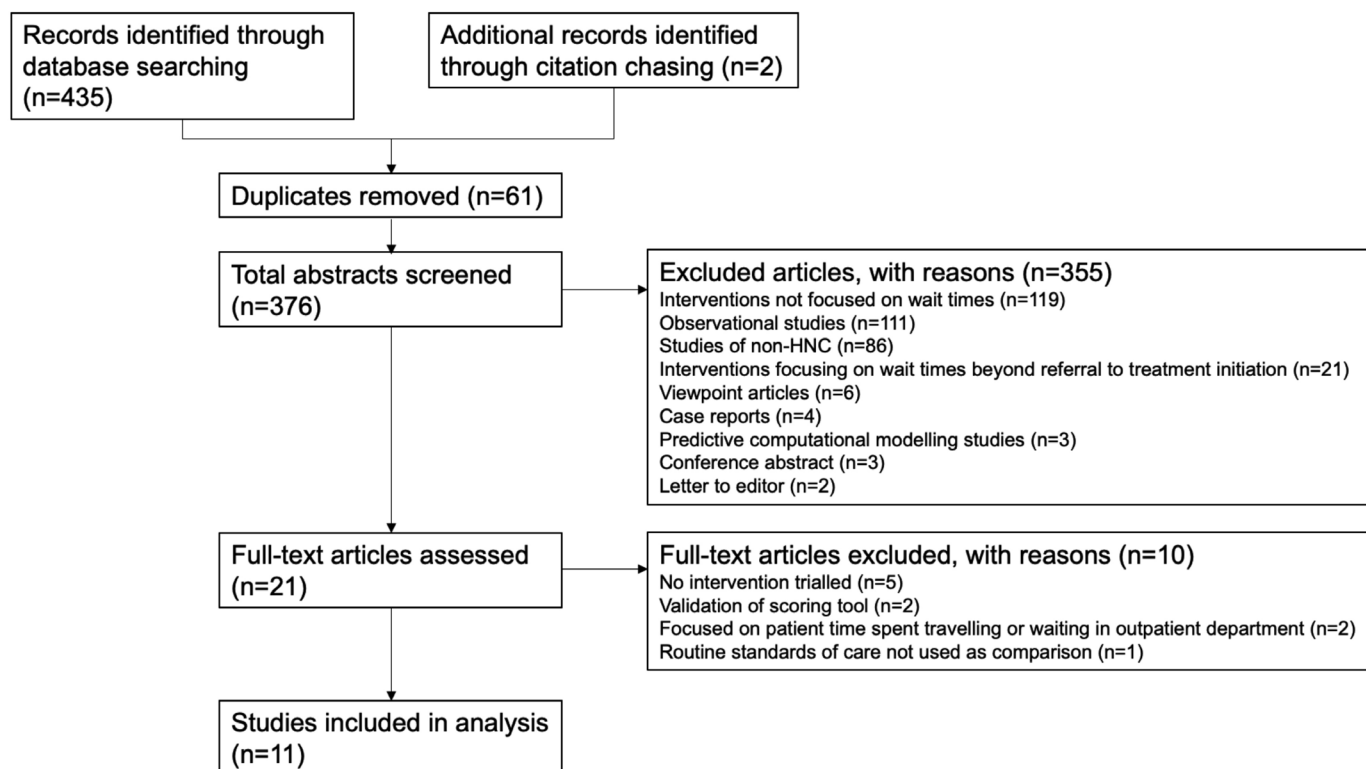


Figure 1: Flow diagram demonstrating article exclusions. HNC, head and neck cancer.

RESULTS

The literature search returned 435 results, of which 374 were unique. Title and abstract screening removed 355 articles. The most common reasons for exclusion at this stage were articles investigating HNC management strategies that did not use reduction in wait time from initial referral to either diagnosis or initiation of treatment as a primary outcome (n=119) and observational studies of delays in HNC investigation or management (n=111). Nineteen full articles were assessed, of which ten were excluded. Of these exclusions, five articles did not trial any intervention, two validated a scoring tool without using this as an intervention for reducing wait time, two focused on patient delay not affecting time to either diagnosis or treatment initiation (e.g., time spent in waiting room before seeing consultant) and one did not use routine standards of care as a comparison. An additional two articles were identified through citation chasing, thus leaving eleven articles included in the final review (figure 1). Three key themes emerged from the literature search: in-office biopsy, incorporation of associate healthcare practitioners and streamlining of services; these will be presented sequentially.

IN-OFFICE BIOPSY

The most common intervention for reducing wait time to initiation of treatment was in-office biopsy of suspicious lesions, which can be performed with local anaesthetic in an outpatient setting, thus eliminating the need to wait for an available theatre slot before a biopsy can be obtained. Five studies examined the effects of in-office biopsy versus operating room biopsy, including lesions from the oropharynx, larynx⁸ and laryngopharynx⁸⁻¹² from a total of 1259 patients. In-office biopsy universally reduced time to diagnosis, with

mean wait times ranging from 2.0 – 7.5 days and 9.0 – 23.0 days for in-office biopsy and operating room biopsy respectively. In three studies, in-office biopsy also reduced time to treatment initiation (21.0 – 27.0 days) versus operating room biopsy (34.0 – 48.8 days).⁸⁻¹⁰ One study¹¹ reported a modest difference in time to treatment initiation between the two biopsy modalities, despite in-office biopsy significantly reducing the time to diagnosis (table 2). The authors did however suggest referral bias and other system factors may have confounded this result. It should also be noted that the study by Schutte et al.¹⁰ introduced in-office biopsy alongside several other interventions aimed at streamlining HNC services and so their observed reduction in time to diagnosis and treatment initiation cannot solely be attributed to in-office biopsy. As secondary findings, in-office biopsy was also shown to be well tolerated by patients,⁸ with minimal complications¹² and cost savings of 10.7% compared with operating room biopsy.⁹ Additionally, a further study was identified which used an economic model to suggest that in-office biopsy of the oral cavity and larynx conferred a reduction in time to treatment initiation of 17 days.¹³

ASSOCIATE HEALTHCARE PRACTITIONERS

Two studies investigated the feasibility of associate healthcare practitioners covering some of the roles traditionally performed by consultant surgeons.^{14,15} For both studies, time savings were commented upon, but absolute savings from patient referral to either diagnosis or initiation of treatment were not reported. The earlier study¹⁴ assigned an advanced nurse practitioner and physician assistant, both with significant experience in common otolaryngologic conditions and endoscopic examination, to assist a head and neck surgeon with their HNC caseload. With the help of these practitioners, the surgeon

Study	Patients (n)	Reduction in time to diagnosis (days)	P value	Reduction in time to treatment (days)	P value
Lippert ⁸	116	–	–	24.6	–
Schutte ⁹	188	14.0	<0.0001	14.5	<0.0001
Schutte ¹⁰	486	7.0	<0.0001	13.0	<0.0001
Lee ¹¹	114	15.5	<0.0001	2.1	–
Cohen ¹²	355	‘3-4 weeks’	–	–	–

All time periods represent reduction in time conferred by in-office biopsy versus operating room biopsy, missing values not reported in original studies.

Table 2: Summary of in-office biopsy studies.

was able to see more new patients (44 versus 60 per month, $p < 0.001$) and had less overbooked hours (43 versus 35 hours per month, $p < 0.001$), while patient satisfaction remained stable. A second study trialled a nurse-led clinic for trans-nasal endoscopic examination in urgently referred patients classified as low-risk by a previously validated triage scoring system.¹⁵ Examinations were recorded and subsequently reviewed by a consultant head and neck surgeon. A total of 155 patients were reviewed under this pathway, which eased pressure on consultant-led two week wait clinics, allowing all high-risk patients to have a face-to-face appointment within five days of receiving a referral. No patients discharged from the nurse-led pathway were re-referred within three months and only one patient received a positive cancer diagnosis. In contrast, before implementation of this nurse-led pathway, urgently referred patients waited a mean of 14 days for a face-to-face appointment.

STREAMLINING OF SERVICES

Three studies evaluated interventions for improving coordination of multidisciplinary care.^{10, 16, 17} The largest of these interventions redesigned the entire diagnostic pathway for all patients referred with suspected HNC,¹⁰ with 457 and 394 patients receiving optimised workup and standard care respectively. The new, optimised pathway spanned three days, in which patients received consultations from various specialists, trans-nasal endoscopy +/- in-office biopsy, advanced imaging, histology results and multidisciplinary team discussion. Compared with standard care, the optimised pathway significantly reduced time from initial consultation to diagnosis (9 versus 2 days, $p < 0.0001$) and initial consultation to treatment initiation (34 versus 21 days, $p < 0.0001$). Furthermore, the optimised pathway conferred a 12% increase in 3-year overall survival ($p = 0.002$). The second study also streamlined the diagnostic pathway, this time with all investigations conducted within four days excluding histology results.¹⁶ Results for the new diagnostic pathway were recorded during 2007–2008 and 2011–2012. For standard care, the mean time from first consultation to diagnosis was 16 days, compared with six days during 2007–2008 and nine days during 2011–2012, both of which represent a statistically significant reduction ($p < 0.001$ and $p = 0.02$ respectively). The final intervention for streamlining services introduced a proforma for prioritising cervical lymph node biopsy requests.¹⁷ The proforma was used in 29% of all referrals. When used, median wait time for biopsy was eight days (interquartile range 7 – 18), compared with 18 days (interquartile range 7 – 27 days) when the proforma

was not used. The statistical significance of this difference was not reported.

DISCUSSION

This review summarises current evidence for interventions aimed at reducing wait time from initial referral to either diagnosis or initiation of treatment for patients urgently referred to ENT services with suspected HNC. The importance of the time delays in diagnosis and initiation of treatment of HNC should not be underestimated; they are often aggressive, fast-growing tumours, with prolonged time to initiation of treatment shown to affect disease progression^{6, 18} and patient survival.^{19, 20}

Most studies focused on in-office biopsy as an alternative to operating room biopsy. These studies benefitted from large sample sizes, with data available for over 1250 patients across the five included studies.⁸⁻¹² Alongside quantifying time savings, the studies demonstrated the procedure can be performed safely and is well tolerated by patients. Compared with operating room biopsy, in-office biopsy produced a universal reduction in time to diagnosis, with time savings ranging from 7.0 – 15.5 days.^{10, 11} There was a greater spread in time savings to initiation of treatment, ranging from 2.1 – 24.6 days,^{8, 11} but factors such as referral bias may have confounded the lower of these results. These studies therefore demonstrate that while in-office biopsy may be used to reduce patient wait times, implementation must be delivered alongside reform that addresses some of the systems factors which act as a barrier to realising the time savings it may offer.

Assigning further roles to associate healthcare practitioners in support of two week wait services may also ease some of the current pressures. Both studies utilised associate practitioner-led endoscopy, and while neither quantified changes in time to either diagnosis or initiation of treatment, both demonstrated benefits which may translate into reductions of these metrics. Furthermore, a recent scoping study has suggested speech and language therapists would be able to improve the quality and efficiency of services for urgently referred patients, but identified issues such as prescribing rights, indemnity and governance as current barriers to effective implementation.²¹ The wider implications of interventions that re-deploy staff to HNC services should also be considered, with none of the reported studies quantifying knock-on negative effects to other services such as routine ENT outpatient clinics.

Three studies also focused on streamlining the diagnostic pathway for patients, two of which reported reductions in time to diagnosis of at least one week and time to treatment

initiation of 13.0 days.^{10,16} These results therefore suggest improved co-ordination of the multidisciplinary care required in HNC management, such as 'one-stop' clinics, may improve wait times. However, compared with most 'one stop' clinics, these interventions provided a more complete package of care, including imaging, anaesthetic and frailty assessments and histology results and this should be considered when interpreting these results. Departments should also be aware of reasons why changes in service delivery may not have the desired effect. Two studies demonstrated that while an intervention has potential to reduce wait times, departmental factors¹¹ and poor clinician adherence to new systems¹⁷ may blunt the potential benefits they offer.

In conclusion, this review has presented evidence to suggest that, for patients urgently referred to ENT, time to diagnosis and treatment initiation may improve through use of in-office biopsy, utilisation of associate healthcare practitioners and a streamlined pathway for service provision. These interventions may improve patient prognosis and could help ENT services to clear the current backlog of patients waiting for surgery, but careful implementation is needed for successful delivery.

