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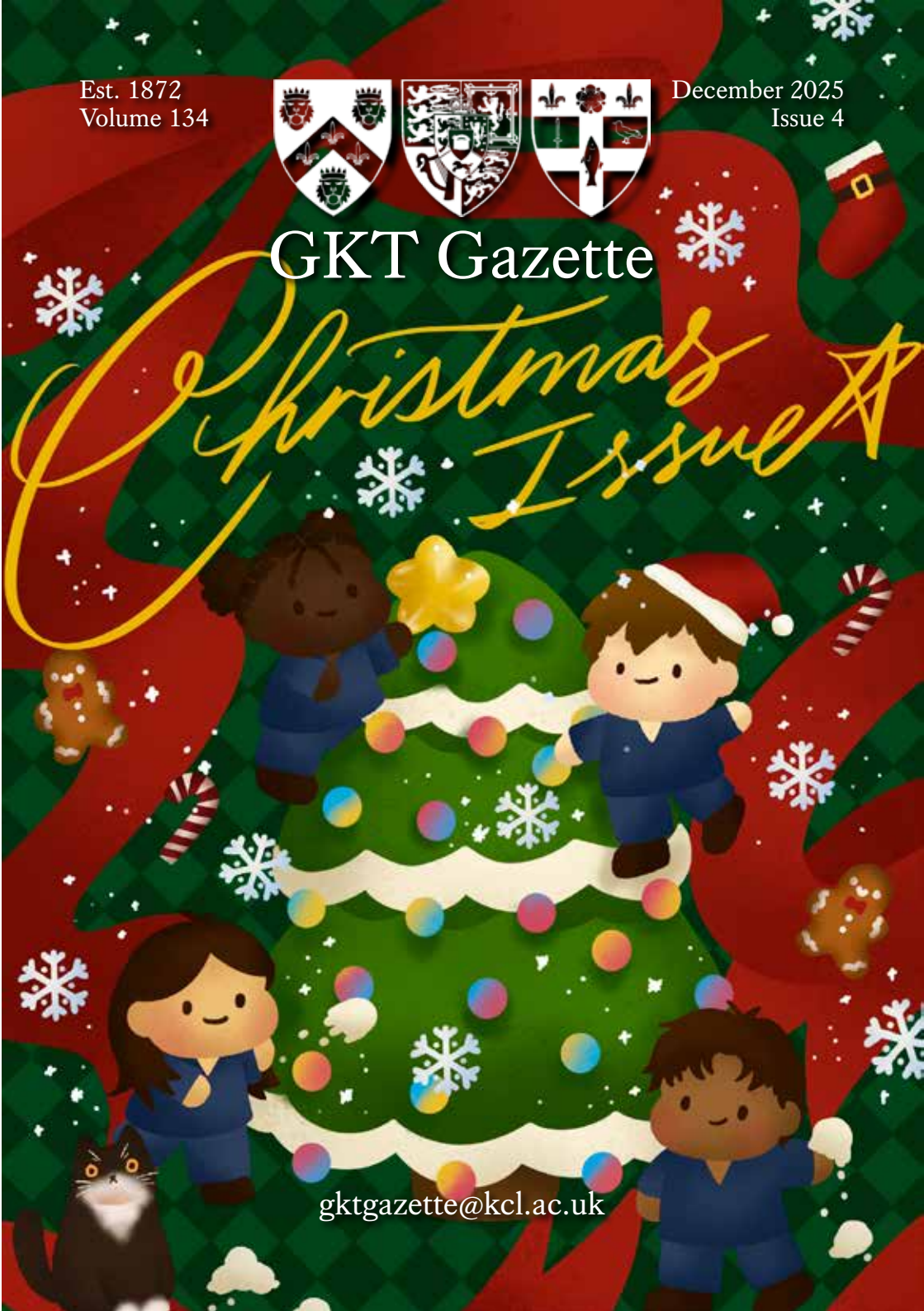
Christmas Issue



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Editor - Morgan Bailey **MBBS4**

Dear Readers,

Welcome to the fourth issue of Volume 134 of the Guy's, King's College and St Thomas' Hospitals Gazette.

This issue marks a special occasion: our first edition in time for Christmas. It also means we are currently producing two issues a term of GKT's one and only publication.

This edition is packed full of interesting reads from across the medical school but also further afield. I am glad to report that students from the biosciences sphere of GKT are coming to contribute to our multi-disciplinery publication. If you are studying a health-related or science-based degree that is affiliated to GKT, do get in contact and contribute.

In other news, I have finally settled back into the rhythm of medical school. It has been great getting back onto the wards and learning from patients. And as I write this, I have also just completed show week for UCL's Sister Act in the Bloomsbury Theatre playing Keys 2. What was an incredibly busy two months and a particularly intense week of 'tech' culimnated in three shows featuring music by Alan Menken (the same mind behind Hercules, Little Mermaid and Aladdin to name but a few). It has been incredible to return to my intercalating alma mater and make music with such a great crowd of people.

Back on topic, I hope you find something of interest in these pages and that the work featured inspires you to contribute to the next edition in 2026.

Have a wonderful Christmas break and enjoy the festive season.

Dare Quam Accipere.

Yours,

The Editor

We welcome submissions from anybody affiliated with GKT to be published in subsequent issues (email us at gktgazette@kcl.ac.uk).

If you are a student and would like to join the Editorial Committee to be involved in crafting future editions, keep an eye out on our Instagram (@thegktgazette) regarding our recruitment rounds.

Deputies' Digest

Deputy Editors - Noor Amir Khan **MBBS4** and Naim Ghantous **MBBS3**

Dear Readers,

As a wise fictional northman once said, winter is coming – well – honestly it has very much arrived, and we here at the Gazette have begun our battle of attrition with the shuddering December winds. Solace is brought however, with the perennial festive shine of London, whether that's the radiant glow of Oxford Street, the chestnut smells of Christmas markets, or the familiarity of your local pub on Christmas quiz night, warmth is everywhere to be found in this seemingly bleak hour. Above all, what better way to shelter yourselves and cozy up than by grabbing a copy of the Gazette and indulging in the frankly magnificent talents of our student cohort at GKT.

As always dear Readers, your editorial team would like to extend our warmest welcomes to you, for this special festive edition of the GKT Gazette.

Winter poses a bittersweet period for the writer or the creative in general, ensconced in our bedrooms and hidden from the harshness outdoors, it only seems logical that the entire magnitude and depth of our life's ideas and conflicts come cascading beautifully onto the page. In reality, many of us are intimately aware of the dreaded 'block' that smothers the season. When the darkness of your morning commute appears identical to the darkness of your evening trawl home, and exams loom like hexes in the wood, it understandably becomes quite difficult to focus on the human condition. Nonetheless, we sincerely hope that the pieces in this edition come to spark that inspiration, and in these trying times, know that the community at the Gazette are always here for support.

Our arsenal of features, the arts, sciences, sports, opinion and dental pieces are as strong as ever, tackling the issues of today and tomorrow, whilst channelling the innate creativity and talent that emanates across our student body. Rumour also has it that our newly expanded games section has offered yet another angle of mental challenge and quick thinking!

As always, we would like to thank the wonderful team here at the Gazette for their unwavering diligence and compassion, and for making sure that GKT voices are heard.

Please do not hesitate to contact us if you would like to contribute to the journal, or whether you have any ideas or questions.

We hope you enjoy this issue!

Yours Sincerely,
Noor Amir Khan and Naim Ghantous
Deputy Editors in Chief

If you would like to contact the editor, please email gktgazette@kcl.ac.uk

Letters to the Gazette

Want to contact the Editor? Have a short-form reply to any of the articles in this issue? Want your opinion heard? Get in touch to contribute to our letters section.

Photo: Guy's Gazette Volume 110 No 2466 - July 1997

Features

Covers and Photos

All photos are taken by our editorial committee or royalty free stock images unless otherwise stated.

Our cover is a fantastic illustration by Christine Yue MBBS3, depicting a Christmas tree surrounded by students in scrubs.

Our back cover is a similarly fantastic illustration by Claire Soo Jeong Han MBBS4. It depicts the Keats statue in the alcove on Guy's.

A Conquest Christmas

Jayne Tan, Emma Inn Lee, James Baldwin **MBBS5**

Seven months ago, the first group of residents made their way to the quiet seaside town of Hastings, just a short train ride from central London. Some had been excited for the move, whilst those less fortunate in their ballot numbers had already started making plans to spend every weekend back in the city.

The rooms at The Oaks may have been small, lacking natural light, and often plagued with silverfish, but in the eight weeks that followed, somewhat unlikely friendships blossomed amidst the bedbug problem in Flat E, creating a tight-knit community that never went a week without events. We walked the battlefield of 1066 together, spent every Tuesday night at our favourite bar, TinTin's, broke PB's week after week at the Hastings parkrun, and even celebrated two birthdays which perfectly coincided with Hastings' own Pirate Week.

When we parted ways at the end of the block, a question remained: how would the continuity line survive a Winter in Hastings with the Summer group gone? In many ways, this article is a love letter to our Summer friends - a means to update them on all of the things we have discovered since our return to the seaside, and all the activities we have planned whilst they enjoy their elective. We hope they might get to enjoy the same Hastings when they return.

As Summer turned to Autumn and the continuity 6 returned, we were surprised to find that our accommodation had been generously upgraded to seafront properties that boasted large sea-view rooms complete with a kitchen island, two ovens, and an in-unit washer and dryer. As if this wasn't enough to offset the gaping hole left in our hearts by our friends from The Oaks, our new flat was situated just a short walk from the town centre.

Living in the town centre has opened our eyes to a whole new Hastings we didn't know existed when we were at The Oaks. Our first big event was the Hastings Bonfire Parade in October, where we watched thousands of people gather on the seafront to watch our Programme Administrator drum in the parade, followed by the most insane pyrotechnic show any of us have ever witnessed, and the lighting of the A21 effigy. Our Summer friends, if you are reading this, will be pleased to know that the A21 is now the smoothest road in the South East, making for a very pleasant drive back into London, unless you are stuck behind a speed restricted vehicle.

When Storm Amy put a temporary hold on outdoor activities, we celebrated yet another birthday, this time in Battle, and signed up for the annual Conquest Hospital pumpkin carving competition. Unfortunately, we did not win this event, although we like to think that our design was a secret crowd favourite. We have also pushed ourselves outside of our comfort zones and tried maybe a little too hard to integrate into the existing community of Hastings as we found ourselves attending the first birthday of a nearby pottery studio. Despite being one of our most awkward social interactions, we did get to try free babka from a local bakery so we do count that as a win.

We have since spent our weekends strolling along the beach, sometimes spotting our Programme Administrator practicing his drumming in Bottle Alley, and taking turns exploring Old Town and St Leonard's in more depth. Our daily walk to and from the bus stop (and the gym) helped us to curate a list of must-try restaurants and cafes before the block ends, and those who follow our instagram page (@gkthsoc) may have already been following along with our new discoveries and reviews. Here is our coffee shop and restaurant guide so far:

Name	Comments	Rating /10	Is it worth your NHS Bursary?
Half Man! Half Burger!	- Delicious burgers - Get the regular fries > cajun - Also do great desserts	8.5	Yes
Maker + Baker	- En-route to the bus stop - Our current favourite coffee shop - Incredible pastries and cakes - Very friendly - No seating	8	Yes
Good Grades	- Very friendly barista - Good atmosphere - Great coffee - Dog friendly - Also not good chai	8	Yes
Botanica	- Our post-parkrun ritual - Delicious cakes and pastries - Maybe the only place that does a good chai - Friendy owner - Plenty of seating	8	Yes
Kuma	- Very good curry and sandwich - Also delicious baked goods - Great price and all homemade	8	Yes
Made Pho You	- Good vietnamese iced coffee - Also does a decent pho for the price - Fresh summer rolls - Very friendly owner	7.5	Yes
Grand Pera	- Good service - Very good kebab, salad and bulgur - Gave us complimentary starters	7.5	Yes
Folks	- Very rounded coffee - Recommended by Ethan (James' barber)	7	Yes
Laya	- Ate the entire menu in Summer block - Good and fairly priced Sri Lankan food - Friendly staff	7	Yes

Name	Comments	Rating/10	Is it worth your NHS Bursary?
Stooge Coffee	- More expensive than M+B, not necessarily better than M+B - Bit of a wait for your drink because they weigh your coffee - Do NOT get the chai	6.5	No
Guacamaya's Nest Café	- Friendly staff and very good cinnamon buns - Price is a bit steep (£6+)	6.5	No
Shish	- Lots of food on the platters - Very well presented - Friendly staff - Perhaps not the best cuts of meat	6.5	No
The Cake Room	- Ok coffee - Very nice vibes - Indulgent cakes - Friendly owner and dog	6	No
Hanoushka	- Beautiful interior - Friendly staff - Coffee is a bit burnt and bitter - Have not returned since discovering other options	5	No
1066 café	- Went a lot in first block due to lack of options, but is expensive and not good	4	No
Fagin's	- Very trendy pub - Popular brunch spot for locals in Old Town - Full English did not have hash or beans but was still very good	8	Yes
Ali's Kitchen	- Was our favourite kebab place in Bexhil - Used to give generous portions - On our last visit gave us a very pathetic portion of chicken - Unfortunate loss because they were very good prior to the incident	5	No
Casa de la Pier	- Amazing lunchtime deal - Great fish - Quick food - Lovely staff	8.5	Yes

Sadly, we will not be around for Christmas Day, but it would be rude to not make use of our two ovens and host a Christmas-adjacent dinner in our flat. Hence, we have settled on thanksgiving - a final get together before we part ways yet again. When we leave for Christmas, we wonder if the locals we have befriended will notice that we haven't come in for coffee in a while or that they haven't seen us walk past their shop window and wave at them.

For our Summer friends, we hope that when you return and look out at the sea, you'll think of us and the months we spent here thinking of you.

For those who may be reading and fear peripheral placements, know that we have all had the time of our lives and may have briefly considered applying for FPP at Conquest since moving away from The Oaks and towards the sea.


Botanica


The first kebab from Ali's kitchen... vs...



Shi Afternoon Dirty matcha chai


Half man! Half burger!

Fagin's

Free pizza every Friday in

Bonfire

A21 Effigy (pre-explosion)

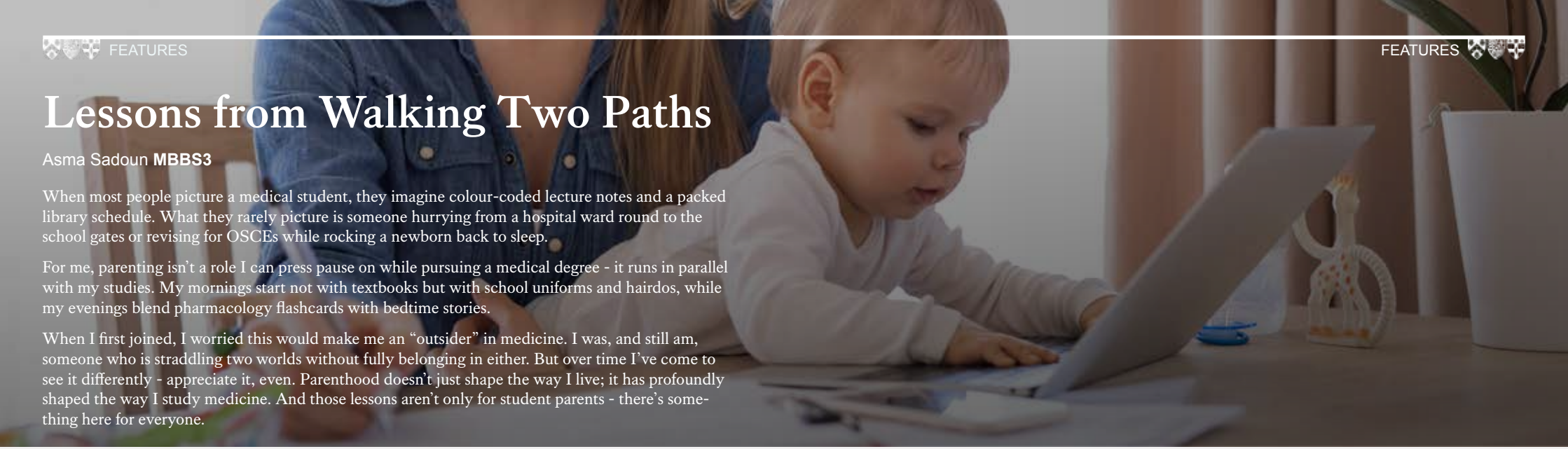

Bonfire parade in action


Treats from Maker +


Made Pho



Guacamaya's Nest Classic Cheese cinnamon



Lessons from Walking Two Paths

Asma Sadoun **MBBS3**

When most people picture a medical student, they imagine colour-coded lecture notes and a packed library schedule. What they rarely picture is someone hurrying from a hospital ward round to the school gates or revising for OSCEs while rocking a newborn back to sleep.

For me, parenting isn't a role I can press pause on while pursuing a medical degree - it runs in parallel with my studies. My mornings start not with textbooks but with school uniforms and hairdos, while my evenings blend pharmacology flashcards with bedtime stories.

When I first joined, I worried this would make me an "outsider" in medicine. I was, and still am, someone who is straddling two worlds without fully belonging in either. But over time I've come to see it differently - appreciate it, even. Parenthood doesn't just shape the way I live; it has profoundly shaped the way I study medicine. And those lessons aren't only for student parents - there's something here for everyone.

The Elephant in the Room

Balancing medicine and parenthood are not seamless. Clinical placements often clash with childcare, and the culture of "always being available" in medicine can feel unforgiving to students with non-negotiable responsibilities at home. Revision schedules get derailed by sick days, school plays and night feeds. There are days when I feel I am just barely keeping all the plates spinning.

And yet, in many ways, these struggles mirror what we'll face as doctors: dealing with the unexpected, juggling competing priorities, or finding a way forward when nothing goes to plan.

What Parenthood Taught Me About Medicine (and What Others Can Learn Too)

Focus on Quality

Parents rarely have whole afternoons to revise in the library. I've learned to turn even 20-30 minutes into a productive block: flashcards while dinner cooks, a podcast during bath time, learning anatomy while playing doctors with my children, or question banks during a commute. Focused bursts beat long but distracted sessions. There is no perfect long day - but a few sessions of deep work will go a long way.

Plan

Every parent knows the chaos of clashing schedules. I plan my week like a shift rota - if it's not in the calendar it doesn't exist to me. Lectures, placements, childcare, even downtime all find their place in my diary. I also factor in unexpected events; my kids love to get sick in the two weeks leading up to exams (it's a ritual - I have been doing this rodeo for six years now). I make sure I start revision well in advance to not feel thrown off by the bumps along the way.

Use this as your guide: treat study slots as mandatory shifts, not optional extras.

Boundaries

When my kids are home in the evening, my time belongs to them. That boundary keeps me sane. It also forces me to study earlier, more efficiently. Protect your downtime. Recovery is as vital as revision.

Progress Beats Perfection

Parenting means constant compromise. Sometimes bedtime wins over PassMed. I've had to accept that progress matters more than perfection. You don't need perfect notes or to finish every past paper. Consistency will carry you further than chasing perfection.

Change Your Perspective

After sleepless nights or toddler tantrums, a tough OSCE feels survivable. Parenthood reminds me that medicine is important, but life is bigger. Don't let one bad exam define you. Broaden your perspective to build resilience.

Empathy Extends Beyond Patients

Juggling kids with medicine makes you deeply aware of hidden struggles. Some students are parents, carers, or working two jobs – and yet they still show up. Practice empathy with your peers. Everyone is balancing something you don't see.

How I Organise My Time

Organisation has been survival.

- **Early mornings**: I wake before my children to revise while the house is quiet.
- **Micro-study sessions:** I break big topics into short blocks I can fit around my other commitments.
- **Strict boundaries:** Evenings are family-only unless an exam is imminent.
- **Planning ahead:** Childcare and study are booked in advance and treated as non-negotiable.

This routine isn't perfect, but it keeps me moving forward. And truthfully, it's not much different from what every student needs: discipline, structure and the ability to protect time that matters.

Final Thoughts

Parenting while studying medicine is not a detour - it's another kind of training. It teaches patience, adaptability and the art of juggling impossible demands. But you don't need to be a parent to learn these lessons.

If there is one takeaway, it's this: **study like a parent**. Plan with purpose, use your time intentionally, protect your rest and keep perspective. Because in the end, medicine isn't about who spends the most hours at their desk - it's about who can show up for their patients and themselves.

Perhaps one day, when I am supporting patients who are balancing their own complex lives, I will be grateful that I have walked both paths at once.

First Gen Doctors: Speaking About the Unspoken

Sumaya Abdulrahman **MBBS3 COO First Gen Doctors**

When you're the first in your family to study Medicine, there's no map - so you learn to draw your own.

Being the first to do something has never been easy. Throughout history, change has always started with someone who dared to go first, someone who stepped into unfamiliar ground without knowing what would come next. Whether it was the first person to question the way things were done, the first to cross a line others were too afraid to approach, or the first to imagine a better future, being "first" has always meant being brave enough to face uncertainty.

It's daunting.

But just like the people who came before us and changed the course of history in their own ways, we're changing the course of ours, rewriting what's possible for those who come after us.

There's a saying: you don't know what you don't know. For many of us who are the first in our families to study Medicine, that phrase captures our entire journey.

We begin with excitement and hope, unaware of how complex, exhausting, and sometimes isolating the path can be. In a way, our ignorance is what gives us courage, chasing a dream simply because we haven't yet seen how steep the climb will be. The higher you go, the more you realise just how much you don't know: the hidden networks, the unspoken rules, the invisible signposts that only some can read.

At the same time, Medicine has never been more scrutinised. There's talk everywhere about burnout, NHS pressures, and the long, competitive years of training, and still, something about it calls to you. Something deeper than status or pay. A quiet conviction that, despite everything, this is where you're meant to be.

So you start to wonder: Where do I go from here? Who can I ask? How do I even begin to find my place in a world that feels so far from what I know?

From One Voice to Many

It all began with a TikTok, a "Get Ready With Me," just a simple chatty video about something many were too scared to admit out loud: the unspoken nepotism in Medicine.

How family connections could open doors you didn't even know existed. How so many talented students were held back, not by their abilities, but by their lack of access.

The comments flooded in. People shared their frustrations, their confusion, their feelings of being left behind. Among the hundreds of messages came a simple suggestion: why don't we start a group chat?

And from that moment, First Gen Doctors was born.

What started as one video and one idea quickly grew into a nationwide community - a space for honesty, guidance, and support, built not by those who had it all figured out, but by those still figuring it out together.

Carrying the Weight

Medicine is hard. There's no arguing that. Balancing content, placements, exams, and the constant sense that you're running just to stay afloat is exhausting. Now imagine doubling that weight as a first-gen.

There's the academic challenge, yes. But there's also the emotional one: the quiet pressure of representing your family, the guilt of doing something they might not understand, the loneliness of carrying responsibilities others can share.

At First Gen Doctors, we've learned that just because you can carry the weight doesn't mean it's not heavy. And that's exactly why we exist, to make that weight a little lighter. Every piece of advice shared, every message answered, every event run by our volunteers is another way of saying: you're not alone in this.

A year and a few months later, we've grown from a single conversation online to a thriving community of applicants, students and doctors across the country. We've hosted a research teaching series, specialty deep-dives, application guidance, mock interviews; helping demystify Medicine at every step and stage.

But what truly defines us isn't just what we do, it's how we do it. We run entirely on volunteer time, students and doctors giving back out of pure passion. Every project, post, and piece of advice is built on the same foundation that started it all: honesty, vulnerability, and empathy. We don't pretend to have all the answers. We're learning as we go, too. And maybe that's the point: you don't need to be perfect to make a difference; you just need to care enough to start.

Why We Rise

In Medicine, we're taught the importance of teamwork, compassion, and reflection. But for many first-generation students, those lessons begin long before the first day of lectures or on placement. We've been practising resilience since the day we decided to apply.

First Gen Doctors is a reminder that progress in Medicine doesn't just come from research or innovation, it comes from inclusion. From creating spaces where students can be open about what they don't know and find the courage to keep going anyway.

Our vision is simple: a fairer, more transparent, and more human future for Medicine, one where background doesn't dictate belonging. Because when we uplift others as we climb, we all rise higher together.

GKT School of Medical Education Faculty Update

Professor Nicki Cohen, and all the directors

As we come towards the end of 2025, there's been a lot to reflect on in the medical school. We are an institution that constantly evolves, and it was yet another enormously proud year seeing another cohort of GKT medical students graduate and enter clinical practice.

We know times are difficult in the NHS and for resident doctors at the moment. Financial pressures and industrial action have taken their toll. However, we must keep in our sights the overarching purpose of why you study medicine and why we teach it: to care for the sick. This purpose has remained unchanged over many centuries, and whilst governments will come and go, and salaries will rise and fall, as doctors we will continue to care for sick. That is what we signed up for, and what we will continue to do. So, those thoughts aside, here are some updates from faculty we're pleased to share.

Portsmouth Partnership

We've just entered our second year following a successful launch in autumn 2024. We've taken on board feedback from our year one students and have now enrolled our second cohort. This partnership offers fantastic clinical exposure, and our new branch of teachers have been absolutely superb to work with.

Faith Guides

We have now published Muslim and Jewish faith guides, co-authored with students, faculty, and national organisations, provide practical guidance on prayer facilities, dietary variation, observance alongside placements, dress code, and routes for raising concerns. I hope these demonstrate our commitment to active inclusion.

SOFIA Curriculum Mapping

This platform went live this term and is available to all staff and students. It provides a clear, searchable overview of what is taught, where, and when across all years - with direct links to GMC MLA outcomes to support your revision and exam preparation. Work continues to map it to evolving MLA content and to improve granularity around clinical teaching alignment with our partner sites.

OSCE Experience Day

Rolled out for the first time this year, over 300 year 5 students attended this formative preparation for the CPSA exam. Feedback was fantastic: 90% of respondents found it useful CPSA preparation, praising the realistic exam environment, peer observation model, and immediate faculty feedback. We're now building a repository of CPSA training videos to complement, and next year, based on your feedback, we'll resequence the programme so the Experience Day replaces the existing formative OSCE (which falls at the end of year four), and we will run a full mock CPSA in autumn of year five - the logical preparation sequence.

Thank you for your continued engagement. It makes everything we do worthwhile.

The Conservation Room of the old Dental School in Guy's at around the turn of the century

Dental Corner

Photo: UMDS Volume 101 No 2369, 31st of January 1987

Brain vs Bacteria

Sofia Maniar **BDS1**

You may have heard of the oral systemic link, a theory originally coined "oral sepsis" or "focal infection", which became prominent in the late 19th century. The oral systemic link pertains to the connection between oral health and the health of the rest of the body, where the bacteria found in the oral cavity are not fixed to this location - rather, they are able to enter the bloodstream and migrate which can cause a number of systemic diseases. This can contribute to severe issues including cardiovascular disease, diabetes, respiratory infections such as pneumonia, and even complications during pregnancy. However, more surprisingly, recent research has shown that there may be a link between oral bacteria and brain aneurysms...

So what is a brain aneurysm? This medical term (otherwise known as an intracranial or cerebral aneurysm) is a bulge formed by the swelling of a weakened area in a blood vessel in the brain. If this grows big enough, it can cause symptoms like a headache, pain above or around the eye, changes in vision, or dizziness. More worryingly, brain aneurysms can be a risk factor for a subarachnoid haemorrhage, which can occur if they burst. Although this type of stroke is rare, the bleeding in the brain can cause seizures, drooping on one side of the face and an extremely painful headache known as a 'thunderclap headache', according to the NHS. Consequently, it is a life-threatening condition that requires emergency treatment. Based on records from the Brain Aneurysm Foundation (BAF), intracranial aneurysms result in almost 500,000 deaths worldwide each year with half the victims being younger than 50, highlighting it to be a serious and significant public health issue.