Correspondence to:

Daniel James Taylor, Lancaster Medical School,
Lancaster University, Lancaster LA1 4YW
d.j.taylor@lancaster.ac.uk

REFERENCES

1. NHS England. Consultant-led referral to treatment waiting times data 2021-22. 2022. Available from: <https://www.england.nhs.uk/statistics/statistical-work-areas/rtt-waiting-times/rtt-data-2021-22/> (accessed on 30 April 2022).
2. NHS England. Cancer waiting times. 2022. Available from: <https://www.england.nhs.uk/statistics/statistical-work-areas/cancer-waiting-times/> (accessed on 30 April 2022).
3. House of Commons Committee of Public Accounts. NHS backlogs and waiting times in England. 2022. Available from: [https://www.england.nhs.uk/coronavirus/publication/delivery-plan-for-tackling-the-covid-19-backlog-of-elective-care/](https://committees.parliament.uk/publications/9266/documents/160332/default/#:~:text=Before%20the%20pandemic%20only%2083,did%20so%20in%20February%202022,(accessed on 30 April 2022).
4. NHS. Delivery plan for tackling the COVID-19 backlog of elective care. 2022. Available from: <a href=) (accessed on 30 April 2022).
5. Cancer Research UK. Head and neck cancers statistics. Available from: <https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/head-and-neck-cancers#heading-Two> (accessed on 30 April 2022).
6. Jensen AR, Nellesmann HM, Overgaard J. Tumor progression in waiting time for radiotherapy in head and neck cancer. *Radiother Oncol.* 2007;84(1):5-10. Available from: <https://doi.org/10.1016/j.radonc.2007.04.001>
7. Polesel J, Furlan C, Birri S, et al. The impact of time to treatment initiation on survival from head and neck cancer in north-eastern Italy. *Oral Oncol.* 2017;67:175-82. Available from: <https://doi.org/10.1016/j.oraloncology.2017.02.009>
8. Lippert D, Hoffman MR, Dang P, McCulloch TM, Hartig GK, Dailey SH. In-office biopsy of upper airway lesions: Safety, tolerance, and effect on time to treatment. *Laryngoscope* 2015;125(4):919-23. Available from: <https://doi.org/10.1002/lary.25007>
9. Schutte HW, Takes RP, Slootweg PJ, et al. Digital video laryngoscopy and flexible endoscopic biopsies as an alternative diagnostic workup in laryngopharyngeal cancer: A prospective clinical study. *Ann Otol Rhinol Laryngol.* 2018;127(11):770-6. Available from: <https://doi.org/10.1177/0003489418793987>
10. Schutte HW, van den Broek GB, Steens SCA, et al. Impact of optimizing diagnostic workup and reducing the time to treatment in head and neck cancer. *Cancer* 2020;126(17):3982-90. Available from: <https://doi.org/10.1002/cncr.33037>
11. Lee F, Smith KA, Chandarana S, et al. An evaluation of in-office flexible fiber-optic biopsies for laryngopharyngeal lesions. *J Otolaryngol Head Neck Surg.* 2018;47(1):31. Available from: <https://doi.org/10.1186/s40463-018-0275-x>
12. Cohen JT, Bishara T, Trushin V, Benyamini L. Adverse events and time to diagnosis of in-office laryngeal biopsy procedures. *Otolaryngol Head Neck Surg.* 2018;159(1):97-101. Available from: <https://doi.org/10.1177/0194599818764412>
13. Simons PA, Ramaekers B, Hoebers F, et al. Cost-effectiveness of reduced waiting time for head and neck cancer patients due to a lean process redesign. *Value Health.* 2015;18(5):587-96. Available from: <https://doi.org/10.1016/j.jval.2015.04.003>
14. Paydarfar JA, Gosselin BJ, Tietz AM. Improving access to head and neck cancer surgical services through the incorporation of associate providers. *Otolaryngol Head Neck Surg.* 2016;155(5):723-8. Available from: <https://doi.org/10.1177/0194599816647945>
15. Metcalfe C, Dogan M, Glazzard N, Ross E, George A. Introduction of a novel telescopic pathway to streamline 2-week-wait suspected head and neck cancer referrals and improve efficiency: A prospective service evaluation. *Laryngoscope Investig Otolaryngol.* 2021;7(1):117-24. Available from: <https://doi.org/10.1002/lio2.721>
16. Sorensen JR, Johansen J, Gano L, et al. A "package solution" fast track program can reduce the diagnostic waiting time in head and neck cancer. *Eur Arch Otorhinolaryngol.* 2014;271(5):1163-70. Available from: <https://doi.org/10.1007/s00405-013-2584-z>
17. Dimbleby G, Golding L, Al Hamarneh O, Ahmad I. Cutting cancer waiting times: streamlining cervical lymph node biopsy. *J Laryngol Otol.* 2013;127(10):1007-11. Available from: <https://doi.org/10.1017/S0022215113002004>
18. Waaijer A, Terhaard CH, Dehnad H, et al. Waiting times for radiotherapy: consequences of volume increase for the TCP in oropharyngeal carcinoma. *Radiother Oncol.* 2003;66(3):271-6. Available from: [https://doi.org/10.1016/s0167-8140\(03\)00036-7](https://doi.org/10.1016/s0167-8140(03)00036-7).
19. Murphy CT, Galloway TJ, Handorf EA, et al. Survival impact of increasing time to treatment initiation for patients with head and neck cancer in the United States. *J Clin Oncol.* 2016;34(2):169-78. Available from: <https://doi.org/10.1200/JCO.2015.61.5906>.
20. van Harten MC, Hoebers FJP, Kross KW, van Werkhoven ED, van den Brekel MWM, van Dijk BAC. Determinants of treatment waiting times for head and neck cancer in the Netherlands and their relation to survival. *Oral Oncology.* 2015;51(3):272-8. Available from: <https://doi.org/10.1016/j.oraloncology.2014.12.00>
21. Occomore-Kent LC, Hatch E, Cruice M. Scoping opinion: Speech and language therapists' views on extending their role to the urgent ear, nose and throat pathway. *Int J Lang Commun Disord.* 2021. Available from: <https://doi.org/10.1111/1460-6984.12650>

Case Report: Delayed onset of severe acute facial swelling following bimaxillary osteotomy surgery

Matthew Gribbon,¹ Melissa Loh,² Miles Duncan³

¹ Dental Core Trainee in Oral and Maxillofacial Surgery Morecambe Bay Hospitals, ² Specialty Registrar in Oral Surgery Morecambe Bay Hospitals, ³ Consultant in Oral and Maxillofacial Surgery Morecambe Bay Hospitals

ABSTRACT

This case report will discuss a 20-year-old male who presented to the Accident and Emergency (A&E) department at a district general hospital (DGH) with severe bilateral submandibular facial swelling four days following bimaxillary osteotomy surgery to correct his mandibular prognathism and maxillary retrognathism.

The patient had previously undergone both bilateral sagittal split (BSSO) and LeFort 1 osteotomy surgery for the correction of a severe class 3 skeletal discrepancy following orthodontic treatment. The osteotomy was stabilised with titanium fixation plates. Following the surgical treatment, the patient received a regime of co-amoxiclav antibiotic prophylaxis and dexamethasone to combat post-operative inflammation. After an uneventful surgery and a single night in hospital post-operative inpatient stay, the patient was discharged with oral antibiotics and chlorhexidine mouth rinse along with their regular inhalers for his medical history including mild well controlled asthma.

Four days following the surgery, the patient presented to A&E complaining of sudden onset severe dysphagia, trismus, and bilateral submandibular and submental facial swelling, only noticed on waking. This case report will discuss the indications of a bimaxillary osteotomy as well as the management and treatment of post-operative complications following this surgery.

INTRODUCTION

A bimaxillary osteotomy allows for the repositioning of the maxilla and mandible to improve a patient's function and aesthetics.¹ Indications for this procedure include: to correct skeletal deformation, improve function/biting, relieve pain often associated with traumatic bites, temporomandibular joint dysfunction (TMJPDs) or alteration of appearance,¹ and in the treatment of obstructive sleep apnoea and snoring.

This case report encompasses a young patient undergoing this physically transforming procedure to improve the functional component of his lifestyle. This treatment combines the surgical skills of an oral and maxillofacial (OMFS) surgeon with the precision and planning of an orthodontist to ensure an ideal outcome.

Any surgical procedure carries post-operative risks. It is important that patients are made aware of this to allow for informed consent² prior to commencing the procedure. Risks specific to this procedure include the possibility of permanent paraesthesia to the lip, tongue and cheek due to involvement of the inferior alveolar dental nerve (IDN), lingual nerve and long buccal nerve, respectively. Less commonly, paraesthesia to the infraorbital region is noted due to involvement of the infraorbital nerve, but this is usually temporary, and the sensation to the upper lip/cheek/lateral nose/lower lid, invariably makes a full recovery.

Most commonly haemorrhage risk is described as an intraoperative complication involving the inferior alveolar,

superior alveolar, maxillary, retromandibular, facial, and sublingual vessels.

The initial procedure was carried out under general anaesthetic with nasotracheal intubation, after the patient received pre-operative doses of prophylactic intravenous (IV) co-amoxiclav and dexamethasone. Doses were continued post operatively every eight hours until discharge the following day. LeFort 1 and bilateral sagittal split osteotomies were conducted and secured with titanium fixation plates. Attempts were made to secure the left osteotomy with bi-cortical fixation screws, however this was not completed, and mono-cortical mini-plates were used bilaterally, to fix the mandible securely.

METHODS

On arrival to the A&E department, routine blood results were obtained to indicate a normal white blood cell (WBC) count and elevated C-reactive protein (CRP). On clinical examination, the bilateral swelling in the sublingual and submental regions were firm to palpation, slightly tender and mouth opening was limited to 5-8mm. He had voice changes with the classical description of a 'hot potato' voice, signifying considerable swelling/oedema of the soft palate.

An anaesthetic review reported an unremarkable respiratory rate with no evidence of dyspnoea, wheezing or stridor at this current time.

RESULTS

A head and neck computerised tomography (CT) scan with contrast was ordered urgently along with radiologist report. The scan indicated a left submandibular radiolucency and evidence of displacement of the hypopharynx towards the patient's right-hand side (see figure 1).

MANAGEMENT

Emergency surgery was arranged to immediately explore the fascial spaces involved. This also allowed placement of both extra and intra-oral drains. Conscious fibre-optic nasotracheal intubation was performed to manage the patient's airway prior to surgery. The operation involved exploration of both the left submandibular and submental spaces along with the left pterygo-mandibular and buccal space for haematoma evacuation. Following drain stabilisation, the patient was transferred to the intensive therapy unit (ITU) and an anaesthetic decision was made to leave the patient intubated overnight. IV co-amoxiclav and dexamethasone were continued over this period.

The patient remained intubated for a further two days under sedation before sufficient improvement was noted by the anaesthetics team to allow for safe extubation. Drains were removed the following day after the patient showed further improvement. Significant discharge was collected following drain placement. Two days post extubation, the patient was discharged to continue their recovery at home, with out-patient follow up organised in due course.

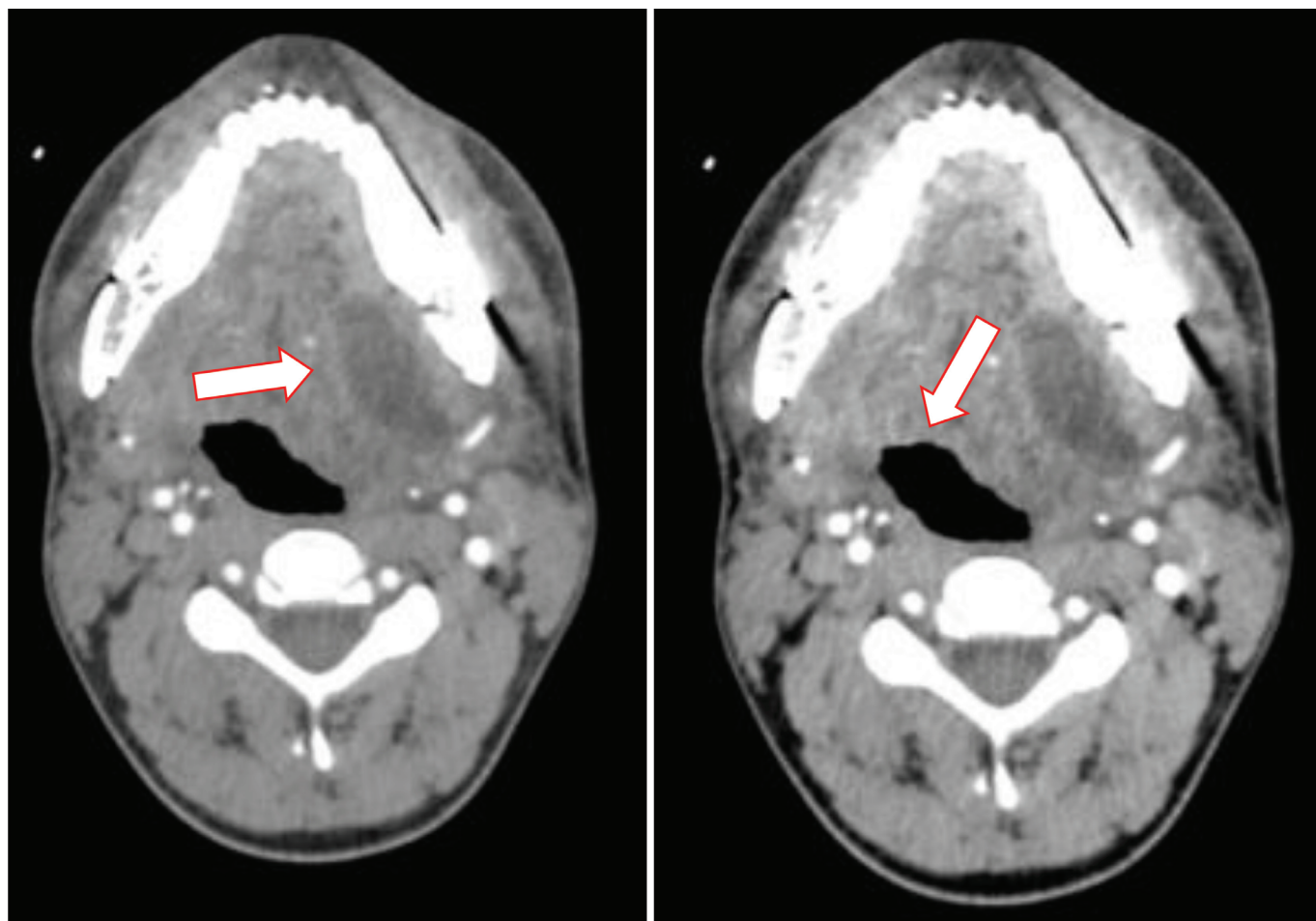


Figure 1: CT indicating the displacement of the hypopharynx due to the large evolving haematoma in the left pterygo-mandibular space.