A recent study by Ma et al. (2024) in the BMC Oral Health Journal compared the saliva samples of 60 patients diagnosed with intracranial aneurysms to 130 healthy controls. Through sequencing the V3-V4 region of the 16S rRNA gene to look at what bacteria were present, significant differences were found in the microbiome composition and relative abundance of certain bacteria at the genus level in *Eubacterium, Saccharimonadaceae, Rothia, Gemella, Streptococcus, Lactobacillales, Phocaeicola, Bacteroides, Saccharimonadales,* and *Abiotrophia*. Therefore, this research suggests that those with brain aneurysms have distinct oral microbiomes different to those unaffected by this condition, providing evidence for an oral-brain link.

Further recent research by Gong et al. (2025) in the Annals of Medicine Journal has suggested a cause for brain aneurysm formation in relation to oral health, beginning with oral microbiota dysbiosis. This refers to an imbalance in the normal, healthy community of microorganisms in the mouth due to poor oral hygiene, leading to a shift from symbiotic to pathogenic bacteria. Following this, there are several possible pathways for oral bacteria from the mouth to reach the brain, including through damaged gums. In gingivitis and periodontitis where the gums are inflamed, the barrier to the bloodstream can become compromised, leading to oral pathogens entering the blood stream and triggering inflammation of the cerebral blood vessels via adhesion molecules, for example. Another theory suggests that oral bacteria can affect the gum microbiome and enter the bloodstream through a compromised gut barrier, therefore reaching the brain. Alternatively, some theorise that oral bacteria may reach the brain via nerves or cervical lymphatics connecting to brain-draining lymphatic systems, creating a direct neurovascular inflammation. Each of these cases begins with poor oral health leading to oral bacteria entering the bloodstream to reach the cerebral blood vessels, where they can cause inflammation that weakens vessel walls and increases the risk of brain aneurysms.

Another interesting study by Pyysalo et al. (2016) involved collecting tissues from 70 individuals undergoing surgery for brain aneurysms, with 42 ruptured aneurysms and 28 unruptured aneurysms. The technique of real-time quantitative polymerase chain reaction (qPCR) was used to find that 70% of aneurysm wall specimens had DNA from various oral bacterial species, compared to much fewer in healthy vessel controls, which must have come from the mouth. The most common bacterial species included *Treponema denticola, Prevotella intermedia* and *Porphyromonas gingivalis*, the latter of which is a major periodontal pathogen. This suggests a strong link between periodontal infection and cerebral inflammation, indicating that gum disease may be a potential risk factor for brain aneurysm formation. This demonstrates the importance of educational and preventative advice being given to patients regularly to improve their oral hygiene and reduce the incidence of gum disease, which currently affects approximately 50% of adults in the UK. Overall, the study reinforces the idea that oral pathogens may be able to physically travel to the brain to have been found within it and contribute to the presence of aneurysms.

In conclusion, current research suggests that there is a growing link between the oral microbiome and the formation of brain aneurysms. This is through the recent findings that those with intracranial aneurysms have different oral microbiomes, the potential ability for oral bacteria to travel around the bloodstream and cause inflammation of the brain, and how aneurysm tissue contains oral bacteria, specifically bacteria strongly associated with gum disease, signposting the need for gum disease control. Ultimately, while these theories still remain unclear, this biological link highlights how the oral cavity has a direct impact on our systemic health, emphasising the need for effective oral hygiene and the concept of the oral systemic link.

References available on request at gktgazette@kcl.ac.uk

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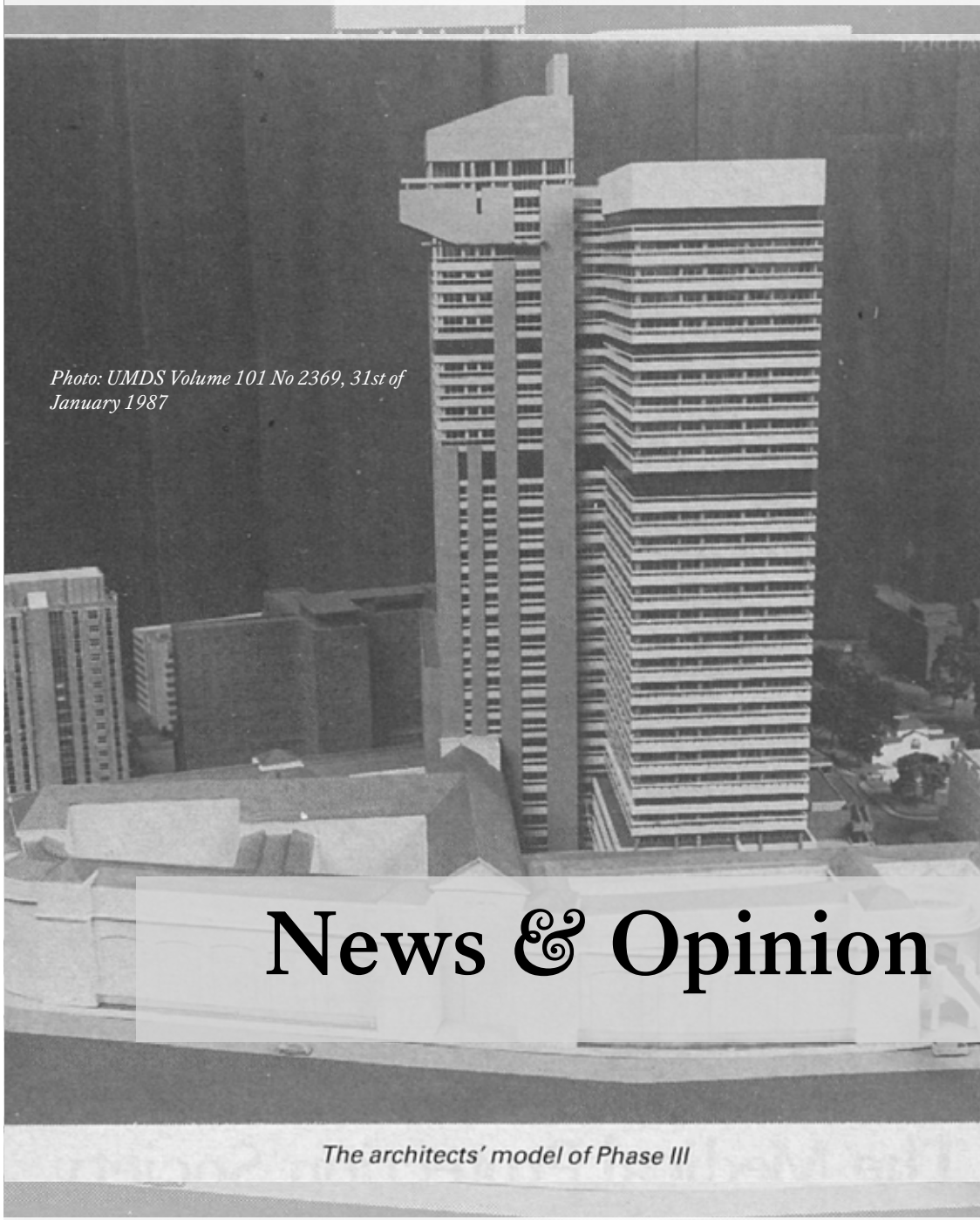


Photo: UMDS Volume 101 No 2369, 31st of January 1987

News & Opinion

The architects' model of Phase III

Natty or Not:

A Medical Perspective on Steroid Culture

Milad Qadare **MBBS3**

Scroll through Instagram or TikTok for more than a minute, and it feels like everyone has a six-pack, boulder shoulders, and veins popping out like a road map. Either there's something in the water, or everyone's protein powder has a mystery ingredient the rest of us missed. The main question is simple: "*Natty or not?*"

At its core, the question asks whether someone is a **natural** - building muscle without drugs; or **not**, meaning they've turned to anabolic steroids or other performance-enhancing substances.

What started as a **casual debate in the fitness industry** has grown into a culture that's both obsessive and dangerous, particularly for young people. Some are still developing through puberty, nowhere near their natural muscular ceiling, and are bombarded with images of "perfect" physiques. The pressure to shortcut their way there with steroids carries real risks: not just for their health now, but for their long-term development.

In this article, we'll take a closer look at what that distinction really means, why it matters, and the consequences behind the debate.

Background on Steroids

When people say "steroids" in the gym, they're usually talking about **anabolic-androgenic steroids (AAS)**, which are synthetic derivatives of testosterone. These aren't the same as the **corticosteroids** prescribed every day for conditions like asthma, eczema, or arthritis.

Two very different families of steroids:

- **Anabolic steroids:** designed to build muscle by mimicking testosterone.
- **Corticosteroids:** anti-inflammatory drugs that calm the immune system.

Because both share the word "steroid," confusion is common. Patients may panic when prescribed a steroid inhaler, imagining it will cause weight gain or the physique changes seen with anabolic steroids. In reality, these drugs act through **completely different pathways**: corticosteroids target **glucocorticoid receptors** to reduce inflammation, whereas anabolic steroids bind to **androgen receptors** to stimulate muscle growth.

Anabolic steroids enter the bloodstream and bind to androgen receptors in muscle cells. This triggers increased protein synthesis, decreased protein breakdown, and higher nitrogen retention - all key ingredients for muscle growth. They also enhance recovery by reducing muscle damage after workouts, meaning more training can be done at higher intensity.

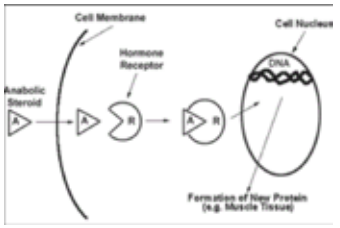


Figure 1: Diagram showing the simplified Mechanism of Action (MOA) of Anabolic Steroids

Fitness Educator Jeff Nippard (2024) explains a simplified version of the pathway from injection to muscle:

1. **Injection**: Anabolic steroids are often delivered as testosterone esters (like testosterone enanthate), dissolved in oil with stabilisers. When injected into muscle, a small bubble of oil sits between the muscle fibres.
2. **Absorption**: Over several hours, testosterone molecules gradually diffuse into the bloodstream.
3. **Activation**: Enzymes called esterases remove the ester group, leaving active testosterone behind.
4. **Transport**: The testosterone binds to carrier proteins in the blood and is transported to muscle tissue.
5. **Action**: Inside the muscle cell, testosterone binds to **androgen receptors**, which switch on genes that increase **protein synthesis**, leading to bigger, stronger muscle fibres.

It sounds straightforward: inject, absorb, grow - and that's exactly why the appeal is so strong. But as we'll see, what happens outside of muscle building, is what creates the serious risks.

Although now closely tied to gym culture, anabolic steroids were developed for legitimate clinical reasons, including:

- **Delayed puberty** (to help trigger normal male development).
- **Hypogonadism** (low natural testosterone production).
- **Muscle wasting conditions** (such as HIV/AIDS or certain cancers).
- **Anaemia** (some anabolic steroids can stimulate red blood cell production).

In medicine, doses are small, temporary, and carefully monitored. In contrast, recreational use often involves 10–100 times higher doses, taken in cycles, frequently mixed with other substances, and almost always without medical supervision.

Health Risks

Like most shortcuts, steroids come at a cost. While the promise of rapid muscle growth and strength gains is what draws people in, these benefits are often accompanied by a long list of side effects. Many users overlook or downplay the risks in the short term, focusing only on the visible "positive" of a bigger physique. Unfortunately, the more serious health problems often emerge later down the line with prolonged use.

Common **physical side effects** include:

- **Acne**: increased sebum production from androgen activity.
- **Hair loss** (male-pattern baldness):acceleration of genetic predispositions through excess testosterone/DHT.
- **Gynecomastia** ("gyno"): breast tissue growth in men due to conversion of testosterone into oestrogen.
- **Infertility and testicular shrinkage**: suppression of the body's natural testosterone production.
- **Liver damage**: especially with oral steroids, which are metabolised by the liver.
- **Cardiovascular risks**: increased blood pressure, thickened blood (polycythaemia), higher risk of heart attack and stroke.
- **Kidney Failure**: prolonged high-dose use can lead to chronic kidney disease.

Common **psychological side effects** include:

- **Mood swings and irritability** ("roid rage").
- **Anxiety and depression**, particularly dur-

ing withdrawal.

- **Dependence**: many users struggle to stop because of body image concerns and the psychological boost steroids provide.

Once the body adapts to having supraphysiological (unnaturally high) testosterone levels, natural hormone production slows or even shuts down. Stopping suddenly can lead to withdrawal symptoms, and for many, this creates a cycle of continued use to avoid the crash.

Big names in the fitness industry such as **Larry Wheels**, a well-known powerlifter, has publicly admitted his difficulties with steroid dependence and the negative health consequences he faced. Similarly, respected coach **Dr Mike Israetel**, who was recently interviewed on '**The Checkup with Doctor Mike Podcast**' (a great episode for those interested in health and fitness) shared insights into the risks, cycles, and the fine balance between performance enhancement and long-term health — highlighting how even the most knowledgeable users are not immune to the dangers.

Figure 2: An image showing a 'before' and 'after' of famous bodybuilder Larry Wheels; photos released alongside an interview on his past steroid use, revealing the struggles that led him to performance-enhancing.

Social and Ethical Issues

Steroids didn't explode in popularity because people suddenly decided they wanted to risk their health, but instead due to the pressure of evolving cultural and media norms.

Online platforms are flooded with flawless physiques, often curated with lighting, angles, and most importantly, selective disclosure. Most influencers **aren't open** about using performance-enhancing substances. Understandably so, because admitting it could undermine their credibility or sponsorships. But this silence creates a dangerous perception: that those physiques are achievable naturally. This fuels unrealistic expectations and can drive impressionable gym-goers toward shortcuts. They haven't yet hit their genetic muscular potential, and many feel like they're always lagging behind what they see online.