Follow up at two weeks was most encouraging. The patient had no new complaints and was managing their recovery well at home. Mouth opening was much improved, and the swelling had reduced considerably. The extra-oral incision left on open drainage was decreasing in discharge and showed no signs of infection. There was no facial weakness, however some paraesthesia of the left side of the tongue was reported. The initial bimaxillary osteotomy had achieved the desired outcome with satisfactory class I occlusion. The patient was advised to remain on a soft diet for a further month and attend further review at that point.

DISCUSSION

Bimaxillary osteotomies have been associated with an increased risk of post-operative complications when compared to the Le Fort 1 osteotomy or BSSO independently.³ This is not surprising when both procedures are being carried out together, simultaneously carrying the risk of each individual procedure. Conversely, patients requiring both mandibular retrusion and maxillary advancement benefit from only having to undergo a single general anaesthetic (and associated risks) and endure a single recovery period. The same paper also highlighted that patients ASA 3 and above had significantly higher risk of post-operative complications. The patient described in this case was ASA 2 and was not in this category.

ID nerve injury has been quoted as the single most common complication and as high as 50%, followed by haemorrhage at 9% and infection at 7%.⁴ Some form of long term sensory deficit are reported between 10 and 30%.⁵ Interestingly haemorrhage is most commonly described as an intra-operative complication most commonly associated with the inferior alveolar, superior alveolar, maxillary, retromandibular, facial, and sublingual vessels.⁶

A similar case in the literature can be found described by Bertossi et al,⁷ however in this case the patient developed neck swelling and dyspnoea within one day post-operatively. CT scans in this case share similarities with the case described above including displacement of the hypopharynx, however due to collections in different fascial spaces. Angiography in this case indicated bleeding from palatine branches of the left ascending pharyngeal artery and a collection in the left parapharyngeal space. It is possible this case has similar aetiology and presentation due to collections in different facial spaces. Angiography was not carried out in the case described above, therefore it is difficult to know which vessels were responsible aside from the location of the collection identified on the CT. The difference in time to presentation post operatively may indicate a small vein was the offending vessel and not an artery.

Studies regarding post-operative airway management exist looking into possible airway complications following such

surgery. Meisami et al⁸ carried out post-operative magnetic resonance imaging (MRI) assessment of 40 patients' airways following orthognathic surgery. MRI imaging was conducted at 24 and 48 hours postoperatively. Whilst marked oedema and swelling was found around the lips and cheeks, no airway compromise was identified in the 40 patients within this study. Out of the 40 patients in this study 25 did receive bimaxillary surgery of both upper and lower arches. This study differs from the case above by the fact that assessment only went up to 48 hours potentially failing to include more delayed cases.

Politis et al⁹ conducted a retrospective study over 23 years from 1989 to 2012 on the postoperative airway complications following orthognathic surgery. Out of 2164 patients included, only two required re-intubation following airway compromise. Both these patients had received a BSSO. In both cases the airway compromise was seen within four hours postoperatively. Again this differs from the case above where onset was delayed by four days. Within this study there were numerous cases of airway distress where intermaxillary fixation (IMF) was released and was sufficient in airway management.

There is evidence that the movement of the mandible via orthognathic surgery can have an effect on the pharyngeal airway space. One study including 25 males found that set back procedures were associated with reduced airway volume when comparing pre and post-operative CT scans;¹⁰ all patients in the study received both BSSO and LeFort 1 osteotomy. In contrast mandibular advancement surgery was associated with increased pharyngeal airway volume. This would indicate that the physical skeletal movement with mandibular setback surgery will impact on the airway, hence sleep apnoea is a potential risk for patients undergoing such surgery.

An interesting case found in the literature reported on a patient who underwent orthognathic surgery with undiagnosed angioedema. With operative trauma being a significant risk of triggering an attack, the surgery resulted in severe airway compromise. Extubation in this case was delayed for 24 hours after a positive response to treatment to ensure the airway was maintained and secure.¹¹

An interesting question raised in this case is on the use of pharmacological methods to manage haemorrhage intraoperatively and post-operatively. Intraoperative IV tranexamic acid has been shown to decrease haemorrhage intraoperatively however no significant difference has been found on the rates of post-operative complications, length of hospital stays or wound drainage volumes.¹² Tranexamic acid irrigation has also been discussed and studied in the literature and has been shown to reduce intraoperative blood loss.¹³

The patient described in the case above was provided with IV dexamethasone preoperatively and eight hourly post-operatively until discharged the following day. Steroids are well cited in the literature to reduce post-operative swelling, oedema and improve the overall recovery time for patients undergoing all forms of orthognathic surgery.¹⁴ Unfortunately, there is little evidence that they can help to reduce neurosensory disturbances following this surgery.

The patient was placed on IV co-amoxiclav post-operatively and discharged on oral antibiotics. On admission with the complication described above, the patient remained on IV co-amoxiclav for the duration of their stay. A Cochrane review in 2015¹⁵ found good evidence to support long term antibiotic prophylaxis as opposed to single doses in the

prevention of surgical site infection following orthognathic surgery. Little evidence was found to advocate any individual regime. Post-operatively the patient was left with open incisions and drains in situ, additionally the patient was at increased risk of infection whilst mechanically ventilated through nasotracheal intubation.¹⁶ Antibiotic cover throughout this period likely provided a great deal of benefit to the patient's recovery.

Bi-cortical screws and titanium plates are both widely cited in the literature as the two methods of fixation. Bi-cortical screws benefit from providing the highest level of initial mechanical strength due to immediate engagement in both mandibular cortical plates.¹⁷ Titanium miniplates however will not provide this level of initial stability, as they engage the buccal cortex only, but benefit from allowing small amounts of adjustment that can help allow the occlusion to settle when guided with intermaxillary elastics. Bi-cortical screw preparation requires depth control via tactile feedback alone when the drill is advanced from buccal cortex, through the trabecular bone and into the lingual cortex.¹⁸ Mono-cortical drills benefit from depth control stops (shoulders built into drills to restrict further bone penetration) at desired depths, most commonly 6mm and 8mm. Bi-cortical drills used from a transbuccal approach do not benefit from this and rely solely on operator skill. This is to allow them to pass through the transbuccal drill guide. This may place structures lingual to the mandible at increased risk when compared to fixation with plates and mono-cortical screws hence drill speed should also be reduced from 40,000 rpm to 10,000 rpm decreasing the risk of lingual soft tissue damage.

CONCLUSION

Complications of orthognathic surgery are well cited in the current literature, therefore a rigorous consenting process must be followed prior to the performance of any such elective surgery. The team responsible for carrying out such surgery should have a good understanding of possible complications and their management when operating in such a complex area of the body.

This case report highlights a less commonly discussed and potentially life-threatening complication that all surgeons should be ready to manage. The swift and robust action taken both by the anaesthetics and surgical team ensured that this case was managed safely to ensure a positive outcome for the patient.

It is important for clinicians to understand the impromptu importance of managing the various anatomical spaces in the head and neck region, to quickly identify if a patient requires emergency surgical input. In addition, the importance of early involvement of colleagues from various specialities optimises patient care and safe discharge home.

Correspondence to:
mathew.gribbon@mbht.nhs.uk

REFERENCES

(a full list available on request)

Blastic plasmacytoid dendritic cell neoplasm transformed from essential thrombocythemia with leukemic picture and no skin involvement – A case study

Muhammad Mansoor Baig, MBBS, FCPS, FRCPath, Locum Consultant Haematologist, University Hospitals of Morecambe Bay NHS Trust

ABSTRACT

Blastic plasmacytoid dendritic cell neoplasm (BPDCN) is an extremely rare and fatal condition, which usually affects elderly males. It presents in the skin with frequent involvement of the bone-marrow, peripheral blood and lymph nodes. It has a dismal prognosis, with most patients dying within one year. The diagnosis is frequently challenging, with a characteristic immunophenotype. The best modality of treatment remains to be defined. Generally, patients require acute leukaemia-like induction chemotherapy regimen. Here we present a local case who transformed from essential thrombocythemia into BPDCN over a 20-year period with sudden leukemic picture, and interestingly without any typical skin lesions.

INTRODUCTION

Blastic plasmacytoid dendritic cell neoplasm (BPDCN) is an aggressive haematological tumour affecting elderly males in the majority of cases. It usually presents with cutaneous lesions with or without bone marrow involvement. Isolated skin lesions are frequently the first symptom leading patients to seek medical advice, and without therapy they rapidly disseminate. Patients typically present with asymptomatic, solitary or multiple skin lesions that can be variable in size (from a few millimetres to 10cm), shape and colour, and can appear as nodules, plaques or bruise-like infiltrates. The skin lesions can be associated with erythema, hyperpigmentation, purpura or ulceration.¹ In suspected cases immediate biopsy and discussion with haematology is advised to avoid diagnostic delay.

Lymphadenopathy, splenomegaly and cytopenia due to bone marrow involvement can be present at diagnosis or may occur at disease progression. When bone marrow is involved, the most common findings in the peripheral blood are thrombocytopenia (78%), anaemia (65%) and neutropenia (34%). Hyperleukocytosis is infrequent, but the presence of blasts in the blood is more commonly observed. Circulating malignant cells can be detected by morphological review or flow cytometric analysis of the peripheral blood. Morphologically, they appear as monomorphic, poorly differentiated, intermediate-sized blasts.^{1,6-10}

Approximately 10–20% of patients have a previous history of myeloid malignancies.⁴ Diagnosis requires biopsy of the suspected site with specialist investigations including immunophenotype, immunohistochemistry. Being an aggressive neoplasm of predominantly elderly males^{2, 3, 6} outcome is usually dismal with the majority of patients dying early in disease and being unfit for intensive treatment options.^{1, 2, 6}

CASE STUDY

A gentleman in his mid-70's was diagnosed with JAK 2 + essential thrombocythemia over 20 years ago when investigated for thrombocytosis. He was initially started on aspirin and cytoreduction with hydroxycarbamide but switched to anagrelide due to hydroxycarbamide related infected leg

ulcers. He tolerated anagrelide quite well with good control of his essential thrombocythemia over many years. His other co-morbid conditions were – hypothyroidism, vitamin B12 deficiency, macular degeneration in both eyes, chronic kidney disease and benign prostatic hypertrophy.

In 2018, he developed mild monocytosis, leucoerythroblastic features on blood film along with a drop in haemoglobin which led to bone marrow assessment. In June 2018, bone marrow showed essential thrombocythemia is transformed into myelofibrosis with no excess in blasts. He was detected positive for molecular mutations including JAK-2, TET-2, ASXL-1, /SF3B1 and was 46 XY (normal) on cytogenetics.

In November 2020 he suddenly developed leucocytosis with total WBC's over 100, circulating blasts in peripheral blood film along with anaemia. He was started on cytoreduction with hydroxycarbamide along with transfusion support, which worked for him in terms of counts control. An urgent repeat bone marrow biopsy was diagnostic of BPDCN with large number of blasts. At this time, he also acquired clonal abnormalities with abnormal karyotype including additional (9q) del (9p) and abnormalities in 18p/22q from previous normal karyotype back in 2018. This supports clonal evolution over a period of years. Next generation sequencing was carried out which showed a rise in burden of molecular mutations; ASXL-1 went from 17% to 38% and TET-2 from 26/28% to 44/46%.

He was made aware of bone marrow results and the dismal outcome of the disease. Subsequently he was discussed in the regional multi-disciplinary meeting and assessed at the tertiary centre. Due to his age and frailty, he was deemed to be unfit for any chemotherapy and local palliative supportive care was suggested by the tertiary centre. He did receive supportive care from the Macmillan cancer team in the community and sadly died within few months of diagnosis.

MANAGEMENT AND OUTCOME

Diagnosis is made as per WHO criteria:³

Biopsy of affected organ with required specialist investigations.

Characteristic morphology of plasmacytoid dendritic cells including large pseudopodia microvacuoles eccentric nuclei heterogeneous cytoplasm, as shown below (figure 1) in bone marrow aspirate images.

Flow cytometry – Neoplastic cells express CD4, CD43 (also termed SPN), CD45RA and CD56 (also termed NCAM1), as well as the plasmacytoid dendritic cell-associated antigens CD123 (also termed IL3RA), BDCA-2 (also termed CD303, CLEC4E) TCL1 and CTLA1 (also termed GZMB). Lack of expression of markers for B cells, T cells, myeloid or monocytic cells, and NK cells. Flow plots are identified in diagram below (figure 2).

Cytogenetics – no specific single chromosomal aberrations, often 5q, 6q, 9, 12p, 13q, and 15q.¹⁻⁶

Blastic plasmacytoid dendritic cell neoplasm transformed from essential thrombocythemia with leukemic picture and no skin involvement – A case study Muhammad Mansoor Baig

Bone Marrow Aspirate images of Plasmacytoid dendritic cells showing:

Large pseudopodia, Vacuolation

Eccentric nuclei, Heterogenous cytoplasm

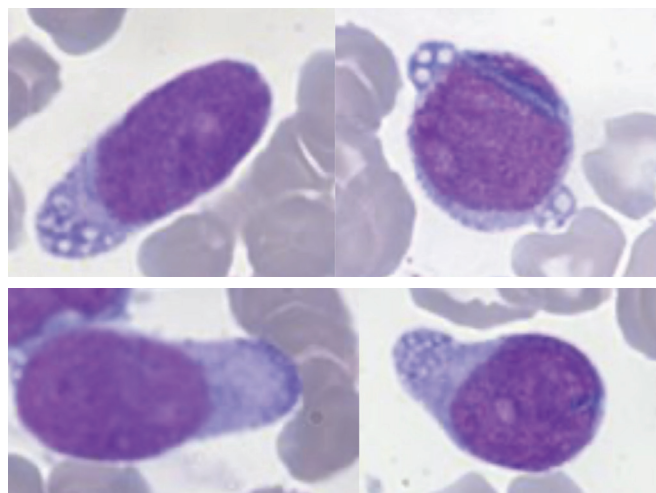


Figure 1: Images courtesy of Dr Alesia Khan, Leeds HMDS Teaching Hospitals NHS Trust.