Research shows that **muscular performance typically peaks between ages 25 and 35** (Aagaard et al., 2010), after which a gradual decline begins. That means young gym-goers are often nowhere near their natural genetic ceiling, but social media doesn't make that clear.

One landmark trial by **Bhasin et al. (1996, NEJM)** compared four groups of men:

- those who **trained naturally**
- those who **trained with steroids**
- those who **took steroids without training**
- those who **did neither**

The striking result? **Men who took steroids without training gained more muscle than natural lifters who trained and were given a placebo.** This finding shows just how tempting steroids can seem: why spend years grinding naturally when drugs appear to deliver results faster?

In fitness spaces, whether online or in-person, muscle isn't just muscle - it's a symbol of discipline, desirability, and status. Ripped physiques are praised, regressed to "hard work," and often framed as attainable goals for anyone who tries hard enough. The unwritten subtext? If you're not hitting those standards naturally, something must be wrong with your effort, or body. That moral pressure intensifies the temptation to seek help from drugs, or risk reputation and community connection by opting out.

For some, steroids offer confidence, quicker results, and enhanced performance that may feel unattainable naturally. In competitive bodybuilding or strength sports, they can mean the difference between winning and staying invisible.

Outside of sport, many users report feeling more attractive, more respected in the gym, and more satisfied with their appearance.

The flip side is deception and harm. Steroid use perpetuates **unrealistic standards**, creates an uneven playing field in sport, and reinforces a culture where health is sacrificed for aesthetics. Many influencers profit off "natty" claims while quietly enhanced, leaving their followers chasing an unattainable physique. And beneath it all lies the medical cost: cardiovascular disease, infertility, and mental health issues that surface long after the initial gains.

A Doctor's View

For doctors, the "natty or not" debate isn't about internet jokes or gym culture - it's about real patients, with real risks. Steroid use shows up in clinics more often than many realise, and the way doctors approach it can make the difference between a patient opening up or shutting down.

Most users won't admit to taking steroids if they feel judged. Doctors are trained to keep consultations open and non-confrontational, asking questions like "Can you tell me what you've been using, and how often?" rather than immediately lecturing. This encourages honesty and makes it easier to catch health risks early.

When a patient admits to steroid use, doctors think about the possible knock-on effects:

- **Blood pressure** and **cardiovascular health.**
- **Liver** and **kidney function.**
- **Hormonal changes,** including fertility.
- **Mental health**, especially mood disorders.

Simple checks such as blood tests, ECGs, and mood screening can catch early warning signs before they turn into long-term damage.

Not everyone who uses steroids is ready, or willing, to stop. In these cases, doctors focus on **harm reduction**. That might mean monitoring bloodwork more closely, discussing safe injection practices to reduce infection risk, or advising on tapering strategies rather than abrupt withdrawal. The priority is to keep patients safe, while still encouraging them to consider stopping in the future.

For those who want to quit, medical support is essential. Coming off steroids often means dealing with low testosterone, depression, and rapid physical changes. Doctors can provide bridging treatments, counselling, or referrals to specialists to make withdrawal safer and more manageable.

Ultimately, a doctor's role is not to moralise, but to protect health. Whether it's a competitive bodybuilder or a teenager chasing Instagram ideals, the approach remains the same: open communication, close monitoring, and unwavering focus on long-term wellbeing.

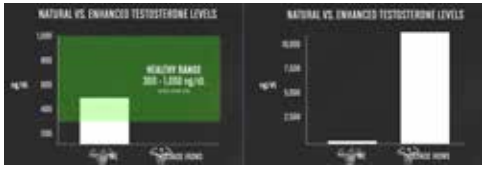


Figure 3: A comparison of Testosterone Levels from a Blood Test between Jeff Nippard (Natural - 485ng/dL) and Chase Irons (Enhanced – ≈20,000ng/dL) (Jeff Nippard, 2024)

Conclusion

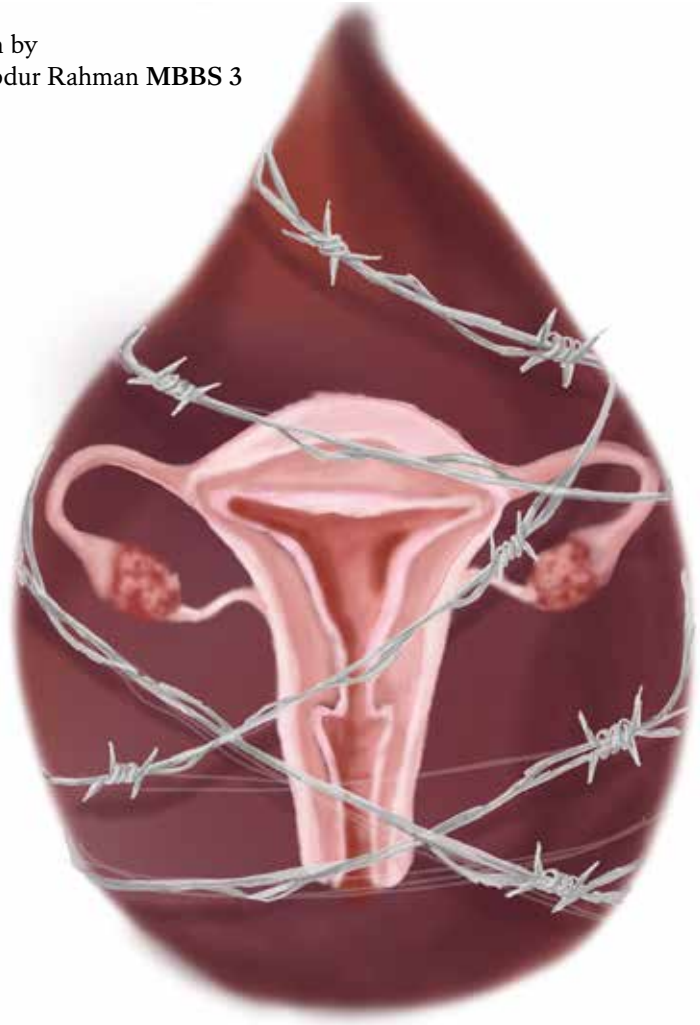
The question "*natty or not?*" might sound like harmless gym chat, but behind it lies a web of health risks, social pressures, and ethical dilemmas. Steroids can transform physiques in ways natural training can't, yet the costs - medical, psychological, and cultural - are heavy.

For young people especially, the debate matters: the images they see online often mask the reality of drug use, fuelling unrealistic standards and risky decisions. For doctors, the challenge is to cut through stigma and provide honest, supportive care.

In the end, being "natty" is about more than muscle. It's about respecting your health, your limits, and the truth behind the mirror.

References available on request at gktgazette@kcl.ac.uk

Illustration by
Zainab Abdur Rahman **MBBS 3**



Womb for Change: Addressing the Silence Around Endometriosis

Shrikhushi Reddy **MBBS4**

Endometriosis is a gynaecological condition characterised by the growth of endometrial-like tissue outside the uterus. Affecting around one in ten women, it causes chronic pelvic pain, heavy periods, fatigue, and can lead to complications like infertility. Despite its prevalence and debilitating symptoms, it remains underestimated and underfunded. On average, it takes 8 years from the onset of symptoms for a woman in the UK to be diagnosed with the condition; a delay that is nothing short of a silent scandal in women's healthcare.

This diagnostic gap reflects a wider inequality in health services. Many patients report feeling dismissed, being told their pain is "normal," or facing stigma around menstruation. This delays referral and investigation. One patient, quoted in a Circle Health Group report, described her experience: "For years I was told it was normal to not be able to walk with the pain and that it would settle down as I got older." A lack of awareness among healthcare professionals, combined with limited access to specialist care, leaves many women in a silentstruggling in silence. Chronic pain not only affects physical health but also education, employment, relationships, and mental wellbeing, compounding the burden of the disease.

Policy progress has been gradual. The Women's Health Strategy for England (2022) recognised endometriosis as a priority, pledging to shorten diagnostic times and increase research funding. However, campaign groups such as Endometriosis UK argue that without significant investment in training, specialist services, and research, these promises will not translate into meaningful change. Professor Andrew Horne, a leading gynaecology researcher, has emphasised that "endometriosis is as common as diabetes, yet receives only a fraction of the attention and funding." Greater collaboration between policymakers, clinicians, and patient advocacy groups is essential to drive improvements in endometriosis care.

The impact on the NHS is also substantial. Chronic pain management, repeated GP visits, and surgical interventions such as laparoscopy place long-term pressure on NHS resources. According to Endometriosis UK, most women attend five or more GP appointments before receiving a diagnosis or referral, highlighting both one's own frustration and systemic inefficiency. Earlier diagnosis and improved management could reduce costs and waiting times, and more importantly, restore women's quality of life.

As medical students, understanding endometriosis reminds us of the importance of listening to patients, validating their experiences, and advocating for change. It exemplifies the persistence of health inequalities when conditions affecting women are under-researched and under-prioritised. Addressing endometriosis is not just about managing a single condition; it is about a systemic change within healthcare to ensure women's pain is no longer dismissed, and their health is given equal priority.

The hidden pain of endometriosis has been ignored for too long. Real progress requires cultural change, policy commitment, and clinical awareness of women's health - only then will we stop failing our patients.

References available on request at gktgazette@kcl.ac.uk

Climate change is the biggest health crisis of our time—why aren't we taught how to treat it?

Ruby Ramsay MBBS3

Think back to 2022, perhaps you remember sweltering on the tube or relaxing on the beach, dipping your toes in the not-so cool water. It was a summer of never-ending sunshine. In July 2022, London recorded temperatures above 40˚C for the first time in history. Train tracks buckled, roads melted and nearly 3,000 people died in England and Wales during the heatwave. For far too many this wasn't welcome heat; this was deadly. For some, this was a wake-up call: climate change is not a distant politicised environmental concern, but a present and urgent public health emergency. Yet, as medical students, we are barely taught how to recognise, reduce, or manage its impacts.

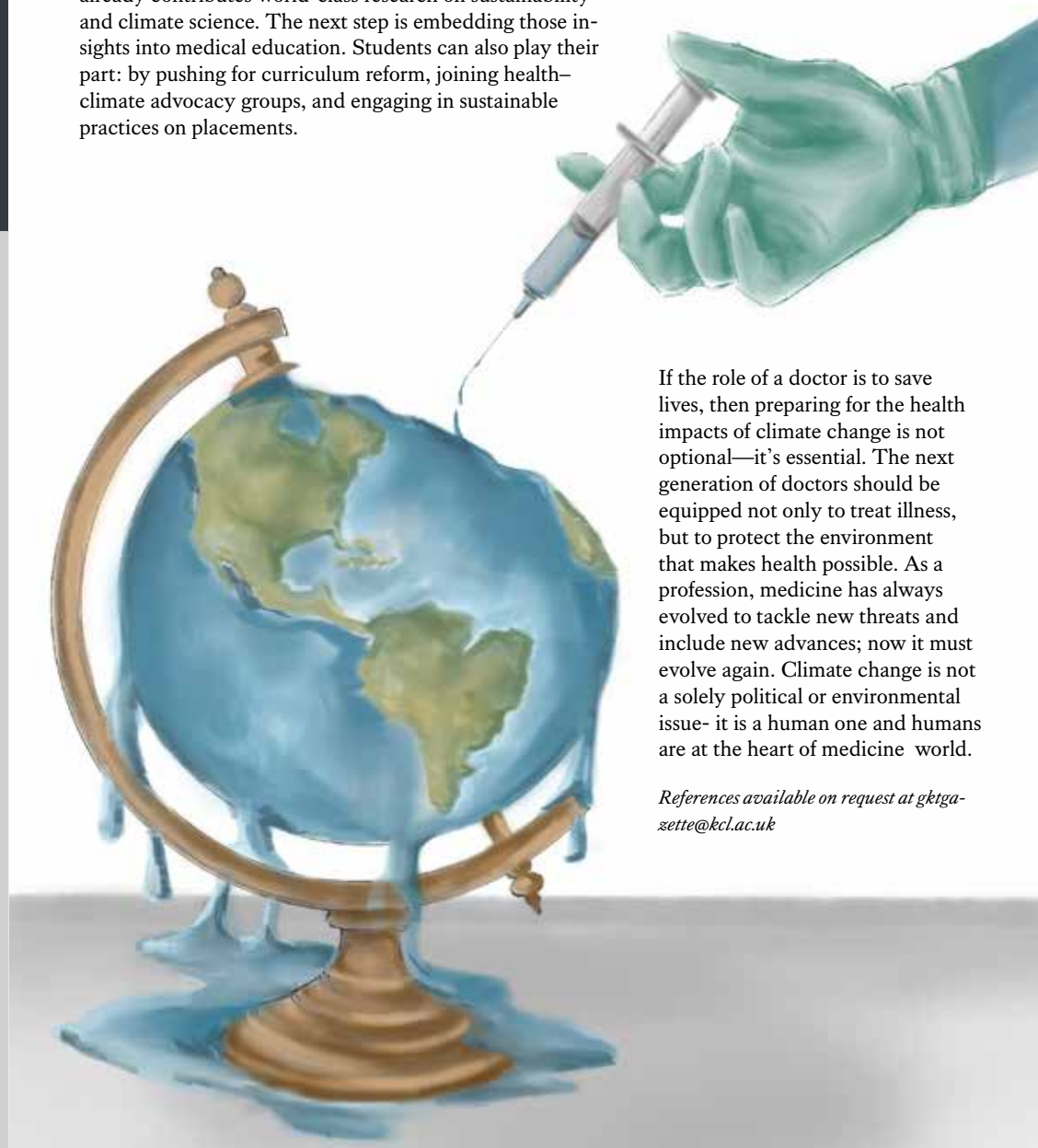
Climate change is already shaping the health landscape. Heatwaves increase cardiovascular stress and mortality. Air pollution exacerbates asthma and chronic lung disease. Flooding and wildfires bring an increase in trauma and internal displacement, while changing ecosystems are pushing vector-borne diseases like Dengue and West Nile virus further north. The Lancet Countdown on Health and Climate Change describes it as "the greatest global health threat of the 21st century.". But in lecture theatres and exam blueprints, climate rarely gets a mention.