Bone Marrow Aspirate flow cytometry

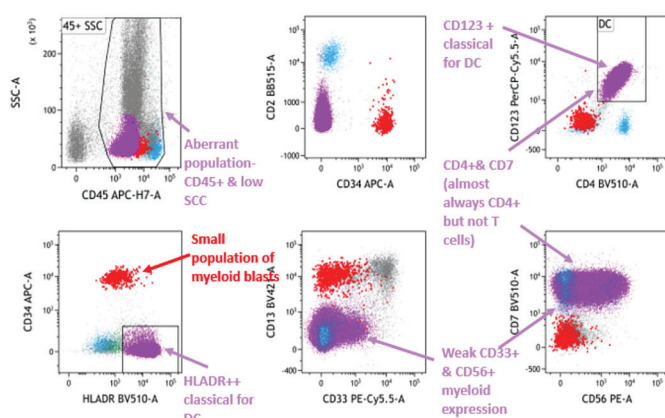


Figure 2

TREATMENT

There are no NICE approved treatments specifically authorised for BPDCN and no standard of care treatment has been established for patients with treatment-naïve (newly diagnosed) or previously-treated (relapsed/refractory) disease in the United Kingdom. Worldwide, it is usually treated with acute lymphoblastic leukaemia/acute myeloid leukaemia like protocols followed by allogeneic bone marrow transplant if the patient is fit enough.^{1, 2, 6} Other options are palliative chemotherapy and best supportive care. A few novel/targeting agents are in the pipe line including Anti-CD 123 (Elzonris) but are not yet approved. Being an aggressive neoplasm of predominantly elderly males, outcome is usually dismal with the majority of patients dying early in disease.^{1, 6}

DISCUSSION

Blastic plasmacytoid dendritic cell neoplasm, being a rare and highly aggressive tumour, would require high clinical suspicion in suspected cases and would require immediate diagnostic workup. Usually, haematology malignancy diagnostic services (HMDS) services are required for specialised investigations.

In the majority of cases, patients present with single/multiple skin lesions to GPs, and/or dermatologists; requiring an urgent biopsy for correct diagnosis. Immediate discussion with the haematology team is advised in suspected cases.

Approximately 10–20% of patients have a previous history of myeloid malignancies; it would require keeping an eye on such patients in haematology follow ups.

It can present with sudden leukemic picture with no skin manifestations at all, like in our case, and would require picking it up on blood film and arranging an immediate clinical review and required diagnostic work up from the haematology end. Management should be planned under the appropriate multi-disciplinary meeting.

ACKNOWLEDGMENTS

Alesia Khan, Consultant Haematologist at Leeds HMDS Teaching Hospitals NHS Trust and Daniel Payne, Leeds HMDS Teaching Hospitals NHS Trust.

Correspondence to:
Muhammad.baig@mbht.nhs.uk

REFERENCES

1. Pagano L, Valentini CG, Grammatico S, Pulsoni A. Blastic plasmacytoid dendritic cell neoplasm: diagnostic criteria and therapeutical approaches. *Br J Haematol*. 2016;174(2):188-202. Available from: <https://doi.org/10.1111/bjh.14146>
2. Sapienza MR, Pileri A, Derenzini E, et al. Blastic plasmacytoid dendritic cell neoplasm: state of the art and prospects. *Cancers*. 2019;11(5):595. Available from: <https://doi.org/10.3390/cancers11050595>
3. Swerdlow S, Campo E, Harris NL, et al. Eds. WHO classification of tumours of haematopoietic and lymphoid tissues. Lyon: International Agency for Research on Cancer; 2017.
4. Facchetti F. Plasmacytoid dendritic cell neoplasms. In: Orazi A, Weiss LM, Foucar KA, Knowles DM, eds. *Knowles neoplastic hematopathology*. 3rd ed. Philadelphia PA: Lippincott Williams & Wilkins; 2013.
5. Feuillard J, Jacob MC, Valensi F, et al. Clinical and biologic features of CD4+ CD56+ malignancies. *Blood*. 2002;99(5):1556-63. Available from: <https://doi.org/10.1182/blood.v99.5.1556>
6. Garnache-Ottou F, Vidal C, Biichlé S, et al. How should we diagnose and treat blastic plasmacytoid dendritic cell neoplasm patients? *Blood Adv*. 2019;3(24):4238-51. Available from: <https://doi.org/10.1182/bloodadvances.2019000647>
7. Julia F, Petrella T, Beylot-Barry M, et al. Blastic plasmacytoid dendritic cell neoplasm: clinical features in 90 patients. *Br J Dermatol*. 2013;169(3):579-86. Available from: <https://doi.org/10.1111/bjd.12412>
8. Pagano L, Valentini CG, Pulsoni A, et al. Blastic plasmacytoid dendritic cell neoplasm with leukemic presentation: an Italian multicenter study. *Haematologica*. 2013;98(2):239. Available from: <https://doi.org/10.3324/haematol.2012.072645>
9. Rauh MJ, Rahman F, Good D, et al. Blastic plasmacytoid dendritic cell neoplasm with leukemic presentation, lacking cutaneous involvement: case series and literature review. *Leuk Res*. 2012;36(1):81-6. Available from: <https://doi.org/10.1016/j.leukres.2011.07.033>
10. Wang H, Cao J, Hong X. Blastic plasmacytoid dendritic cell neoplasm without cutaneous lesion at presentation: case report and literature review. *Acta haematol*. 2012;127(2):124-7. Available from: <https://doi.org/10.1159/000334703>

Problems of practising public health in Westmorland: John A. Guy as County Medical Officer, 1946-70

Dr Michael Lambert, Fellow in Social Inequalities BA (Hons) MA PhD

ABSTRACT

The Covid-19 pandemic constituted an unprecedented public health crisis for the National Health Service (NHS) since its inception in 1948. The crisis exposed the fragmented nature of health services, the centralisation of decision-making, and the weakened position of the Director of Public Health (DPH) to provide essential local leadership. This position reflects years of uncertainty along with a pyrrhic 'return' to local government for public health in 2013. Using the career of Westmorland County Medical Officer (CMO) John A. Guy, this paper offers a historical examination of the problems of practicing public health in local government until its absorption into reformed NHS structures in 1974. The case study reflects upon the shape of current community health services in Lancashire and South Cumbria, the ambiguous place of local public health in a nationalised service, and the ability of individual leadership to overcome structural constraints.

INTRODUCTION

The Covid-19 pandemic constituted an unprecedented public health crisis for the National Health Service (NHS) since its inception in 1948. Despite significant localised outbreaks during the 1957 and 1968 influenza pandemics, pressures on health services and the government response were slight in comparison.¹ Both were dwarfed by the scale of the earlier 1918-19 influenza pandemic. The crises unleashed since 2020 have had several consequences for the NHS. First, it exposed the fragmented nature of health services and their organisation following decades of reforms. Second, the ensuing centralisation within both government and the Department of Health and Social Care (DHSC) exacerbated fragmentation, limiting the potential of local public health initiative. Third, it demonstrated the weakened position of the Director of Public Health (DPH) as the champion of local public health for communities in providing local leadership.² In the hour of greatest need, public health services were found wanting.³

The failure of public health is not an indictment of DsPH either individually or collectively. Rather, it reflects historic marginalisation within the NHS that has privileged acute hospital services, embedded professional uncertainty, and 'returning' in 2013 to its philosophical home in local government following its departure in 1974.⁴ Since its 'return', the position of public health has only worsened. Left with a range of residual functions and limited resources, placed in competition with other local authority services, and subject to relentless austerity, DsPH have increasingly become a 'protected species'.⁵ Ultimately, this leaves the problems of practising public health as using influence, networks, and individual expertise to counteract the constraints of systemic pressures.

Such problems would be immediately recognisable to those who first practiced public health under the newly nationalised health services in 1948. At the height of their power in the interwar period, Medical Officers of Health (MOsH) were significant figures in local authorities. They were, as I have discussed elsewhere, an 'omnicompetent servant' with extensive powers, resources, and status.⁶ However, at

the inception of the NHS they were 'reduced to a dispirited rump' in the view of Charles Webster, the official historian of the NHS.⁷ Nationalisation left them bereft of powers and demoralised as a profession. Accordingly, post-war MOsH were equally forced to rely on the same individual strategies to practice public health within the NHS as their contemporary counterparts.^{8,9}

Using the career of Westmorland County Medical Officer (CMO) John A. Guy as an example, this paper offers a historical examination of the problems of practicing public health in local government until its absorption into NHS structures in 1974. Drawing upon the annual reports of Guy whilst CMO, the papers of other local welfare state organisations, and obituaries from the *British Medical Journal*, I offer three sets of reflections. First, upon how historic decisions in Westmorland continue to shape current community health services in Lancashire and South Cumbria. Second, on the enduring ambiguity of local public health in a national service. Third, on the ability of individual leadership to overcome structural constraints.

THE RISE OF THE 'OMNICOMPETENT SERVANT'

The rise of the MOH as an 'omnicompetent servant' was slow but inexorable following their creation with the 1848 Public Health Act. Their rise was inextricable from the public health consequences of urbanisation, industrialisation and population expansion that characterised the Victorian era. Although the first MOH had been appointed for the City of Liverpool in 1847, serving as a blueprint for the 1848 Act, it was the 1856 appointment of an MOH for London that heralded their ascent.^{10,11} With successive Public Health Acts throughout the nineteenth century MOsH obtained growing responsibilities. These included: the provision of clean running water; removing and treating sewage; the demolition of housing declared unfit for human habitation; the testing of impure food for impurities, adulteration, and contamination; inspecting the conditions of livestock and the manufacture of produce; immunisation; curbing the spread of epidemics; the collection of epidemiological data; and much more besides. By 1900 local authority public health departments were the envy of the medical profession and a central building block of Victorian local urban government.¹²

From 1900 until the outbreak of war in 1939, the purview of MOsH increased. Moral panics surrounding the unfitness of recruits for the Boer and First World Wars propelled maternity and child welfare up the agenda. Here, MOsH expanded into schools with routine inspections for children, the municipalisation of health visiting formerly run by voluntary organisations, health education, and the provision of free milk and school meals.^{13,14} They were also given new powers for housing and slum clearance to provide 'homes fit for heroes' after 1918 although these were never fully realised in post-war austerity. These were inflected with the fashionable philosophy of eugenics that pervaded the public health profession.^{15,16} It was, however, the 1929 Local Government Act that provided public health with its zenith.¹⁷ This municipalised workhouses and public institutions previously run by parishes and poor law guardians, bringing them under the control of MOsH.¹⁸

During the Second World War they acted as key medical administrators of the Emergency Medical Services (EMS) under civil defence auspices.¹⁹ As an 'omnicompetent servant' their trajectory remained ascendent and knew few bounds prior to the creation of the NHS.

Their rising star, combined with involvement in hospital administration from 1929, caused antagonism with others in the medical profession. Hospital consultants who trained and worked in the elite private, voluntary and teaching hospitals resented the encroachment and could not countenance subordination to MOsH when reform loomed. This informed the decision to nationalise hospital services in 1948 rather than municipalise them, as some in the Labour Government demanded. Equally, GPs feared that public health would undermine the financial viability of their practice and supplant their role as the family doctor. This removed the prospect of a salaried primary care service from the negotiation table by the BMA (British Medical Association).²⁰ The culmination of these jealousies produced an outcome in 1948 which went 'against the natural trend of events' of the continued ascendancy of public health according to Webster.²¹ As I have noted previously, these professional divisions were mirrored in the tripartite division of the NHS.²²

Ultimately, MOsH were the major losers in the creation of the NHS and the welfare state. Hospital nationalisation removed a central source of their power whilst the concurrent creation of social services and housing programmes impinged upon other traditional responsibilities. Given the heights from which they rapidly fell, there was little wonder that public health practitioners were 'reduced to a dispirited rump', as Webster notes, under the NHS.⁷

PUBLIC HEALTH IN MORECAMBE BAY

Whilst the NHS created new organisational arrangements in 1948, public health remained anchored in the Victorian structures of local government that were virtually unchanged since 1889. Within these, power centred on towns and cities which – as county boroughs – possessed a greater ability to raise funds, recruit staff, and push active rather than permissive public health policies. County councils were far weaker, with power residing in urban and rural district councils below them. Between these were municipal boroughs. These had some of the powers of county boroughs, but still sat within the administrative territories of county councils. The wide variation in size, population and resources across councils produced stark discrepancies in powers.²³

Given their greater resources, urbanisation and population concentration, county boroughs served as the principal career route for MOsH before and after 1948. This impacted Barrow-in-Furness, which had a succession of MOsH using it as a rung on a ladder to a larger authority. This began after the death of A. Robb Forrest who served from 1939 until his death in June 1948. His successor, George G. Dickie (1948-50), left for a post as CMO in his native Aberdeenshire.²⁴ James MacLachan (1950-55) departed for Sunderland. I. D. M. Nelson (1955-62) was appointed as MOH for Gosport. D. J. Roberts (1963-68) ascended the career ladder to Salford. Arthur W. Hay (1968-74) bucked this trend, arriving towards the end of his career, having served for a decade as MOH for Whitley Bay. This turnover in senior leadership reduced the ability to develop professional or political networks and

further eroded the place of public health in the local NHS for the town, despite some innovation around policies for elderly people caught between hospital and local authority residential care.^{25, 26}

The reverse situation existed for the portions of Lancashire County Council in Morecambe Bay after 1948. Despite this disadvantage compared with urban areas, Lancashire was pioneering in public health administration, using the passage of the 1948 Local Government Act to strengthen its grip over urban and rural districts. The CMO delegated considerable authority to 17 Divisional Medical Officers (DMOs), each of which – apart from Lancaster, and Morecambe and Heysham, being municipal boroughs – served the rural hinterland of a county borough.²⁷ DMOs also became MOsH for all the constituent urban and rural districts within the area, removing historic conflicts of interests between such localities and the county council.

The hinterland of Barrow, part of the historic county of Lancashire comprising Health Division 1, stretched from Dalton-in-Furness to Coniston and Grange-over-Sands. Following the unexpected death of Archibald Todd in 1949, J. L. Wild (1950-70) took on the DMO mantle.²⁸ Despite a lengthy and stable tenure, Wild was unsuccessful. He struggled to recruit staff, obtain resources, or build networks across the NHS, leaving him responsible for delivering as well as organising services.²⁹ Lancaster as the epicentre of Health Division 2 was similarly placed. After the brief tenures of A. R. Graham (1946-49), who left for a succession of posts in London, and James A. Tomb (1950-52), who retired after an extensive career as an assistant MOH in Lancashire, the position was occupied by Robert W. Farquhar (1952-68).³⁰ Like so many Morecambe Bay MOsH, Farquhar died in post. The glowing obituary provided by Lancashire CMO Stanley C. Gawne was a testament to Farquhar's achievements: working tirelessly for the town with voluntary organisations, nationalised hospital bureaucracies, and the medical profession.³¹

The man who replaced Farquhar can arguably claim to be the first public health leader for Morecambe Bay. John V. Dyer served as DMO for Lancashire Health Division 2 (1968-74) having worked as a junior doctor at both Lancaster and Kendal, and with a stint in the public health department during the 1950s under his belt. However, concurrent NHS and local government reforms under review since the mid-1960s renewed professional uncertainty in public health.³² With Morecambe Bay struggling to recruit doctors in general, let alone MOsH, Dyer agreed to be DMO for Health Division 1. He subsequently became the District Medical Officer for Lancaster Health District (1974-82) and Health Authority (1982-90).³³ Indeed, such was Dyer's commitment that his successor as DPH, R. Nick Gent, praised his 'impressive' contribution to the development of Lancaster's health and health services, along with inspiring his own route into the profession.³⁴ Clearly not all MOsH were part of Webster's 'dispirited rump'.⁷

JOHN A GUY AS COUNTY MEDICAL OFFICER FOR WESTMORLAND

John Allan Guy was appointed as the first full-time CMO for Westmorland shortly before the NHS in 1946. The CMO role dated to 1911, although his predecessors were appointed either part-time or divided the role between the north and

south of the county. Originally from Leeds, Guy was raised and educated in Edinburgh, qualifying from the medical school in 1930. After a series of junior roles at hospitals and in general practice, he obtained his first public health role as Assistant CMO for Staffordshire in 1936. From there he became Deputy MOH for Barrow-in-Furness in 1939, forming part of the response to the May Blitz which targeted the town's vital shipyards in 1941. Afterwards he served in the Royal Army Medical Corps from 1942 to 1946.^{35, 36} During this time he completed his MD thesis on maternity and child health, reflecting his immersion in the classical philosophies of the 'omnicompetent servant' at their interwar zenith.

The situation in which Guy found himself in 1946 offered both constraints and opportunities in practicing public health.

Constraints abounded. The rural, agricultural, and sparse population of Westmorland was juxtaposed with the urban conditions which characterised the Victorian MOH. The political character of the local authority was significant. The county was a fiefdom of the Conservatives who were parsimonious in public health spending when compared with their Labour counterparts, particularly in the textile towns of Lancashire to the south.^{18, 37} Guy was outflanked by the growth of social and welfare services. His newly appointed – and, unusually, university-trained – social worker, Phyllis Thurman was in post for less than three months before resigning in 1948, having been appointed as Westmorland's first Children's Officer.^{38, 39} Services for homeless families and the elderly were run by a separate Welfare Officer, leaving Guy with few institutional resources.

Despite this, there were opportunities. Foremost was the comparably minor status of municipal hospitals in the county before 1948. Westmorland County Hospital was the largest, but the loss was small in comparison to towns and cities.⁴⁰ Ambulances, a minor function before 1939, expanded beyond recognition with wartime civil defence, and Guy inherited a fleet of vehicles able to bridge the gap between a static rural population and newly nationalised health services.³⁹ Whilst Lancashire serviced a large and sprawling population of just over two million in 1948, Westmorland in contrast had 66,700.^{39, 41} The county town, Kendal, was a municipal rather than county borough, which provided administrative unity. There was no need for a system of DMOs overseeing Health Districts for Westmorland, and the county was – at least from an administrative point-of-view – compact with close lines of authority to urban and rural district medical officers. Indeed, Frank T. Madge's lengthy tenure as MOH for the combined county districts from 1946 to 1974 was a key point of continuity in contrast to the fortunes of Barrow.⁴² Ultimately, how these relationships were handled hinged upon Guy's leadership.

PRACTISING PUBLIC HEALTH IN WESTMORLAND

There is a clear legacy from Guy's tenure on the shape of current services. In 1948 the former county District Nursing Association and its staff were nationalised, providing Guy with a sizeable staff of 33 domiciliary midwives who doubled as district nurses. The service 'flourished' during those early years with incentives of housing, transport, and promotion.⁴³ A combination of local conditions and national policy eroded gains. The availability of ambulances and a desire from mothers for hospital confinement led the number of maternity cases to decline from a peak of 228 in 1949 to 110 in 1963.^{43, 44} By 1967 the service was 'unviable', and the large and highly trained workforce was either retrained in health visiting or

relocated into hospitals.⁴⁵ The acceleration of this trend was due to government maternity policy. The 1959 Cranbrook Report created a target of 70% for hospitalisation within a decade which was increased to 100% with the 1970 Peel Report.^{46, 47} The national withdrawal of community services undermined Guy's local investment and removed a feasible alternative for the local population from the table by the time of hospital and maternity rationalisation a decade later.

Public health occupied an ambiguous place under the 'classic' NHS which defined Guy's tenure. It served as a permeable boundary between statutory and voluntary services, belying the fiction of universal services provided free at the point of delivery. A mixed economy of care remained. Whilst domiciliary midwifery initially flourished, other community services did not. Guy struggled to recruit health visitors for his ambitious vision for maternity and child welfare. Undeterred, the 'introvert who loved children' opened clinics across the county through the goodwill of the British Legion, St John Ambulance, churches, working men's clubs and the British Red Cross.^{41, 44, 48} The limited financial support rarely covered costs and was on an honorary, not contractual, basis. Although attendance from locals ebbed and flowed, and specialist care was not always available – with Guy's wife Angharad, a pioneering doctor in her own right, undertaking routine clinic work on returning to work in the 1960s⁴⁹ – these clinics constituted for many in Westmorland the reality of the new nationalised health service.

By 1953 Guy declared that the home help service – modern day social care – was 'one of the most vital parts' of the NHS, limited only by 'financial stringency'. A far cry from the marketisation of the present. Financial stringency was evident as costs were met from local rates rather than general taxation, and means testing was kept as a source of income generation based on the ability to pay.⁵⁰ The service existed since 1918 to help expectant and new mothers with domestic work, but professional and public hesitancy limited its growth.^{51, 52} After 1945 it grew exponentially, caring mainly for the elderly and infirm in their own homes. Guy struggled with two difficulties. First, high employment rates in Westmorland made the arduous work an unattractive proposition. Second, the paucity of vehicles in a rural county posed a significant barrier. However, Guy recruited help on a case-by-case basis from neighbours, families, and communities.⁵⁰ It was an innovative form of traditionalism rooted in the values held by his generation of MOsH. Although this ultimately inhibited the professionalisation of the service, it was a pragmatic solution which reduced the numbers moving into expensive and oversubscribed residential accommodation.

The problems of practising public health in Westmorland led Guy to develop a spectrum of strategies, although these struggled against constraints of powers and policies beyond his control. These same dilemmas existed for his successor H. Peter Ferrer (1971-74) who briefly held the post before public health moved into the NHS in 1974. He developed new knowledge exchange partnerships with the Operational Research Department of the fledgling University of Lancaster to reconstruct the county's community nursing.⁵³ Yet, like his predecessor, he praised the 'voluntary societies who form an essential part of the life and services' of Westmorland's public health.⁵⁴ On the cusp of MOsH becoming a 'protected species' in 1974, let alone 2013, Ferrer and a new generation of public health professionals needed to reinvent these same strategies and remake networks as Area and District Medical Officers under the reorganised NHS.

CONCLUSION

The story of public health under the NHS has largely been one of persistent decline since 1948. There are a few isolated exceptions. Chief Medical Officer Donald Acheson reinvented the MOH as the DPH in 1988 to rejuvenate the profession.⁵⁵ Concurrently, maverick John Ashton was in the vanguard of the new public health movement creating contemporary philosophies and practices.⁵⁶ Notwithstanding these and others, the DPH remains a shadow of the interwar MOH. They shifted from being a 'watchdog' of the public health to a 'lapdog' in the view of historian John Welshman.¹⁷ Webster's view of MOsH being 'a dispirited rump' seems to capture the overarching process of residualising public health further within the NHS over time, rather than capturing the experiences of 1948 alone.⁷

Despite the narrative of decline and a context of constraint, the experience of Guy as a public health professional shaping solutions to the particular problems of practising public health in Westmorland, offers a series of historical reflections for the present. First, the current shape of health services in Lancashire and South Cumbria have been moulded by the past. Maternity and child welfare were historic public health concerns which

have remained despite their move into community and hospital services. This accumulation of changes has influenced the current service landscape beyond the horizons of historic public health alone. Second, the ambiguous place of local public health in a nationalised service has been compounded by the uncertainty around place. A renewed emphasis on its primacy and the potential for individual strategies to rebuild or reconstruct alternatives creates a new space for DsPH, despite the barriers constructed against them. Third, the potential of individual leadership to overcome structural constraint requires an understanding of context. Although Westmorland and Morecambe Bay did not reflect the same urban public health problems imaged by their Victorian forerunners, some local MOsH were able to work with the grain of place rather than against it, comprising more than a 'dispirited rump'. With uncertainty comes opportunity, and if the history of public health tells us that anything, it is that uncertainty is the one certainty regarding the place of public health in the NHS.

REFERENCES

(a full list available on request)

Book review

With the End in Mind

By Dr Kathryn Mannix. William Collins; 2017

Review by Jacob McSweeney, 4th Year Medical Student, Lancaster University

Dr Kathryn Mannix's Sunday Times bestseller, "With the End in Mind", lifts the veil on the frequently avoided topic of death and dying. Walking readers through her stories as a palliative care doctor, Mannix explores common themes present not only at the bedside of dying patients, but also those found within the networks surrounding them.

My fears of the unknowns of death led me to pick up Mannix's book. The lessons shared within changed my entire perception of death and dying, allowing me to put down this book feeling comforted with a new found acceptance of the inevitable. I had never expected a book about dying to have such a profound effect on the way that I live today. I now find myself having frequent conversations about death and dying with those around me, using Mannix's teachings to reintroduce our abandoned relationship with death.

Throughout Mannix's writing, she invites us to consider our end-of-life plans and teaches the reader how to discuss these with family and friends. What is important to us? Who do we want with us at the end? And where do we want to die? Alongside her teachings, Mannix leaves us with a letter template to aid in opening conversations about death and dying with those important to us, offering the first stepping stone to support us in further exploration of our fate.

The gifts of knowledge acquired through Mannix's own experience are delivered to us throughout a series of patient interactions. Through these stories, we are brought to witness a plethora of different encounters. From emergency department deaths and premature unexpected turns to hospice weddings and final goodbyes, Mannix shows us death in all lights and settings with her experienced and compassionate commentary.

Despite its common place in daily life, Mannix recognises that due to modern medicine and hospital-based care, most are yet to understand what dying looks like. She describes "the process of dying is recognisable. There are clear stages, a predictable sequence of events. In the generations before dying was hijacked into hospitals, the process was common knowledge...". To unpack this reality, Mannix offers the reader a story of a young man, fearful of his mother's approaching death. She details how this son has difficulty understanding his mother's current state, desperately questioning the medical care being provided, concerned it is hastening his mother's end. The pivotal moment of this story highlights nothing less than the importance and sheer wonder of sound communication. Mannix invites us into the conversations between a senior nurse and the struggling son. We witness the calm and reassuring approach, as she delicately yet unambiguously details the changes in breathing this family can expect to see. Without divulging too much of this conversation, I will share that the major lesson I have taken from it, is that offering any small level of certainty or understanding through education in these precious moments can be powerful medicine in itself.

Mannix continually illustrates how a carefully struck dynamic between medical interventions and conscientiously constructed conversations can relieve not only the symptoms and worries of the patient, but also the complex relations surrounding them. Mannix's wisely placed patient stories, found along the journey she takes us on, create a personable and touching recommendation for how we can hold power over how we choose to live and die.