The gap in our education is stark. Medical schools have made room for new fields such as genomics, nutrition, and digital health, but planetary health remains at the margins. The UK Medical Licensing Assessment (UKMLA) sets out the knowledge future doctors must demonstrate, yet climate-related health receives little explicit coverage. The result is a generation of doctors who may graduate unprepared for the defining health challenge of their careers.

Some argue that the curriculum is already overflowing, that climate is a political or environmental issue rather than a medical one. But this misses the point. Climate change is not an optional extra—it directly influences the conditions we see in our clinics and hospitals. Integrating it does not mean adding new modules; it means weaving it into what we already study. When we learn about asthma, we should understand the role of air pollution. When we learn about cardiovascular disease, we should discuss how extreme heat worsens outcomes. This isn't extra—it's context.

Doctors also have an influence beyond the clinic. The NHS itself still produces around 4–5% of the UK's carbon emissions6. From energy-intensive hospitals to pharmaceutical supply chains, healthcare is both healer and polluter. Clinicians are uniquely placed to advocate for sustainable practice—whether that means reducing unnecessary waste, rethinking anaesthetic gases, or pressing for greener hospital energy. To do this effectively, we need climate literacy built into our training from day one. We need to see environmentalism, not as something we may advocate for in our spare time, but something intrinsically linked to our career.

At King's, we have a responsibility to lead. The university already contributes world-class research on sustainability and climate science. The next step is embedding those insights into medical education. Students can also play their part: by pushing for curriculum reform, joining health–climate advocacy groups, and engaging in sustainable practices on placements.



If the role of a doctor is to save lives, then preparing for the health impacts of climate change is not optional—it's essential. The next generation of doctors should be equipped not only to treat illness, but to protect the environment that makes health possible. As a profession, medicine has always evolved to tackle new threats and include new advances; now it must evolve again. Climate change is not a solely political or environmental issue- it is a human one and humans are at the heart of medicine world.

References available on request at gktgazette@kcl.ac.uk

Illustration by Zainab Abdur Rahman **MBBS3**

The Watched Body: How Far Should Immune Surveillance Go?

Samyuktha Sezhian **Intercalating**

Wearable technology represents a new frontier in health monitoring. One that promises continuous, non-invasive and real-time insight into the body's inner workings. When the immune system is activated, whether by infection, stress, or another trigger, it releases inflammatory molecules called cytokines. These molecules drive subtle physiological changes in temperature, heart rate, breathing, sleep, and activity.

Traditionally, immune activity has been measured using thermometers or blood tests; snapshots that capture just a single moment and compare results to population averages. But new wearable devices aim to go further: tracking patterns over time to detect illness, even before symptoms appear!

Currently, immune-monitoring wearables fall into two broad categories:

1. Physiological trackers, which monitor parameters like heart rate, respiratory rate and temperature
2. Biochemical sensors, which measure inflammatory molecules such as cytokines.

Among physiological devices, smartwatches, the Oura ring, and Astrokskin or Hexoskin shirts represent different levels of sophistication and price. Smartwatches have already proven their potential: one study found they could detect elevated resting heart rate up to ten days before COVID-19 symptoms appeared. More advanced wearables, such as the Oura ring and Astroskin shirt, have been used to train computational models that outperform symptom-based reporting.

A striking innovation on the biochemical front is the microneedle patch, capable of analysing cytokines in passively expressed sweat in real time. Although successful so far only in animal studies, its creators envision applications in patients undergoing immunotherapy for cancer, where it could detect cytokine release syndrome (CRS), a potentially fatal immune reaction, and automatically alert clinicians. This is where wearable immune surveillance could save lives

That said, wearable immune-response devices should prioritise those who truly need them: the immunocompromised or patients with autoimmune diseases. In Crohn's disease, one study found that wearable tracking of physiological signals correlated with rising C-reactive protein (CRP) levels during disease flares. Such tools could transform chronic disease management and drive early intervention.

But for healthy individuals, constant immune system monitoring risks doing more harm than good. Tracking every minor fluctuation, from a cold to mild stress, could heighten health anxiety and promote dependence on data that may be imprecise, without context. Some devices are up to 40% inaccurate in reporting basic metrics such as calorie expenditure or step count. When users begin to trust their device over their own body, has technology crossed the line between guidance and governance?

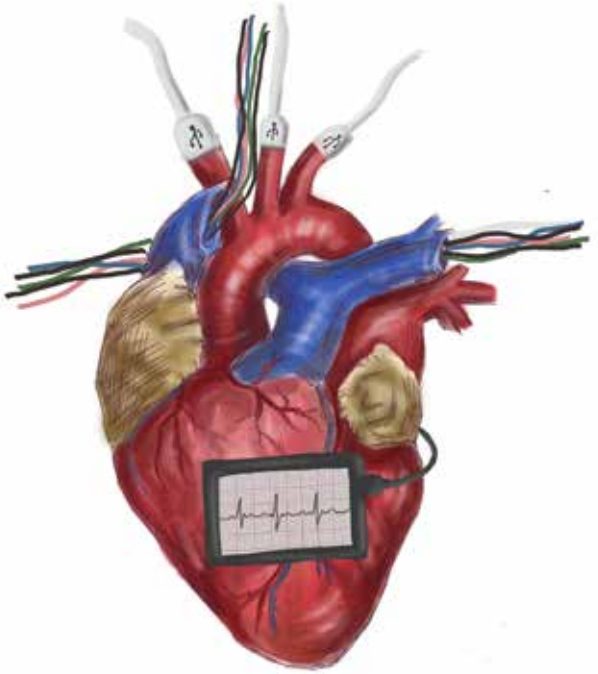


Illustration by Zainab Abdur Rahman **MBBS 3**

This raises an important question: are we mistaking vigilance for wellbeing? Will we take sick days because our watch labels us "unwell"? As our devices interpret our immunity, we risk losing the ability to interpret our own. In pursuit of precision, we may sacrifice intuition.

There is also a socioeconomic dimension to consider. The most accurate wearables carry high costs, placing them out of reach for many. Paradoxically, those who might benefit most from early immune detection (people with chronic illnesses, low income or limited healthcare access) are least likely to afford them. Without deliberate efforts to ensure accessibility, technological progress risks deepening the health divide rather than narrowing it.

Ultimately, the future of wearable immune technology should not be about making the healthy hyper-aware but about offering the vulnerable a stronger line of defence. True innovation must be grounded in empathy, equity and evidence; because technology should enhance wellbeing, not amplify anxiety or inequality.

References available on request at gktgazette@kcl.ac.uk

‘Black Wednesday’: From Freshers to Frontline

Milad Qadare **MBBS3**

‘Mortality rates rise by around 6% during the first week of August compared to the last week of July’. This statistic echoes in every newly qualified doctor’s mind - a stark reminder that they are starting their careers in the deep end. After earning the right to practise and working tirelessly for 5–7 years, they now stand on the threshold between confidence and catastrophe: ‘Black Wednesday’.

This term refers to the first Wednesday in August, when thousands of new doctors take up posts across the UK. For Foundation Year 1 (F1) doctors, it marks their first shift as qualified clinicians, stepping overnight from student to doctor, responsible for patient care. For F2s, specialty trainees, and registrars, it’s a rotation to new departments or hospitals, often with unfamiliar systems, teams, and responsibilities. The sheer scale of this national changeover makes it the largest single staff turnover in the NHS calendar.

The phrase emerged in the early 2000s, fuelled by research suggesting a small but measurable rise in patient mortality during this period. Critics argue it unfairly undermines new doctors before they even begin, while supporters say it reflects genuine risks. More than a decade later, the debate remains: has the NHS done enough to make ‘Black Wednesday’ just another day, or does it still carry the weight of its name?

Origins and Ongoing Relevance of the Term

The term itself is not unique to the NHS. This phenomenon can be seen internationally, most notably in the United States, where it is known as the “July Effect” — a belief that hospital performance dips when newly qualified doctors begin work in July. In the UK, the equivalent moment is the first Wednesday in August, when every junior doctor rotates posts and thousands of F1s start their careers.

The term gained momentum after a 2009 study analysed nearly 300,000 emergency admissions across 175 NHS trusts which found “a small but significant 6% higher odds of death for all patients, and 8% higher for medical patients, in the week following the first Wednesday in August compared with the week before” (Jen et al., 2009). Media coverage seized on these figures, portraying wards full of inexperienced doctors navigating their first days with real patients.

While the arrival of new F1 doctors is often assumed to be the main cause, the reality is more complex. For the first time, these doctors are making decisions with real responsibility, albeit under senior supervision. However, changeover day also involves the simultaneous rotation of entire medical teams, meaning even experienced trainees may be unfamiliar with their wards, local protocols, or colleagues, disrupting team cohesion.

In some cases, doctors begin in completely new hospitals, occasionally starting with a night on-call shift in an unfamiliar setting. Consultants and senior clinicians, meanwhile, may be supporting multiple new colleagues at once, stretching supervision capacity and potentially leaving some doctors without the guidance they most need in their first days. In reality, the rise in patient risk is best understood as a combination of factors - both individual inexperience and wider systemic disruption.

Changes since its Rise

Several measures have been introduced since the 2009 study to counteract the risks of ‘Black Wednesday’. In 2012, a letter from Sir Bruce Keogh led to the Academy of Medical Royal Colleges’ ‘Recommendations for Safe Trainee Changeover’, which introduced a mandatory four-day paid shadowing period for F1 doctors prior to their official start date. The guidance summarised four key recommendations (Academy of Medical Royal Colleges, 2013):

1. Consultants must be appropriately available.

2. Flexible and intelligent rota design.

3. High-quality clinical induction at all units.

4. Reduction of elective work at changeover times.

Sir Bruce Keogh

A BMC Health Services Research study analysing emergency admissions data from 2003–2019 following the introduction of shadowing found no significant change in the odds of death within seven days for patients admitted on Black Wednesday after the scheme began. While this suggests no measurable effect on short-term mortality, the authors note that benefits such as improved confidence, familiarity with systems, and overall preparedness, may not be reflected in mortality statistics.

Building on this, a 2016 initiative at a district general hospital in South-West England introduced an e-learning and mandatory training package. This achieved a 100% completion rate and saved 19.5 hours of trust time per trainee. By streamlining mandatory training before start

day, around 90 minutes of induction time was freed on 'Black Wednesday' itself, allowing earlier ward-based orientation - a change aimed at enhancing patient safety.

Despite these improvements, challenges remain around how new doctors are supported. The recent BMA junior doctor strikes highlight wider frustrations with working conditions, staffing, and rota design - systemic issues that overlap with the risks seen on 'Black Wednesday'. It reinforces the point that improving outcomes are not just about individual preparedness, but about valuing and supporting the workforce as a whole.

Personal Experiences

While statistics help quantify the issue, anecdotal evidence (The Guardian, 2015) illustrates the lived reality of 'Black Wednesday' - though these accounts reflect personal perspectives rather than measure risk.

One junior doctor recalled feeling well-supported despite the daunting transition:

"It's a huge leap going from medical school to being a junior doctor... I never felt alone. I was struck by the kindness of my consultant." (ST1, Acute General Medicine, Oxford)

By contrast, another doctor emphasised that the main risk lies in the simultaneous turnover of all staff, not just new graduates:

"Everyone assumes Black Wednesday is just about brand-new medical graduates. It isn't... Some start on a night on-call shift in a place they've never worked before." (F2, Essex)

These contrasting accounts suggest that individual experience depends heavily on team culture, supervision, and local organisation. They also highlight system-level solutions such as better inductions, stronger senior presence, and staggered changeovers, to ensure that positive experiences become the norm rather than the exception.

Why this matters to Medical Students and how we can make a difference

Now, you may be reading all this and thinking: *"I've just started medical school. Why should I care? I have progress tests and OSCEs to worry about!"* And you're right - there's no need to lose sleep over something that is still years away.

However, the reality is that we are all working towards the same end goal, which ironically is also our new beginning: completing medical school and stepping into our careers as F1 doctors. We will all inevitably be in this position. Even with years of clinical experience, our first day will be both daunting and exciting. Crucially, the challenges of 'Black Wednesday' are not confined to new doctors alone; they affect everyone in the NHS, from nurses and consultants to reception staff, because the disruption of mass changeover impacts entire teams, not just individuals.

As medical students, we still have the safety net of training. This makes it the ideal time to make mistakes, learn from them, and grow into well-rounded clinicians. Being a clinician is not just about mastering theory or practising skills; it also means being a healer, a communicator, and a leader. As the next generation of doctors, we bring diverse perspectives and a greater awareness of how policy decisions shape the lives of both doctors and patients. Our voices can, and should, be stronger than those who came before us. If we want to challenge the stigma of 'Black Wednesday', then making a meaningful impact starts with us.

Ultimately, doctors are human. Mistakes are inevitable, but they should be seen as opportunities for growth rather than as sources of stigma or shame.

We can make a difference by taking placements seriously and engaging in clinical work. Building habits of collaboration and open communication will help foster an environment where asking for help is normal. Supporting new colleagues in their first days, just as we hope to be supported ourselves, is equally important. At a systemic level, we should continue to push for change: expanding simulation-based training, gradually increasing responsibilities, and introducing staggered start dates.

Conclusion

The rise in mortality observed on 'Black Wednesday' is not simply about inexperienced doctors being let loose on patients. Instead, it reflects broader issues of system design, workforce planning, and timing. The simultaneous turnover of thousands of staff, combined with its occurrence in August, a month when senior consultants are often on leave, creates unnecessary disruption in hospitals at the very moment when stable support is most needed.

While policies such as shadowing schemes, induction programmes, and staggered training modules have been positive steps, they have not done enough. The concerns highlighted in the recent BMA junior doctor strikes echo the same systemic problems highlighted by 'Black Wednesday': unsafe rotas, poor workforce planning, and lack of investment in staff wellbeing. A more coordinated approach is needed: reconsidering the arbitrary August changeover, aligning staff rotations to ensure continuity, and restructuring teams before or after F1 doctors begin, so that they can be smoothly integrated into established units rather than dropped into disruption.

'Black Wednesday' should not remain an accepted feature of NHS culture. By addressing the structural causes such as rota design, mistimed changeovers, and supervision gaps, we can reduce risk for patients and anxiety for staff alike. And perhaps, by the time we stand on the frontline of the medical field, we can finally turn 'Black Wednesday' into just another Wednesday - a day remembered not for its risks, but as the beginning of our journeys as doctors.

References available on request at gktgazette@kcl.ac.uk

NEWS & OPINION

Pathogen or Policy? The Rhodesian Anthrax Controversy

Aathi James Thiru-Lewis **MBBS3**

Anthrax as a Weapon? The Rhodesian Outbreak, 1978-1980

A farmer arrives at a rural clinic with a painless black lesion on his forearm—cutaneous anthrax, a disease easily treatable with penicillin. But this is 1979 in rural Rhodesia, and there is no penicillin. And he is one of hundreds arriving that week.

Figure 1: Map showing Rhodesia (present-day Zimbabwe) in green, and its neighbouring countries in southern Africa during the late 20th century.

This was the reality of one of the largest recorded anthrax outbreaks in human history, occurring amid the brutal Rhodesian Bush War. For medical students, this episode offers lessons not only in infectious disease epidemiology but in how health systems, ethics, and conflict intersect.

Reanalysis estimates put the total human case count at approximately 10,738, resulting in around 200 confirmed deaths (a case fatality rate of 1.9%). For medical students, it is vital to note that the vast majority of these cases were the less fatal cutaneous anthrax, but the sheer volume of cases strained the inadequate medical infrastructure, turning a manageable infection into a mass casualty event.

The toll on the economy was staggering: estimates suggest 171,990 cattle may have been infected, with at least 100,000 confirmed dead, devastating rural African farmers. Prior to 1978, anthrax in Rhodesia was exceptionally rare. The sudden eruption, concentrated overwhelmingly in the Tribal Trust Lands (TTLs)—segregated, rural areas that were the main focus of the counter-insurgency war—instantly raised a chilling question: Was this a catastrophic natural event, or the deliberate release of a biological weapon?

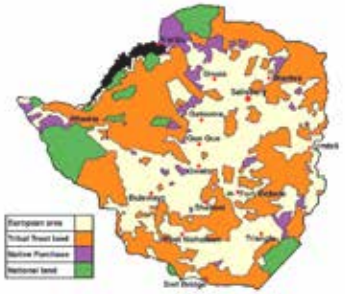


Figure 2: Map of Rhodesia (now Zimbabwe) displaying administrative divisions and land categories used during the late 20th century: European area, Tribal Trust Land, Native Purchase, and National Land, as labelled. Towns and cities across the country are marked.

"It Was Deliberately Spread": The Case for Deliberate Release

The assertion that the regime deliberately weaponised anthrax is supported by powerful, albeit circumstantial, evidence.

The most chilling is the confirmed existence of a top-secret Chemical-Biological Warfare (CBW) programme run by the Rhodesian military's Central Intelligence Organisation (CIO) and the elite Selous Scouts. This was not isolated science; it involved high-level institutional complicity, including a professor and students from the University of Rhodesia's medical school. Declassified documents and post-war testimony confirm the programme involved chemical agents like Parathion (an organophosphate) and Thallium (a heavy metal) to poison food supplies. Critically, Bacillus anthracis was among the biological agents explicitly selected for potential deployment.

Proponents of the bioweapons theory highlight several anomalous patterns:

- **Geographical "Hopping"**: The epidemic did not spread contiguously. It appeared to "hop" across regions, suggesting intentional seeding in strategic locations to deny insurgents (ZANLA and ZIPRA) food and economic resources.
- **Selective Targeting**: The outbreak was confined to TTLs. Commercial white-owned farms—sharing similar ecological zones—reported little or no infection. This striking disparity suggested deliberate, racially targeted deployment.
- **Psychological Warfare**: The Selous Scouts were masters of psychological operations. Alleged testimony from a former Rhodesian officer stated: "It is true that anthrax spoor was used in an experimental role... to kill off the cattle of tribesmen... in conjunction with... psychological suggestion."

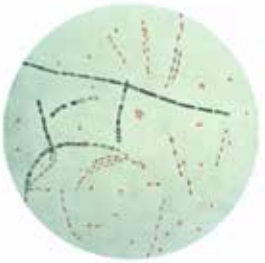


Figure 3: Photomicrograph of Bacillus anthracis, stained using fuchsin-methylene blue (spore stain)

Despite this compelling evidence, there is no definitive microbiological "smoking gun"—such as an engineered strain—and no universally accepted operational orders have surfaced.

"War, Not Weapons": Why Recent Analysis Points to Natural Disease

In sharp contrast, systematic epidemiological analysis suggests the outbreak was tragic, but primarily natural, amplified exponentially by the war itself.

The most compelling challenge comes from reanalysis by Wilson and colleagues (2016). Their work found that the outbreak's geography strongly overlapped with regions where Bacillus anthracis already existed naturally in the soil. This implied a catastrophic amplification of a known disease, not the introduction of a new agent.

The war destroyed the veterinary "firewall" that kept disease in check. In peacetime, the reproductive number (R_0) was kept below 1 through routine cattle vaccination with the Sterne strain. Wartime collapse in the TTLs caused R_0 to skyrocket through three primary mechanisms:

- **Loss of Vaccination**: Routine cattle vaccination programmes ceased, eliminating herd immunity.
- **Improper Carcass Disposal**: Infected carcasses, which are highly contagious, were often left to decompose or were illegally salvaged for food/hides, allowing spores to return to the soil and proliferate.
- **Population Displacement:** Mass displacement increased the number of susceptible hosts and vectors, forcing people to consume meat from questionable sources. These factors dramatically increased the effective R_0 above 1, fuelling exponential spread.

This view also refutes the "selective targeting" argument. The key difference was not exposure, but the integrity of the veterinary firewall. White-owned commercial farms maintained intact private veterinary services. TTLs relied on the collapsed state-run system. The geographic disparity, therefore, reflected structural inequality and service collapse, not necessarily targeted release. The emerging scientific consensus favours this interpretation, though absolute certainty remains impossible.

Beyond Intent: The Deeper Medical Ethical Scandal

Irrespective of whether anthrax was deliberate or natural, the medical ethical scandal did not disappear. This was, unequivocally, a healthcare system failure reflecting decades of segregation-era resource allocation policies.

A System Designed to Fail

The TTLs were significantly under-resourced. This created a dual system where resources flowed freely to white communities, while rural African areas were left vulnerable. When the epidemic erupted, this deficiency manifested immediately: TTL hospitals lacked basic antibiotics like penicillin and intravenous fluids; staff were undertrained for mass zoonotic outbreaks; emergency transport was non-existent.

The Co-option of Research

The most profound ethical breach remains the confirmed involvement of medical researchers in the hostile CBW programme. When a professor from a national medical school is confirmed to be involved in producing agents like Bacillus anthracis for potential deployment, it represents a complete betrayal of the medical oath to protect life.

Public health scholars recognise that social determinants of health—poverty, conflict, unequal access—create differential vulnerability. Medical professionals must understand how health system design, resource allocation, and governance affect population health outcomes.

Figure 4: Rhodesian Light Infantry "Saint"—elite commando soldier during the Bush War.

Historical Gaps and The Modern Dual-Use Mandate

Absolute proof of the outbreak's origin remains impossible, demanding epistemic humility. The enduring uncertainty reflects significant gaps in the historical record shaped by document destruction and classification policies. During Zimbabwe's transition, military and intelligence bodies destroyed substantial documentation, and the Lancaster House Agreement (1980) granted de facto immunity to Rhodesian officials, ensuring no thorough criminal inquiry materialised.

This raises important methodological questions. Retrospective epidemiological modelling relies on incomplete data, while contemporary accounts may lack systematic rigour.

The Rhodesian case provides a historical anchor for the Dual-Use Dilemma: the ethical risk that research intended for good (like vaccines) can be weaponised. This dilemma is more relevant than ever. As debates continue over Gain-of-Function (GoF) research and lab biosafety in the wake of the COVID-19 pandemic, the Rhodesian case is a stark reminder that intent and context are as important as capability. The ethical calculus is stark: does the potential benefit of preparing for a pandemic outweigh the risk of creating a new, catastrophic threat? When medical knowledge is fused with military or political agendas, the risk-benefit analysis becomes catastrophically skewed towards harm.

Conclusion: Evidence, Ethics, and Responsibility

The Rhodesian anthrax epidemic reveals how war, inequality, and medical systems intersect to create mass suffering. For medical professionals, vital ethical mandates emerge:

- **Interrogate the Evidence:** Understand that historical evidence is often contested and incomplete. Learn to ask what methodological approaches are being used, what assumptions underlie different interpretations, and what limitations exist in different types of evidence.
- **Recognise Social Determinants of Health:** Acknowledge that social, economic, and political factors—including poverty, conflict, and unequal access to healthcare—profoundly shape disease outcomes.
- **Embrace Contextual Awareness:** Medical practice extends beyond clinical diagnosis to understanding the broader factors that shape disease emergence and progression, including health system design, resource allocation, and governance.
- **Practice Vigilance:** The Institutional Review Board (IRB) and Institutional Biosafety Committee (IBC) are your ethical firewalls against the Dual-Use Dilemma. Be vigilant about research funding and intent, especially regarding high-risk pathogens.

Next time you review a research protocol or hear about pathogen research, ask: **Who benefits? Who is vulnerable? What safeguards exist?**

Healthcare professionals operate within systems shaped by historical, political, and social contexts. ***Understanding these contexts is essential to ethical medical practice.***

References available on request at gktgazette@kcl.ac.uk

NEWS & OPINION

The BMA at GKT: A warm welcome and introductions

Ellen Martin **MBBS4**

Hello and welcome to the new 25/26 academic year here at GKT!

I'm Ellen, a returning 4th year medic and deputy section editor here at *the Gazette*, writing today to introduce you to the upcoming team representing your interests as medical students via the British Medical Association's Medical Student Committee (BMA MSC) and our local society (the BMA at GKT).

I was lucky enough to be elected as deputy MSC representative this year and will be working alongside your main MSC representative, **Anjali Sardana**.

Within our medical society, the BMA at GKT, your elected president is **Kaavya Venkatesh**- who is supported closely by vice-president **Larissa Berry** as well as wider society members.

We wish to express our gratitude to the outgoing BMA at GKT president, **Ohemaa Asare**, for her continued hard work and dedication- and congratulate her on being re-elected as deputy co-chair of Widening Participation on the BMA MSC executive committee.

Together we are here to amplify the voice of the GKT medical student community as well as to get involved where possible to improve both the collective and individual student experience.

Our contact details can be found at the end of this article, but first I will explain a little more about what the BMA MSC actually does, and what we can do for *you*.

What is the BMA, and BMA MSC?

For those unaccustomed with the BMA, the British Medical Association is the professional body and trade union for doctors in the UK, acting as a voice for the profession and representing doctors' interests in conversations with employers, stakeholders and the government; The BMA Medical student committee furthermore acts to represent all medical students in the UK and helps to ensure we are adequately supported and listened to during our training as future doctors.

The MSC has an elected executive committee that helps to drive change at a national level within four priority areas: **Finance, Welfare, Education and Widening Participation**. For change at the local level, there are internally elected MSC representatives for each medical school who may work with BMA student societies like we do here at GKT.

Nationally, the MSC have successfully lobbied for improved student wellbeing services, the expansion of specialty training posts, as well as for the integration of UKMLA teaching into medical school curricula (to name but a few). Locally, the BMA @ GKT have stepped in to combat issues such as unfair engagement log requirements, the unpaid labour of students at Guy's and St Thomas' trust, as well as the systemic sexual violence faced by GKT students.

Aside from systemic issues however, the BMA is here to support you at an individual level. Alongside various available online resources spanning areas of wellbeing, education, and finance (see BMA website or contact us for more details), the BMA MSC can support you personally with a variety of problems that may arise during your studies. Examples of common problems the BMA can assist with include forms of discrimination and/or harassment, issues with exams/academic progression, bullying from seniors/colleagues, as well as issues regarding the misuse of social media, alcohol or drugs.

If you require any personal advice regarding issues with your medical education, whether it's related to the above problems or otherwise, please contact one of us via email and we will reply or escalate accordingly (contact info found at the end of article).

How can you get involved this year?

There are many ways to be involved with the BMA student community and get your voice heard- the first being becoming a member of our society and/or the BMA itself! (Links to both can be found in our Instagram bio- @bmaatgkt).

Following our Instagram is also a sure-fire way to be kept up to date on all our events and campaigns throughout the year; Upcoming events this year include a 'Welcome social' as well as our annual pan-London 'Pizza and policy night'.

We also have a WhatsApp group chat for updates and direct correspondence- link for this can also be found in our Instagram bio, if any difficulties with accessibility, please reach out to us.

Most importantly, we have recently set up a form to gauge student body opinions on what systemic issues here at GKT we should make into local priorities for the upcoming academic year. **What problems are reducing the quality of our education here the most? What could be done to mitigate or solve them?** We want to hear from as many medical students as possible, as to create the largest positive impact possible for the collective student community.

Whether it's issues with travel reimbursement, funding information, poor administration or something else entirely.... **Please take a second to scan the QR code and have your voice heard!**

Thank you for reading and we look forward to meeting you soon!