As a detailed guide to death and dying, filled with the compassionate, empathetic, and wise take of Dr Kathryn Mannix, I encourage all those curious, or even apprehensive, of death and its complex conversations to join Dr Mannix through her memoirs and rediscover the forgotten knowledge of dying.

Correspondence to:

j.mcsweeney@lancaster.ac.uk

Passy-Muir Mishap: Learning from Near-miss Events

Charlotte Dixon, 5th Year Medical Student, Lancaster University Medical School

Dr Gareth Hardy, Critical Care Consultant, Blackpool Victoria Hospital

The Passy-Muir valve is an excellent device which allows patients with a tracheostomy to talk and communicate. Because this device is relatively specific to that of a critical care environment, there have recently been two critical incidents which may have resulted in moderate or severe harm. The aim of this short article is to raise awareness of the Passy-Muir valve, how they work and how patients who use one should be managed safely.

The Passy-Muir valve was invented by a patient, David Muir, in 1985.¹ David was diagnosed with muscular dystrophy; he eventually became dependent on a ventilator and subsequently became unable to speak. Following months of frustration at his inability to communicate, David used his scientific background to invent a speaking valve that could be used both on and off the ventilator.¹ The resultant effect for a patient being able to communicate with their friends, family and medical team providing their care, is a dramatic increase in the patient's mood, quality of life and rehabilitation.

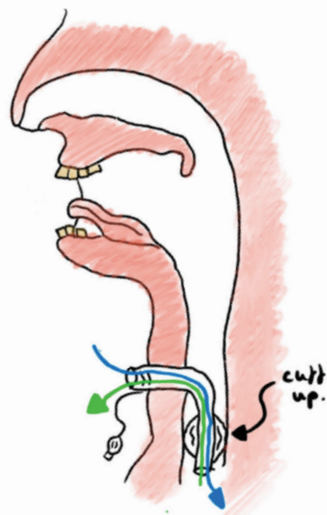
HOW DOES IT WORK?

The Passy-Muir valve works by redirecting expiration up and out through the vocal cords and mouth, allowing speech. The patient inspires through their tracheostomy and expires through their mouth. In order for this to happen, the cuff on the tracheostomy needs to be deflated. If the cuff is inflated, then the patient cannot expire; breath stacking ensues, potentially followed by respiratory arrest if the problem is not resolved. This can be visualised by the illustrations below.

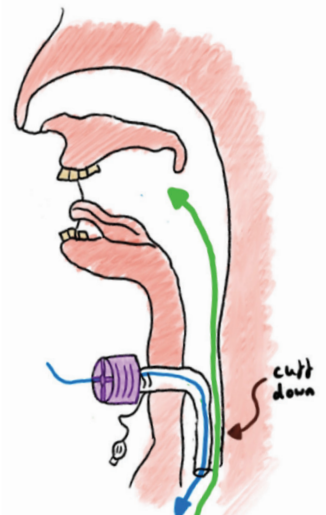
WHAT WENT WRONG?

A patient with a tracheostomy was transferred from the intensive care unit (ICU) to theatre with a Passy-Muir valve in place. During the procedure, the cuff on the tracheostomy was inflated to allow ventilation. At the end of the procedure, the Passy-Muir valve was replaced but the cuff was not deflated.

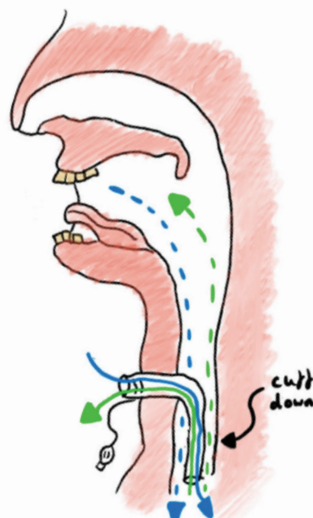
1. When the cuff is up, the patient inspires and expires through their tracheostomy. The cuff prevents air passage through the mouth and nose.



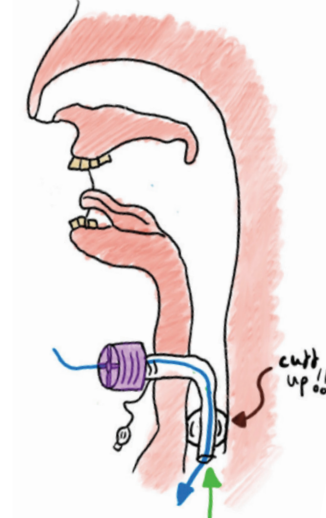
3. With a Passy-Muir valve in place, the patient can talk. This is because the Passy-Muir is a one-way valve; the patient cannot expire through their tracheostomy, so air passes up and out of the mouth.



2. If the cuff is deflated, a small amount of air can pass in and out of the nose and mouth, but most inspiration and expiration is still via the tracheostomy, so the patient is not able to talk properly.



4. If the cuff is inflated with the Passy-Muir valve in place, the patient cannot breathe out. This will quickly lead to respiratory arrest if not identified!



The patient rapidly developed respiratory distress with the patient agitated and struggling to breathe. Fortunately, one of the physiotherapists noted that the cuff was inflated; it was immediately deflated, and the patient's symptoms settled. The patient thankfully didn't come to any harm from this particular incident, but had the problem not been noticed, the patient may have gone into respiratory arrest with the worst-case scenario being death. This incident was a definite 'near-miss' in which we should learn from to ensure it does not happen again.

HOW DID THIS HAPPEN?

From this case, two potential root causes have been identified:

1. A lack of familiarity with the Passy-Muir valves and how they function amongst the theatre staff caring for the patient.
2. An inadequate handover from the ICU staff to the theatre team. The fact that the theatre staff may be unfamiliar with Passy-Muir valves makes it all the more important that patients which use one should be handed over particularly carefully.

HOW CAN WE PREVENT THIS FROM HAPPENING AGAIN?

There are three potential methods which can be used and introduced into clinical practice to minimise the chances of another 'near-miss' event, such as this one, from happening again:

1. Ensure that any ICU patients due to go to theatre have the Passy-Muir valve removed prior to being transferred to theatres (removes the ability for the error to be made). This is the most efficient and realistic method in clinical practice.

2. ICU staff could provide additional training to theatre staff around tracheostomies and Passy-Muir valves. However, even if this training takes place, it is very rare that the theatre staff manage a patient with a Passy-Muir valve in situ and therefore competency may be difficult to maintain due to lack of exposure.
3. Ensure that the ICU team are particularly careful when handing over patients going to theatre. This isn't always done as thoroughly as required, especially in an emergency.

KEY-LEARNING POINTS

- Tracheostomised patients speaking with a Passy-Muir valve should ALWAYS have their tracheostomy cuff DOWN!
- If a patient develops respiratory distress or hypoxia with a Passy-Muir valve in situ, check that the cuff is not inflated!

ACKNOWLEDGEMENTS

I would like to thank Dr Gareth Hardy for providing the illustrations used in this piece, and for his supervision and advice throughout my placement in critical care.

Correspondence to:
gareth.hardy@nhs.net
c.dixon@doctors.net.uk

REFERENCES:

1. Passy-Muir: Our history. Available from: <https://www.passy-muir.com/history>. (Accessed on 14 October 2021).

2023: THE BICENTENARY OF THE LANCASTER AND MORECAMBE MEDICAL BOOK CLUB

Established on 11th November 1823, at a meeting of clinicians in the Royal Oak public house, the Lancaster Medical Book Club (recently renamed the Lancaster and Morecambe Medical Book Club or LMMBC) is one of the oldest surviving provincial medical societies in England. Thanks to current President Dr Andy Gallagher, I have recently had the privilege of reading the original minute book of the Book Club. Purchased for the cost of 5 shillings, this book was one of the first 5 books purchased by the Book club on November 17th 1823, the others being: Chevalier's Lectures (cost 12 shillings); Cooke's Treatise on Nervous Diseases (cost £1 and 4 shillings); Haden's Formulary (cost 4 shillings and 6 pence) and Good's Nosology (cost £1 and 1 shilling).

Very few medical organisations have survived for 200 years so the Book Club committee are organising a number of special events to mark this achievement. This will include a 'Book Club Bicentenary' edition of the Morecambe Bay Medical Journal in spring 2023. As guest editor of the edition, I welcome any suitable articles that readers may wish to submit for inclusion in this edition. Ideally the article should relate to the Book Club or its members or, at least, be relevant to our local medical heritage.

I am hoping to include a feature celebrating the first female President of the Book Club, namely Dr Elizabeth B Dowell, who was President in 1952 and who, alongside her husband, was also an outstanding GP in Bentham. I am currently searching for a photograph of Elizabeth to accompany the article so please contact me on bryan.rhodes@mbht.nhs.uk if you can help with this request.

The Book Club continues to welcome new members and, although the society no longer purchases medical books on behalf of members, it continues to organise a varied and educational programme of events for a miniscule annual fee. For membership enquiries please contact Andy Gallagher on argallagher@btinternet.com

Fast-Bleeped: A to E Series – Disability: Coma

Guilherme Movio, 4th Year Medical Student,¹ Dr. Aziza Rashid, Acute Care Common Stem (ACCS) Year 2 Trainee,² Dr. Andrew Clarke, Acute and Intensive Care Medicine Speciality Trainee Year 6³

¹ Lancaster Medical School, Lancaster University, ² University Hospital Morecambe Bay (UHMBT), ³ Royal Free Hospital Trust, London

A medical educational series comprising practical instructional pieces on how to approach undifferentiated clinical problems in the acute setting

CASE PRESENTATION

You are the emergency department (ED) foundation year 2 (FY2) working in a busy district general hospital. A nurse approaches you because they are concerned about Mr K, a 44-year-old male, who presented with a sudden-onset, “thunderclap” headache. You are informed that the only past-medical history is of adult polycystic kidney disease (APKD). A computerised tomography (CT) scan of his head without intravenous contrast was ordered by one of your colleagues, but there was a hold up at the CT machine due to a concurrent major trauma emergency. They are concerned that over the last 15 minutes he has become more confused, unable to speak and has developed a reduced level of consciousness. They are worried and want you to urgently review him.

You are handed his national early warning score (NEWS) chart with the following observations:

- Heart rate (HR): 108 beats per minute (BPM)
- Blood pressure (BP): 185/97mmHg
- Respiratory rate (RR): 22 breaths per minute
- Oxygen saturations: 96% on room air
- Temperature: 37.2 degrees Celsius

You decide this patient needs urgent review. You go with the nurse to the patient's trolley in the majors cubicles and help to move him to the resuscitation room for further assessment and management.



WHAT SHOULD BE YOUR INITIAL APPROACH TO THIS PATIENT?

As you are moving to the resuscitation area, you remind yourself that with all patient encounters, there are two parallel trains of thought: diagnostic as well as managerial thinking. This patient has deteriorated in a short time whilst in the ED, which demonstrates a worrying trajectory. You also consider

that in this case, a patient presenting with headache, there are already two red flags that should put you in a heightened state of awareness: sudden onset history of presentation and a drop in consciousness level.¹ This is probably someone who needs management before, or at the very least alongside a diagnostic process because you may need to intervene quickly to avoid further deterioration.

On arrival, the patient appears to be unresponsive to your greetings. Signs of life are present; the patient is breathing but in a laboured fashion and his pulse is present and regular but fast. All of this worries you. You ask the nursing team to immediately find a senior doctor to attend with you. You remind yourself of the importance of a systematic approach. You begin your ABCDE assessment according to advanced life support (ALS) guidelines.²

(A)irway: you look, listen, and feel for signs of breathing. You apply a non-rebreathe oxygen mask attached to 15 litres per minute of oxygen and notice that although the mask is misting, you hear snoring (stertor). There is no stridor or swelling around his mouth. He is not speaking in response to you, nor does he respond to a painful stimulus applied at the supraorbital notch. You are worried that this patient is at least partially obstructing his airway and you identify that with this level of consciousness there may be a threat to losing the airway patency further.³

You begin to think that you may need specialist help to support his airway. The ED registrar arrives and immediately walks to the head end of the trolley and supports the patient's airway with a jaw thrust manoeuvre. The patient's snoring stops. The nurse grabs an oropharyngeal airway (OP), and the ED registrar inserts it into the airway. He also provides some suction to remove oral-pharyngeal secretions. High-flow oxygen is then applied via a non-rebreathe mask. Mr K appears to be breathing more easily and you move on with your assessment.²

(B)reathing: You observe the monitor and check Mr K's RR and pattern. His RR is 23 breaths per minute, and he appears to be breathing irregularly. Oxygen saturations are 98% on high-flow oxygen. There is no use of accessory muscles of respiration and there is an equal chest rise and fall. The trachea is central. On auscultation of the chest there are normal breath sounds throughout the precordium with no added sounds such as crepitations or wheeze. There is a resonant percussion note which is equal bilaterally.² His irregular breathing pattern along with clear alteration in consciousness level points to an intra-cranial problem.⁴

(C)irculation: There is no intravenous (IV) access yet, so you ask the nurse to prepare to insert a large bore intravenous cannula and to send off a full blood count, urea, electrolyte, liver, and clotting profile as well as a c-reactive protein level. You also ask for a venous blood gas (VBG) to be run so that you have some useful results available immediately. Whilst this is taking place, you auscultate for heart sounds, which are normal. You feel the patient's hands and feet and are reassured that they are warm. The peripheral and central capillary refill time (CRT) is 3 and 2 seconds respectively. The patient has a pulse of 110

beats per minute and is regular. The BP is 180/125mmHg. You are worried about the hypertension and ask the nurse to show you how to automatically cycle the BP every 5 minutes on the monitor for continuous up-to-date readings. You recognise that the tachycardia and hypertension signify a syndrome of sympathetic nervous system overactivity.⁴

(D)isability: You already know there is a decreased consciousness level. You would like to quantify this so that the team can objectively track any improvement or deterioration in the level of consciousness over time. There are many ways to do this, for example, you could apply the alert, verbal, pain and unresponsive (AVPU) scale and note that the patient is (U)nresponsive because they do not respond to painful stimulus applied at the supra-orbital notch.⁵ The Glasgow coma score (GCS) is made up of a score for (E)ye, (V)erbal and (M)otor response. It is only validated in traumatic head injury but is commonly used for other purposes in hospital.⁶ To start to assess the GCS you look at the patient's eyes, they are closed and do not open to voice or painful stimulus. You score the patient as E1. The patient has not made any verbal response either so therefore you score V1. You note that the patient did not raise their arms to their head when applying your supra-orbital pressure – he is therefore not localising to pain. You perform a painful stimulus peripherally at the fingernail bed to look for a flexion-withdrawal, an abnormal flexion, or an abnormal extension response. When compressing a nail bed of the right hand there is no response, but on the left side the patient extends so you score the patient M2. You examine the patient's pupils; the right side is dilated to 5mm and is not responsive to light. Given you have identified some lateralising signs (a sign present on one side of the body not seen on the other) you suspect that the cause of this patient's coma could be a structural, intra-cerebral problem.⁷ You ask the ED registrar how to organise a CT head urgently. Nevertheless, you remind yourself of anchoring bias, and the importance to stay open to other potential diagnoses.⁸ For this reason, you continue your systematic assessment by quickly scanning the patient's ED prescription chart to check whether any sedative or analgesic drugs were given to the patient before their GCS change. He was only given 1 gram of paracetamol 1 hour ago. You would also like to get some collateral history from someone who knows Mr K to reassure yourself that there was no chance of an accidental or intentional overdose of medication before admission. You also specifically check the VBG for the venous blood glucose level because you recognise that hypoglycaemia can be a cause of reduced consciousness level.⁹ The patient's venous blood glucose is 5mmol/L.

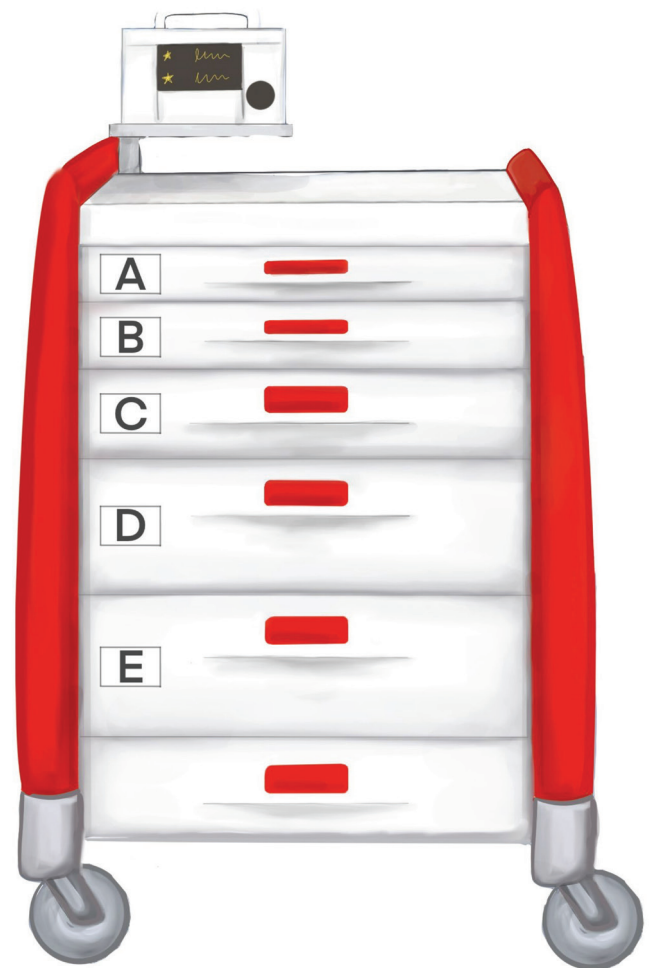
You quickly re-evaluate the airway, breathing and circulation. Your registrar is supporting the airway, the saturations are appropriate, and the circulation remains the same.² You continue to assess (E)xposure: The nurse takes a temperature, and it is 37.3 degrees Celsius. You ask for the door to be closed to ensure patient dignity whilst you and your team begin exposing the patient's body and looking for any additional signs. There are no signs of bleeding, abdominal guarding, or rashes on the body.

As you begin to wrap up your assessment, the intensive care registrar arrives, and you deliver a handover in a situation, background, assessment, and recommendation (SBAR) fashion:

This is a 44-year-old male, who presented to the department with a sudden-onset, thunderclap headache with a past medical history of polycystic kidney disease. Whilst he awaited his CT head scan, he deteriorated with reduced

consciousness level. I am not sure of his functional baseline, but I will have a look at his general practice records on the computer system. I suspect he is not maintaining his airway, so my colleague is supporting it with a jaw-thrust, and we are giving high-flow oxygen. He is tachycardic and a hypertensive. He is unresponsive with a GCS of 4 with abnormal extension of his left arm. His right pupil is dilated and unresponsive to light. I'm worried there is an intracranial cause for this, I think he needs airway support and an urgent CT scan of his head.

The intensive care registrar assesses Mr K and decides that urgent airway management is needed. He performs a rapid sequence induction (RSI) to secure the airway with a tracheal tube before transporting the patient to CT. The radiologist confirmed in his report that there was a large subarachnoid haemorrhage. The intensive care team take over the care of Mr K and start neuroprotective measures and contact the local neurosurgical centre.



What are the differentials of a patient with an acute reduced consciousness level or coma?

Common causes of reduced consciousness level include hypoxia, hypercapnia, analgesia/sedative drugs and cerebral hypoperfusion.² Coma can be defined as “an eyes-closed state of deep unconsciousness with an inappropriate response to stimulation that lasts for a prolonged period of time”.¹⁰

Coma can be divided clinically into various phenotypes (see table 1):

Coma Types	Conditions
Coma with focal or lateralising features e.g., fixed gaze palsy, or hemiplegia.	• Cerebrovascular event (ischaemic or haemorrhagic) • Trauma • Space occupying lesion
Coma without focal or lateralising features but with meningism e.g., neck stiffness	• Meningo-encephalitis • Subarachnoid haemorrhage
Coma without focal/ lateralising features and without meningism.	• Toxins • Organ failure • Endocrine • Seizures • Pseudo-coma

Table 1: The various coma types and the conditions that tend to be associated with such.¹¹

What are the general principles around assessing a patient with decreased consciousness level and coma?

Always seek help with a patient with acute decreased conscious level or coma. These patients may need urgent airway support. Without this, rapid hypoxia can follow.¹² An ABCDE assessment and full neurological examination is vital. The main principles^{2,13} in the neurological examination of a comatose patient are:

- An assessment of the level of consciousness e.g. use of the GCS (table 2)
- Pattern of breathing
- Pupillary size and assessment of pupil reactivity
- Eye movements and vestibular ocular response
- Motor responses such as abnormal posturing (decerebration and decortication)
- Meningism (neck stiffness, photophobia)
- Administered drugs e.g., sedative agents, opiates.
- Past medical history

Initial investigations include full set of bloods and VBG, looking for electrolyte and acid-base derangements. A non-contrast CT of the head is also an urgent investigation, firstly to look for acute bleeding, but also any evidence of space occupying lesions or suggestion of raised intra-cranial pressure (ICP).¹³

How can we assess consciousness level using the Glasgow Coma Score and AVPU?

There are multiple scores and scales available to assess consciousness but the most widely known and used are the GCS and AVPU scale. AVPU is used as a quick and simple way to assess brain perfusion and conscious level. AVPU is the acronym for awake, verbal, pain and unresponsive.⁵

An alternative and commonly used scoring system is the GCS which was initially developed by Teasdale and Jennett in 1974 and has since been subjected to multiple reviews and updated approaches to improve its reliability.⁶ The GCS helps in assessing the severity of brain dysfunction on initial presentation which then helps in decision making. Repeated assessments of the patient's score can demonstrate injury progression and helps with prognostication. The components of the GCS are shown in the table below.

Due to its common and widespread use, it is important to understand some of the problems and limitations of this scoring system as we use it. Although it is usual for health-care professionals to present GCS as a single score, this is not the intended way nor is it reliable to be presented as such. This is because the same GCS's but with points scored for different components of the score (for e.g., E1V1M2 vs E2V1M1) will have different mortality rates.^{6,14} GCS is also commonly used in settings where reduced or loss of consciousness is affected by other factors such as drugs, alcohol, and other sedatives where its use is not validated. It is also important to note that GCS is not applicable for paediatric patients and so in such cases, a structured clinical assessment with the AVPU score should be used.^{6,14}

What are the different types of intracranial haemorrhages and key features?

Intracranial bleeds are typically divided into four categories: epidural, subdural, subarachnoid and intraparenchymal haemorrhage.¹⁵

Epidural haemorrhage usually happens following a blunt force head trauma or penetrating head injury. Most commonly patients sustain a skull fracture (85-95%) with concurrent damage to the middle meningeal artery. This results in bleeding into the potential epidural space between dura and inner skull. Although usually arterial, venous bleeding happens in one third of all cases, commonly in paediatric patients. The dura is tightly associated to the inner skull, meaning it takes time for an epidural haematoma to develop in size, this explains the classic presentation of an initial loss of consciousness at the time of injury, followed by a lucid interval before the haematoma is of a size that will cause subsequent neurologic deterioration.¹⁵

Subdural haemorrhage occurs when a high force impact

Eyes (1-4 points)	Verbal response (1-5 points)	Motor response (1-6 points)
Open spontaneously (4)	Orientated (5)	Follows commands (6)
Open to voice (3)	Confused (4)	Moves to localised pain (5)
Open with painful stimulus (2)	Inappropriate words (3)	Flexion to withdrawal from pain (4)
Eyes not open (1)	Incomprehensible sounds (2)	Abnormal flexion (3)
	No sounds (1)	Abnormal extension (2)
		No response (1)

Table 2: Summary of the GCS.⁶

head trauma causes significant brain motion within the skull. This then causes the vessels traversing from brain to skull to stretch and rupture, resulting in bleeding into the subdural space. A subdural haemorrhage happens in 5-25% of significant head injury with the incidence increasing with age. In older patients with cerebral atrophy the traversing vessels are more vulnerable and even mild head injuries can result in significant subdural bleeding. Some causes of subdural haemorrhage include head trauma, coagulopathy, and vascular abnormality rupture.¹⁶

Subarachnoid haemorrhage (SAH) on the other hand can be divided into traumatic and atraumatic haemorrhage. An atraumatic bleed, as the name suggests, is when the bleeding occurs spontaneously and would fall under the definition of stroke (accounting for 5% of all cases of stroke). Atraumatic SAH can be further categorised into aneurysmal and non-aneurysmal. Typically, patients present complaining of a worst headache of their life or the textbook, thunderclap headache.¹⁵

Finally, intraparenchymal haemorrhage can be defined as bleeding into or within the brain parenchyma. It accounts for 10-20% of all strokes and classically presents with a history of stroke symptoms. The most common cause of non-traumatic intraparenchymal haemorrhage is hypertension causing spontaneous intra-cerebral haemorrhage. Other causes include trauma (penetrating or non-penetrating), arteriovenous malformation, coagulopathy, trauma, vasculitis, aneurysmal ruptures, tumour, or venous outflow obstruction.¹⁵

How are intracranial bleeds managed?

Management of patients with suspected or confirmed intracranial bleeds always begin with ensuring a secure airway, breathing and circulation. Intravenous access should be secured. The patient's GCS should be continuously monitored and any deterioration in neurological status or drop of GCS to less than 8, should prompt you to consider intubating the patient.^{6,15} You should then immediately consult the neurosurgical team in the region regarding definitive management of the bleed.