Contacts:

MSC rep **Anjali Sardana**:

anjali.sardana@kcl.ac.uk

Deputy MSC rep **Ellen Martin**:

ellen.martin@kcl.ac.uk

Society President **Kaavya Venkatesh**:

kaavya.venkatesh@kcl.ac.uk

Society Vice-president **Larissa Berry**:

larissa.berry@kcl.ac.uk

For general information and to stay updated, please see our Instagram: @bmaatgkt

BMA AT GKT
BMA
25/26 committee

Anjali Sardana- MSC rep- pictured left,
Ellen Martin- deputy MSC rep- pictured right

Larissa Berry- BMA @ GKT vice-president

Kaavya Venkatesh- BMA @ GKT president

Arts & Culture

Photo: Guy's Gazette Volume 110 No 2462 January 1997

H R H The Prince of Wales at Guy's Hospital, 1921

Pills, Passion and Parkinson's: A Medical Reflection on Love and Other Drugs

Christine Yue **MBBS3**

The movie Love and Other Drugs has quite the unique premise, following Jamie, a charming and manipulative salesperson for pharmaceutical drugs and his love interest Maggie, who navigates life with Parkinson's. At first glance, this hit 2010 film seems just like your typical rom com aimed at teenagers, featuring a swoon-worthy male lead and cliches. However, beneath its glossy surface, this lighthearted film full of charm and humour tackles weighty themes such as pharmaceutical industry corruption and provides a nuanced exploration of chronic illness and identity.

A key theme explored in this movie is the corporate greed and exploitation of healthcare. Jamie is trained to highlight only the drug's benefits using selective, out-of-context statistics. Warnings about side effects are brushed aside, and the pressure to meet sales targets overshadows genuine medical concern. Instead of sending professionals, the company is represented by opportunistic salespeople who employ manipulative tactics, bribing doctors and forming personal relationships with staff in order to push products. Dr. Knight and others are easily swayed by gifts and favors in return for prescribing the drugs, illustrating how decisions are often made behind closed doors and participants leverage their relationships for personal gain. The film exposes the ethical issues of pharmaceutical marketing, where influence and incentives compromise care, shining a light on how patients like Maggie ultimately suffer when their health becomes an afterthought.

Maggie's character offers a compelling look into the lived reality of chronic illness, specifically parkinsons and how it is not as simple as just a physical illness. Maggie keeps her relationship with Jamie casual, fearing emotional dependence. She pushes Jamie away and is afraid whenever he acts attached. Despite visibly struggling with tasks due to tremors, she resists help, and fears that in their relationship "I'll need you more than you need me". Her reluctance stems from a deep fear of becoming a burden, a feeling shared by many with chronic illness. The emotional strain of maintaining independence despite physical limitations, often leads to self-isolation. It also is a gigantic financial burden as Maggie has to travel long exhausting bus rides to Canada to access affordable medication, having to constantly worry about affording treatment. Her story reveals how chronic illness is not only a physical challenge but a persistent mental and logistical struggle people fight to maintain their dignity, identity, and stability in light of their diagnosis.

Since its release it has been heavily critiqued for its seemingly superficial approach to serious topics . However one may also argue that the film offers a fresh take by redefining narratives around chronic illness. The framing of chronic illness in a rom com setting could be seen as an act of defiance against the usual expectation that chronic illness stories must be told through a lens of suffering and sadness. At the climax of the film, Maggie delivers a poignant speech about her condition and expresses that having Parkinson's shouldn't define her entirely, stating "It's not my fault, and I'm not going to let it be my whole life". This is perhaps the most important message this film has to offer and this is well reflected by the possible deliberate choice of having this movie set as a rom-com. Maggie isn't reduced to just a sad sufferer of disease, she is complex, filled with humour, art, sex, independence and love, alongside Parkinson's. The lightheartedness of the film is not disrespect, it's empowerment. By allowing a parkinson's patient to star in a romcom, the movie normalises illness as a part of life and not a tragic exception. The illness doesn't erase Maggie's personality and audiences are reminded that patients are still full human beings that can enjoy the same lighthearted fuzzy romances like the rest of us.

This movie is not only a fun watch but thought-provoking on issues like pharmaceutical greed and the effects of chronic illness on life. Best of all, it does so through telling the story of a character that is living fully with parkinsons, not just dying from it.

"Love and Other Drugs" dir. Edward Zwick (US, 2010)

From Section Editor to BMJ Scholar

Zaynah Khan **BMJ Editorial Scholar**

'Words and ideas can change the world'

- Dead Poets Society

A jack of all trades, master of none, but oftentimes better than a master of one'- this is a phrase that I often heard growing up, without having heard the latter, and more important, half until the last few years! I've always considered myself to be a Humanities student in Medicine. Often, this sentiment is said with regret, but I don't echo that thought. My clinical experiences have reassured me that I made the right choice, but I wish I didn't think I had to choose between the 2 fields!

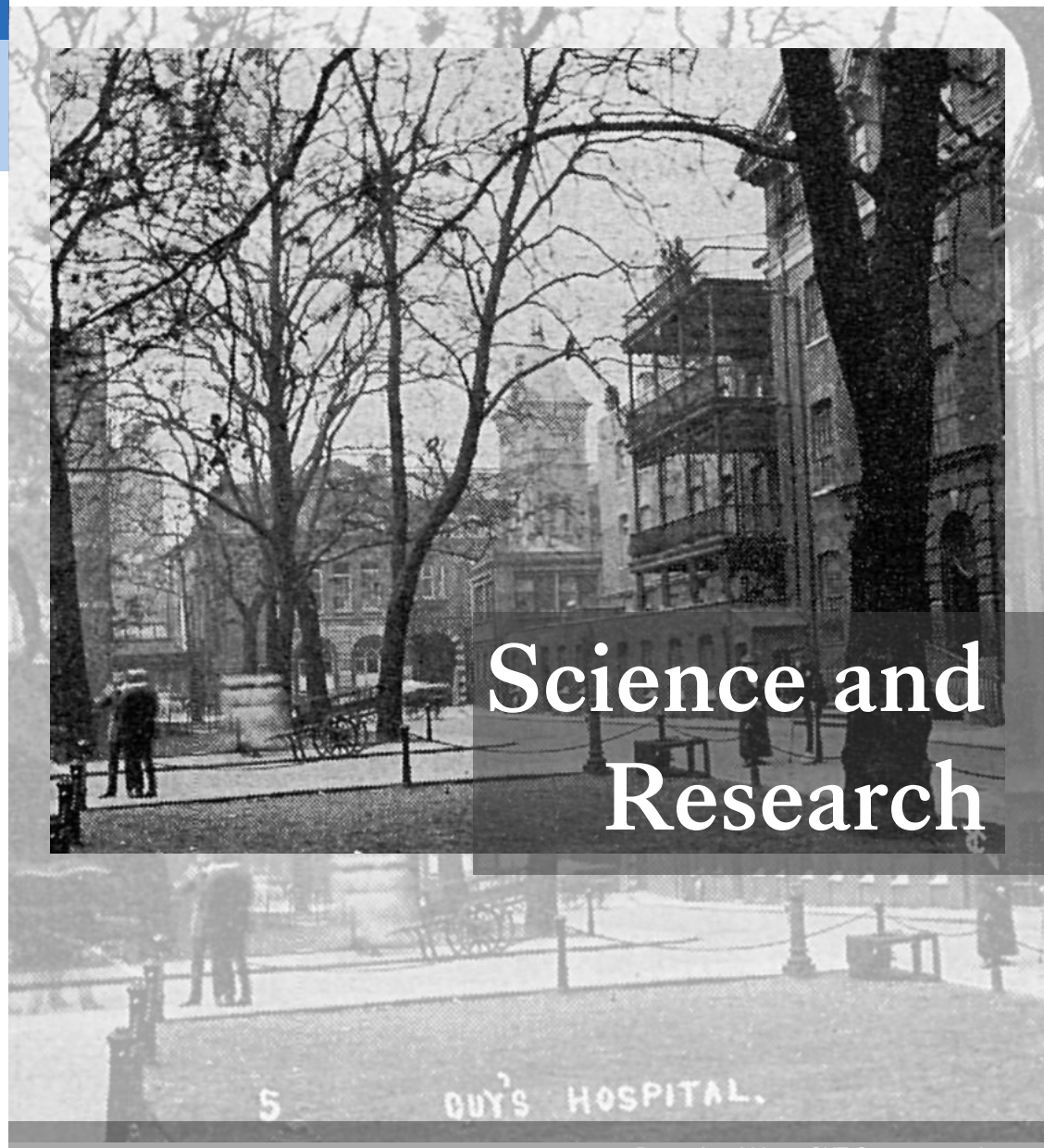
In my experience of medical school so far, my highlights have included where the humanities have intersected with clinical practice. During my SSC in *Medicine and Art: Representing the Body*, I explored depictions of mental illness through the media. My Scholarly Project examined the *Impact of Cancer on Society* through the lens of an artist; I explored the clinical use of poetry, specifically by Ocean Vuong, in oncology. Most recently, I completed my intercalation in *Humanities, Philosophy and Law* at Imperial, where I completed my final project on history and narrative medicine, exploring the role of patient made poetry in Victorian Asylums in influencing clinical care. Throughout the course, my friends and I joked that HPL was my brain turned into a degree, so you can imagine that I adored it!

Being the Arts & Culture Editor and leading this section for the past 2 years has been my favourite experience of my time at GKT! As A&C Lead, I gained invaluable experience curating articles, interviews, poetry, and book reviews, and fostering community through events like zine-making, crochet workshops, and movie nights. The incredible team I've had the privilege to work alongside has been a constant source of inspiration, and I'm eager to apply the experiences and wisdom we've shared to my new role. This year, I'm taking another year out of med school (sorry to the admin team!) to pursue professional journalism through the role of the Editorial Scholar at the BMJ!

As BMJ's new Editorial Scholar, I'll be leading BMJ Student, the journal's platform for medical students. My role is a blend of writing, editing, and amplifying student voices — from crafting my own articles to guiding others through the publishing process. I also manage the journal's social media and website, and host Sharp Scratch, BMJ's podcast on the realities of student life in medicine. I'm so excited for the chance to interview expert guests and have the honour of learning from them and discussing fascinating topics together. Beyond the desk, the role takes me to conferences and fresher's fairs, where I get to connect with students and healthcare professionals, and share opportunities to get involved. It's a unique chance to both contribute to medical journalism and help shape the conversations that matter to our community.

I am forever grateful for the honour of being your Arts & Culture editor, for the friends I've made through the GKT Gazette, and for the community we've formed together. I look forward to the new experiences that this year will bring! *Carpe Diem!*

Photo: UMDS Gazette, Volume 95 No 2313 - 27th of June 1981



Science and Research

A Sibling's Perspective:
Autism in the Family and a Path to Medicine

Dhruv Sharma **MBBS2**

Autism Spectrum Condition (ASC). A neurological condition that affects 1 in 54 people. Some of the most influential people in history, such as Albert Einstein, Isaac Newton and Vincent Van Gogh, were diagnosed with this condition. Autism is often characterised by restricted, repetitive behaviours, but what that looks like day-to-day can be so varied. While society has begun to support autistic children and adults better, the people who often go unnoticed are their families — the ones adjusting to daily life, learning on the fly, and offering constant care.

One such person is myself. My brother has ASC, and I would be lying if I didn't say that my life, especially socially, has been wholly different from many of my friends and peers as a result. Every decision that my parents or I have made over time has had to factor him into that - countless parties and social opportunities have been missed simply because we knew he would not be comfortable with him. However, for all the so-called 'negative' aspects that come with being the sibling of an autistic child, there are positives as well. I would argue that being in the presence of someone like my brother daily, seeing the struggles that he endured and the countless changes and adaptations that my parents had to make, often at their detriment, gave me a unique insight into the roles of doctors and the importance of reasonable care, not only for the patients but for their relatives as well.

These experiences shaped me, my character and my future career path, ultimately leading to me being where I am today as a second-year medical student.

When I was young, I very quickly came to the realisation that my brother was different. Not only was there apparent weakness in his left side, caused by a brain injury during premature birth, which led to him also being diagnosed with right hemiplegic cerebral palsy, I had started to notice that he would often stay quiet and reserved in parties and gatherings, choosing to spend time muttering to himself in the corner, hands over his ears. It was as if any amount of noise or movement was overwhelming for him, and he had to deal with it himself rather than engaging in conversation and fun with people his age. His quirks were as evident as they were fascinating – it almost became a routine of explaining to my friends that he was just 'like this', and that there was nothing that really could be done. After all, I was a young child myself – it was hard to understand what he was doing, let alone explain to children my age.

As I became older and more inquisitive, I started to learn about this word 'autism' – it apparently explained why my brother was the way he was. As my parents trusted me more, and as my understanding grew, the quirks that at first fascinated me for their pure absurdity started to make more sense. Patterns became obvious. Things that annoyed him and things that calmed him down had started to become clearer. However, one question would always bother me – what can I do to help?

Fast-forward a few years, and as I progressed from primary to secondary school, I started to take a more active interest in the science behind the body and how it functioned. I became bothered by the fact that there were countless visits to different doctors and different specialists. Yet, we were no closer to helping my brother. Every time, every other device that was tried on him made him seem less like a human and more like a guinea pig. By the time it came to me deciding my GCSE options, one thing had become clear – I was going to go down a career path that allowed me to help my brother, my parents and the countless other families around the world who were in a similar predicament.

The first thing I thought of was to go down the path of pursuing a degree in neuroscience – after all, the issue I wanted to address was in the brain, so if I did a degree studying the brain, surely, I'd find the answer I wanted along the way? However, after a few weeks of research into the course at different universities that offered this opportunity, I realised that studying pure neuroscience was not the path I wanted to go down. I then considered going down the biomedical engineering route, wondering whether, instead of researching and coming up with ideas for the device, I should pursue the necessary skills and acumen to build any future device. When it came to considering further implications, however, I realised that if I wanted to make the impact I desired, this would not be the correct idea.

Trying to deduce the best possible way to pursue what I wanted to do led to long chats with parents, teachers and my brother's music professor. During one such talk, we broke down the key issues that I wanted to address. I wanted to enhance the quality of life of not only the autistic individuals but their parents as well. I also wanted to provide a more holistic situation - my experience had taught me that, as well as the apparent social issues that ASC presented with, there were often psychological issues that happened as a result. For example, my brother to this day has severe anxiety, especially in scenarios where there is a lot of uncertainty. Then, I was suggested the route of medicine. It would combine my interest in science, my problem-solving skills, my desire to make a positive impact on society, and a direct chance of helping multiple families. Further research showed me that being a doctor was far from being as simple as see symptoms, treat case – no matter what discipline you decide to go in, there is a complex amalgamation of not only seeing and treating patients for their condition they come to you with, but also helping to initially reduce the anxiety and uncertainty of their family and friends, and then helping to improve the quality of both the patients' lives, and those that care for them as well.