Epidural haemorrhages are managed by evacuating the haematoma and stopping further bleeding. However, small haematomas are typically managed non-surgically and monitored for resolution.¹⁵

Like epidural haemorrhage, subdural haemorrhages can be managed surgically with decompression via burr hole. Other approaches include craniotomy or twist drill hole. Management decisions depend on the size, location, resultant neurological injury, and patient factors like past medical history and baseline functional status. Patients with complex medical history and poor baseline function are at higher risk of surgical complications and therefore a non-surgical, conservative approach to management may be taken. Such approaches may be repeating imaging to monitor progression, stopping anticoagulation and reversal where necessary, platelet transfusions in cases of platelet dysfunction and a good control of blood pressure. Patients should also be repeatedly assessed for any neurological deterioration which might prompt change in management.^{15,16}

Definitive management of SAH differs depending on its cause. In aneurysmal SAH, initial medical management includes the use of nimodipine to prevent vasospasm. Emergency measures to alleviate raised ICP can be used such as mannitol or hypertonic saline.¹⁷ Sometimes it may be

necessary to insert an external ventricular drain to decompress the cerebral ventricles and lower ICP. This device also allows direct measurement of ICP which can help guide neuro-intensive care management. As with subdural haemorrhage, repeated imaging to assess improvement and reversal of anticoagulation or antiplatelet use should be done where applicable. Management of non-traumatic SAH varies based on its aetiology which could be clipping or coiling of an aneurysm or treating an arteriovenous malformation.^{15,17}

Finally, with intraparenchymal haemorrhage, initial management should be as all other bleeds with the aim to stabilise the patient first and foremost.^{15,17} In certain cases, aggressive surgical decompression is needed but in others, a craniectomy may be performed instead to help with cerebral swelling. Other options include the different catheter-based dissolutions of haemorrhage.¹⁵

Outcome of case

The patient was intubated and ventilated following an RSI. Due to the suspicion of an intra-cerebral catastrophe, neuroprotective measures to limit escalating ICP were initiated.¹⁸ It is advised that patients should be nursed in a head up position and endotracheal tube ties around the neck should be avoided to encourage venous drainage via the jugular veins. Drugs should be administered to ensure deep sedation to limit cerebral oxygen demand and prevent any seizures or patient actions that could spike ICP e.g., endotracheal tube biting. A considered ventilation strategy should be adopted to avoid hypoxia and/or hypercapnia. PaCO₂ should be controlled to within the normal ranges because high PaCO₂ would cause cerebral vasodilatation and worsen ICP. A mean arterial pressure (MAP) should be agreed to ensure an adequate cerebral perfusion pressure. However, in an unsecured aneurysm there is a risk of ongoing/further bleeding, so a careful balance must be struck.¹⁸

A CT head scan without contrast demonstrated blood within the arachnoid space consistent with SAH. Following this, a contrast scan was performed which revealed an anterior communicating artery aneurysm. ADPKD is a common autosomal dominant genetic disorder causing progressive renal failure. The disease is characterised by multiple cysts that form within the cortex of both kidneys, but cysts can also be seen in other organs such as the liver and pancreas. There is also an association with cerebral aneurysm formation.¹⁹

A decision was made by the critical care team that transfer to a tertiary neurosurgical centre was required. The team acted quickly to ensure provision of portable equipment including a ventilator, oxygen supply and monitoring devices. They also needed to ensure that there were enough ongoing sedative drugs with a back-up supply of propofol 1% and fentanyl continuous intravenous infusions. The intensive care registrar inserted an invasive arterial line to allow continuous blood pressure monitoring and a means for easy blood draw for serial blood gas analysis. A urinary catheter was also inserted before transfer for urine output monitoring and to manage the patient's continence.

On arrival to the tertiary unit, endovascular coiling of the aneurysm was undertaken by the interventional radiology team.¹⁷ On neurocritical care, the team started regular nimodipine via a nasogastric tube; which has been shown to reduce the risk of secondary vasospasm that can cause delayed cerebral ischaemia.¹⁷ There was close haemodynamic and neurological monitoring and after several

days, the critical care team weaned the patient from his sedation. Unfortunately, the patient had sustained a significant neurological injury and never reached a point whereby the critical team could guarantee that he would maintain his own airway and ventilatory status post-extubation. Despite no sedation the patient remained completely tolerant of the endotracheal tube. Brain stem death was confirmed by two of the consultants on the critical care unit. The family were closely supported by the team, and the specialist nurses in organ donation (SNOD) were asked to speak to the family about the possibility of organ donation. The family agreed to stop ongoing life support and decided to donate Mr K's organs.

DISCLAIMER

The article is provided as a study and revision aid and is not intended to be a substitute for formal medical education. It is important to always seek senior support in clinical practice and never work beyond your capabilities. The Morecambe Bay Medical Journal will assume no liability to any person or entity with respect to any loss or damage related directly or indirectly to any information provided through the written articles (including any action or inaction taken or not taken because of such information).

ACKNOWLEDGEMENTS

I would like to thank Zuzanna Nowinka, a final year medical student at Lancaster University for producing the brilliant illustrations for this issue of Fast-Bleeped.

Correspondence to:
g.movio@lancaster.ac.uk

REFERENCES

1. Do T, Remmers A, Schytz H, *et al.* Red and orange flags for secondary headaches in clinical practice. *Neurology* 2018;92(3):134-144. Available from: <https://doi.org/10.1212/WNL.0000000000006697>
2. Resuscitation Council UK. The ABCDE approach. 2021. Available at: <https://www.resus.org.uk/library/abcde-approach/> (accessed on 5th January 2022)
3. Lloyd G. Basic airway management. RCEM Learning. 2020. Available from: <https://www.rcemlearning.co.uk/reference/basic-airway-management/#1568197904703-5494605c-143e> (accessed on 23rd June 2022).
4. Dinallo S, Waseem M. Cushing reflex. StatPearls. 2022. Available from: <https://pubmed.ncbi.nlm.nih.gov/31747208/> (accessed on 23rd June 2022).
5. Romanelli D, Farrell MW. AVPU Score. StatPearls. 2022. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK538431/> (accessed on 23rd June 2022)
6. Teasdale G. Forty years on: updating the Glasgow Coma Scale. *Nursing Times* 110;42,12-16. Available from: <https://www.nursingtimes.net/clinical-archive/accident-and-emergency/forty-years-on-updating-the-glasgow-coma-scale-10-10-2014/> (accessed on 23rd June 2022)
7. Caceres J, Goldstein J. Intracranial hemorrhage. *Emerg Med Clin North Am.* 2012;30(3):771-794. Available from: <https://doi.org/10.1016/j.emc.2012.06.003>
8. Saposnik G, Redelmeier D, Ruff C, Tobler P. Cognitive biases associated with medical decisions: a systematic review. *BMC Med Inform Decis Mak.* 2016;16(1). Available from: <https://doi.org/10.1186/s12911-016-0377-1>
9. Cryer PE. Symptoms of hypoglycemia, thresholds for their occurrence, and hypoglycemia unawareness. *Endocrinol Metab Clin North Am.* 1999;28(3):495-500. Available from: [https://doi.org/10.1016/s0889-8529\(05\)70084-0](https://doi.org/10.1016/s0889-8529(05)70084-0)
10. Huff J, Tadi P. Coma. StatPearls. 2021. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK430722/> (accessed on 23rd June 2022).
11. Nickson C. Coma DDX. Life in the Fast Lane. 2022. Available from: <https://litfl.com/coma> (accessed 23rd June 2022).
12. Aldrich E, Biniek R, Hacke W. How to approach an unconscious patient. *Neurocritical Care.* 1994;23-35. Available from: https://doi.org/10.1007/978-3-642-87602-8_3
13. Nickson C. Examination of the unconscious patient. Life in the Fast Lane. 2022. Available from: <https://litfl.com/examination-of-the-unconscious-patient/> (accessed on 23rd June 2022)
14. Nickson C. Glasgow Coma Scale (GCS). Life in the Fast Lane. 2022. Available from: <https://litfl.com/glasgow-coma-scale-gcs/> (accessed on 23rd June 2022)
15. Tenny S, Thorell W. Intracranial hemorrhage. StatPearls. 2022. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK470242/#:~:text=Intraparenchymal%20hemorrhage%20is%20bleeding%20into,infection%2C%20vasculitis%2C%20and%20trauma> (accessed on 23rd June 2022)
16. Meagher R J, Young WF. Subdural hematoma. Emedicine.medscape.com. 2022. Available from: [https://emedicine.medscape.com/article/1137207-overview#:~:text=A%20subdural%20hematoma%20\(SDH\)%20is,of%20traumatic%20intracranial%20mass%20lesion](https://emedicine.medscape.com/article/1137207-overview#:~:text=A%20subdural%20hematoma%20(SDH)%20is,of%20traumatic%20intracranial%20mass%20lesion) (accessed on 23rd June 2022)
17. Becke T. Subarachnoid hemorrhage treatment & management. Emedicine.medscape.com. 2018. Available from: <https://emedicine.medscape.com/article/1164341-treatment#d12> (accessed on 23rd June 2022)
18. Asehnoun K, Roquilly A, Cinotti R. Respiratory management in patients with severe brain injury. *Crit Care.* 2018;22(1). Available from: <https://doi.org/10.1186/s13054-018-1994-0>
19. Kanne J, Talner L. Autosomal dominant polycystic kidney disease presenting as subarachnoid hemorrhage. *Emerg Radiol.* 2004;11(2):110-112. Available from: <https://doi.org/10.1007/s10140-004-0357-0>

Queen's Jubilee tree planting, picture courtesy of Greg Lambert and Beyond Radio.



PREPARATION OF MANUSCRIPT FOR EACH CATEGORY

Guest Editorials

Guest editorials are non-peer reviewed articles invited by the editor, about a topical issue. These are journalistic in format, but evidence based.

Letter to Editor

Letters to the editor are invited in response to the published articles. If there is a differing view or additional information they will be reviewed by the authors and the response agreed with the editor prior to publication.

Original Article

This is the most common type of article. It includes full reports of data from research. It is sometimes labelled Original Article or Original Research Article. Word count up to 3000 words.

The original article format is suitable for many different categories of studies. It must include a structured abstract; introduction; methods; results and discussion; and conclusions/recommendations. Acknowledgement(s) and references are essential. References should be limited to a maximum of 30 or the editor will create a note at the end of article to state "full list of references available on request". This policy will be reviewed once MBMJ is fully online.

Service Development or Innovation (to include clinical audit)

This category encompasses original research work that can be used to guide clinical decision making, policy within healthcare, education, and audit cycles. These articles should be between 2000-3000 words and may follow a very similar structure to original articles, depending on the focus. If the project is clinical audit, the authors should include information regarding the audit cycle, recognised practice standards, benchmark figures and clinical governance issues.

The MBMJ has utilised 'service developments' for any article covering developments within organisation or department. This could be in relation to current events such as CV19.

Commentary

This section is where authors can present their viewpoints on particular studies or concepts. These articles should be based on constructive criticism and should be evidence based. These articles should encourage discussion on important scientific concepts. Authors are normally invited to this section by the editor. Word count should be 3000 words +/- 10%.

Clinical Review Articles/Clinical Update

Review articles are to be submitted to the editor for initial approval and appropriateness. Student Special Study Modules from Lancaster University are considered in this section. Articles should be of interest to readers of the wider medical field. They should be supported by relevant recent updated guidelines. Word count should be 3000 words +/- 10%. References should be kept to a maximum of 30.

Case Report

Case reports are considered an important educational message for the reader. They report specific instances of interesting medical scenarios. Relevant investigations such as imaging, electrocardiograms, and blood results should be included where appropriate. Patient consent must be included and images have to be in keeping with copyright policy. Limited to 1500 words, or as per editor discretion.

Medical Education

Medical education articles should be submitted to the student editor. Can include interesting cases, radiology findings and other educational articles. Word count at the discretion of the student editor.

Perspective Pieces

These are academic reviews of certain concepts or ideas prevalent in a speciality. These are usually essays that present a personal point of view and critique the subject. A perspective piece can be a review of a single multiple related concepts. Abstract not required. MBMJ Oxytocin issue Vol 8(10) Summer 2021 has examples. Word count should be 3000 words +/- 10%.

Medicine and Society

These articles cover social aspects of medicine and health care, including medical sociology, anthropology, history, and ethics. This section is also used to highlight development of national and local NHS healthcare history and policies.

Materia non-medica

Personal narrative, MBMJ news, UHMB news, Obituary, Biography

Book review: The aim of a book review is to provide insight and opinion on recently published scholarly books. Book reviews are also relatively short articles (1000-1500 words). Book reviews are a good publication option for early career researchers as it allows the researcher to stay abreast of new literature in the field, while at the same time, adding to their publication list. Books are usually suggested by the editors.

SUMMARY SUBMISSION PREPARATION CHECKLIST

As part of the submission process, authors are required to check off their submission's compliance with all of the following items, and submissions may be returned to authors that do not adhere to these guidelines.

- Name and title of all authors
- Qualification of all contributors
- Contact email of main author
- Any images to be accompanied by copyright consent or otherwise
- Keywords and abstract as appropriate
- Tables/figures to be labelled and legend provided
- Patient consent added to all images
- Conflict of interest declared for each author
- References in the Vancouver style
- Instructions to Authors as published in every issue have to be adhered to
- The word count can be varied depending on the article and the discretion of the editor.

MORECAMBE BAY MEDICAL JOURNAL

EDITORIAL	1
OBESITY – A KEY ISSUE IN PUBLIC HEALTH <i>Adele Quinn</i>	2
BOOK REVIEW – IN STITCHES: THE HIGHS AND LOWS OF LIFE AS AN A&E DOCTOR	4
SPEEDING UP HEAD AND NECK CANCER ASSESSMENT AND TREATMENT INITIATION: WHAT CAN WE DO? <i>Daniel J Taylor, Shadaba Ahmed</i>	5
CASE REPORT: DELAYED ONSET OF SEVERE ACUTE FACIAL SWELLING FOLLOWING BIMAXILLARY OSTEOTOMY SURGERY <i>Matthew Gribbon, Melissa Loh, Miles Duncan</i>	9
BLASTIC PLASMACYTOID DENDRITIC CELL NEOPLASM TRANSFORMED FROM ESSENTIAL THROMBOCYTHEMIA WITH LEUKEMIC PICTURE AND NO SKIN INVOLVEMENT – A CASE STUDY <i>Muhammad Mansoor Baig</i>	12
PROBLEMS OF PRACTISING PUBLIC HEALTH IN WESTMORLAND: JOHN A. GUY AS COUNTY MEDICAL OFFICER, 1946-70 <i>Michael Lambert</i>	14
BOOK REVIEW – WITH THE END IN MIND	17
PASSY-MUIR MISHAP: LEARNING FROM NEAR-MISS EVENTS <i>Charlotte Dixon, Gareth Hardy</i>	18
FAST-BLEEPED: A TO E SERIES – DISABILITY: COMA <i>Guilherme Movio, Aziza Rashid, Andrew Clarke</i>	20

Spreading Information – Gathering Interest