The further I delved into it, both how medicine works and what a doctor does, and also introspectively as I tried to figure out the true motivation of what I wanted to do, it became more and more apparent – becoming a doctor would provide me the perfect opportunity to do everything I ever wanted to and more. It was this thought, this motivation that got me through the arduous and ruthless process of applying to medicine, it was this hunger that got me the necessary predicted grades and scores in the admission tests and subsequent interviews to receive offers, and it was this desire that pushed me on to achieve the grades in my A-Levels intoonfirm a place at such a prestigious medical school such as GKT.

As I mentioned at the start, an often-forgotten part of individuals living with neurodivergence is the impact it has on those who care for these patients. While I share in my brother's every joy and despair, there is always an added tinge of responsibility and care in everything I do. While this can, and many a time has been, a source of added pressure which can contribute negatively to a relative's wellbeing, equally it can act as a source of inspiration and pride. In my case, it gave me a sharp focus and directed me towards this career path, this course and this institution.

KCL students get hands-on with ultrasound: ‘The UltraLearn Project’ returns

Sabrina Preece **MBBS4**, Sahiba Sahed **MBBS4**, Charlotte Smith **Intercalating**

King’s College London medical students are gaining hands-on experience with ultrasound technology through the return of The UltraLearn Project, a student-led initiative dedicated to the peer-led teaching of basic point-of-care ultrasound (POCUS) skills.

UltraLearn’s mission is simple but powerful: *to work alongside medical schools in establishing student-led societies that deliver sustainable, clinician-supervised, peer-led POCUS education*. Since its inception, the project has expanded rapidly, with student educators now running sessions at three other medical schools and delivering workshops at national conferences such as the Royal Society of Medicine’s *‘Tomorrow’s Doctors*’.

Upon our completion of the introductory POCUS teaching series, we were eager to share this exciting opportunity with our GKT peers. We relaunched the project at KCL this semester, with the support of its founders and KCL alumni Dr Ephraim Reddy Chappidi and Saman Ali, in collaboration with KCL Emergency Medicine and Cardiovascular Societies. Under the supervision of expert clinicians from partner hospitals, the sessions have provided an extracurricular complement to the revitalised ‘Living Anatomy’ programme within the formal anatomy curriculum.

There was overwhelming enthusiasm among KCL students to learn POCUS; the introductory taster day was oversubscribed threefold, prompting the addition of an extra session. In total, over 40 students from across all year groups attended, gaining foundational POCUS skills and exposure to how ultrasound is used in clinical practice.

During the workshop, UltraLearn student educators, under clinician supervision, guided peers through the normal anatomy found on eFAST scans, a key ultrasound technique used in trauma care. Participants praised the sessions for their approachable teaching style, clinical relevance, and interactivity.

Building on this success, the team has launched a four-week peer-led teaching series, covering:

1. Principles of ultrasound and peripheral structure scanning

2. Thoracic cavity imaging

3. Abdominal imaging

4. eFAST and ultrasound-guided cannulation

The return of UltraLearn to KCL marks an exciting step forward for student-led medical education. With strong engagement and a growing community of passionate student educators, the initiative continues to inspire curiosity whilst empowering the next generation of clinicians to use ultrasound with confidence and purpose.

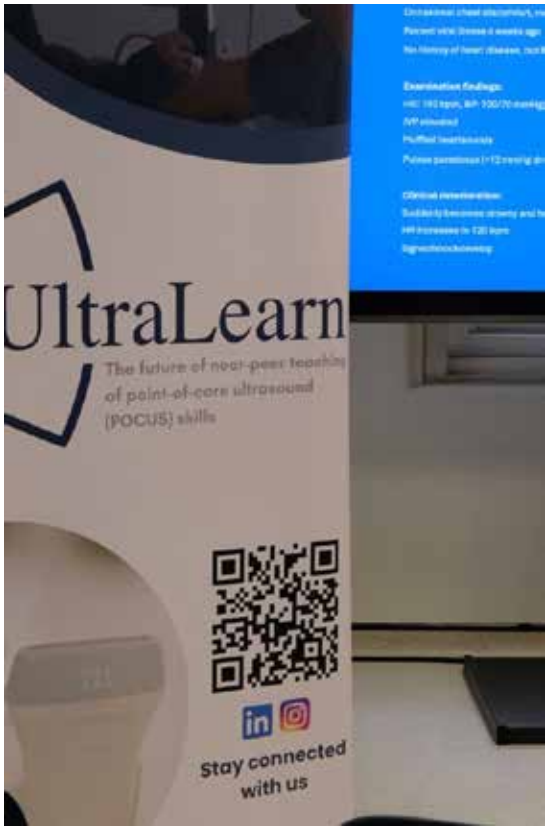


Photo credits: Seren Aydemir MBBS4, Media Officer at UltraLearn KCL.

Epidemics That Shaped Human History

Himanshi Aggarwal **MBBS2**

Throughout history, certain epidemics have seared themselves into collective memory, from the Black Death that ravaged medieval Europe to the Spanish flu unleashed in the aftermath of World War I, and more recently, the COVID-19 pandemic that changed the modern world. Between these well-documented catastrophes lie numerous other devastating outbreaks and mysterious diseases that while extensively recorded by historians, have not captured as much attention. These significant epidemics once brought civilisations to their knees and altered the course of empires, leaving indelible marks on human society. They offer insights into humanity's relentless struggle against invisible enemies and reveal patterns of disease, social response and recovery.

In 430CE, the second year of the Peloponnesian War, the golden age of Athens stood at a crossroads, as Spartan forces besieged the city, yet an invisible enemy that was far more devastating than any army struck from within. The Plague of Athens, as it came to be known, would claim approximately 75,000 to 100,000 lives, approximately 25% of the city's population, and would hence fundamentally alter the trajectory of classical civilisation.

Thucydides, the Athenian general turned historian and survivor of the Plague of Athens, offered a harrowing first-hand account describing the exterior of the body as "reddish, livid and burst out in small blisters and sores," gripped by "insatiable thirst". The disease's course did not however result in the body "wast[ing] away: but rather holding out unexpectedly "against its suffering" with most dying on "the seventh or ninth day". Survivors who made it past this ordeal usually succumbed later with the "disease descend[ing] to the belly" and "violet ulceration" alongside debilitating diarrhoea and death coming from profound weakness.

The plague's onset was as swift as it was merciless. From the crowded port of Piraeus, ships unknowingly ferried the contagion past Athens walls into the heart of the city. Narrow streets, overcrowded homes and packed public spaces such as temples and agorae further fanned its deadly flames as a breeding ground.

Hospitals as we know them did not yet exist. Families, religious sanctuaries, and few powerless physicians bore the burden of care. Thucydides noted the futility of human intervention, with caretakers and gravediggers ending up contracting and succumbing to disease from the sick as well as no humoral or herbal remedy quelling the crisis. Even rigorous bleeding offered no reprieve, with the dying crying out for water, and yet even abundant wells provided only temporary relief against their raging internal thirst. Although the plague was said to have existed elsewhere prior to this, there was no record of as great of as destruction of human life as that as in Athens.

As the epidemic peaked, some three years after its first appearance - Athens became unrecognizable. Public offices emptied; courts and assemblies adjourned. Burials stretched beyond city limits, and mass graves replaced the honour of traditional funerary rites. The city's guiding statesman, Pericles, fell early in the outbreak, depriving the city of an effective leader and fragile democracy into chaos. Political factions thrived on the fear, and accusations of impiety and conspiracy spread, and the city was never able to fully regain its former glory; the subsequent defeat by Sparta in 404 BCE can be traced in part to the social and military disruptions that the plague had wrought.

Modern investigations into the Plague of Athens draw on paleopathology and analysis of dental pulp from ancient mass graves uncovered DNA fragments of Salmonella enterica serovar Typhi, which shows strong evidence for typhoid fever aetiology, but subsequent analysis questions this as well. Yet, anomalies such as the rapid spread, haemorrhagic rash and mental confusion likely suggest co-infections or secondary agents may have worsened the lethal impact.

Nearly two millennia later, at the dawn of England's Tudor dynasty another mysterious epidemic emerged. The English Sweating Sickness struck with equal swiftness and terror, and still baffles historians, epidemiologists and virologists today.

Emerging in the bloody aftermath of the Battle of Bosworth Field, the sweating sickness swept through court and countryside, as "a disease so new and unknown that for a time no one could tell what it was." Patients were seized with an undefinable sense of apprehension, and then an onset of sudden shivering, headache, pains in the back and limbs and followed with intense heat, and sweating that erupted so copiously that it drenched both the patient and the bed. Much like the Plague of Athens, the patient was seized with a raging thirst, alongside pulse irregularity with some physicians noting the appearance of vesicular rash. The terror was abetted by the disease's pace: many died within hours, often before sunset if the symptoms began at sunrise. Unlike many other epidemic fevers however, surviving the first 24 hours almost always meant recovery, but the disease conferred no immunity. Patients could suffer and die from repeat attacks.

Cardinal du Bellay, the French Ambassador portrayed the "slight pain in the head and the heart" accompanied by "sweat", as a disease that struck nobles and commoners alike, resulting in the middle-aged and the affluent being most vulnerable. Doctors, including John Caius, an early epidemiologist, were left with the task of documenting symptoms, whilst unsure of the cause.

Each theory about the Sweating Sickness's origin brings more intrigue than certainty. Its peculiar seasonality, rapid course and lack of acquired immunity point to an unusually infectious and possibly zoonotic pathogen. From influenza, to food poisoning, anthrax or arboviruses and with some modern researchers linking it to a hantavirus due to the wet springs, rodent population booms, and climatic disruption. Others propose enteroviruses or yet unidentified pathogens.

The Sweating Sickness vanished after its final great epidemic in 1551, never (yet) to return. A similar disease, the Picardy sweat, appeared in northern France some 150 years later, marked by a similar but milder illness, eventually fading away in the late 19th century.

Both of these diseases and their histories highlight humankind's vulnerability to unknown pathogens and the limits of contemporary medical science. They also exemplify the profound social upheaval epidemic diseases have always wrought alongside the limits of medical knowledge in the face of emerging diseases remind us to look beyond known (or unknown) pathogens and to consider the amalgamation of environment, host and pathogen that can give rise to such devastating outbreaks.

Caffeine's Chill Cousin:
An Analysis of the Therapeutic Potential of Matcha

Ananya Dangra **Placement Year, Biomedical Science BSc**

It's a familiar sight: students sat in the library from dawn to dusk (and sometimes well beyond) with travel mugs and lecture notes, downing coffee like a necessary fuel – rapid gulps, clenched jaws, shoulders tight from too much buzz. The result is familiar: alertness braided with a tremor in the hands, a scattered attention that peaks and then crashes. What if you could trade that raw spike for steadier focus?

Picture the alternative: a small bowl set before you, steam rising in a soft, green veil. Your first impression is of a dense, satiny jade powder that holds the light. Aroma follows: fresh-cut grass with a toasted nuttiness beneath. The whisk stirs; the surface blooms into a fine foam. Colour blossoms – a dense pistachio green, perhaps softened by the pale swirl of milk. A warm, savoury sip fills the mouth; not sweet or savoury, but a secret fifth sense called umami the Japanese wholeheartedly believe in. The taste rounded by a gentle sweetness and a clean, astringent finish. The bowl's weight settles into your palms; the room grows quieter not from silence but from concentration.

That preparation has a name: matcha.

Notable for its vibrant green colour, matcha is a powdered form of Japanese green tea that has been steadily gaining global popularity, becoming a mainstay in coffee shops, cafés and restaurants. As with most green teas, matcha possesses various health benefits, including enhanced cognitive function, increased cardiovascular health and even weight loss, but instead of growing in sunny fields, matcha bushes are covered using bamboo mats to shield them from the sun for most of their growth period. This process allows the bushes to produce higher amounts of chlorophyll, amino acids and other bioactive compounds which give matcha its characteristic non-bitter grassy taste,

Matcha is 60-70% insoluble ingredients such as Vitamin E, dietary fibre and chlorophyll. The remaining 30-40% comprises amino acids, polyphenols, caffeine, water-soluble vitamins such as Vitamin C and minerals. Polyphenols are powerful antioxidants, almost on par with Vitamins C and E and compounds like carotene in their antioxidant strength. In matcha, catechins make up approximately 90% of these polyphenols, and of the four main types of catechins, epigallocatechin gallate (also known as epigallocatechin-3-gallate or EGCG) is the most abundant and active form present. Multiple studies show that matcha seems to function differently from loose-leaf green tea due to its higher catechin content.

The health benefits of matcha are manifold. Studies have shown that catechins significantly lower fasting blood glucose concentrations. This is thought to occur due to EGCG inhibiting starch digestion, thus reducing the sudden influx of glucose in the gastrointestinal tract post-digestion. EGCG may also inhibit gluconeogenesis, lipid absorption and insulin sensitivity, according to preliminary studies. The high antioxidant power of EGCG also grants it strong anticancer properties. Studies have linked these effects to inhibiting tumour angiogenesis, supressing inflammation and reducing proliferation, EGCG is also capable of inducing the apoptosis of cancer cells and inhibiting tumour growth.

Beyond its protective effects on blood glucose levels, matcha has also been linked to improved cognitive function. These health benefits are attributed mainly to EGCG and L-theanine. L-theanine (also known simply as theanine or as L-y-glutamylethylamide) is a bioactive amino acid predominantly found in green tea plants. It has garnered significant attention due to its impact on matcha's distinctive umami flavour and its benefits on human health. On average, matcha contains five times as much L-theanine as other generic green teas. L-theanine has demonstrable effects on cognitive enhancement, stress reduction and anxiety minimisation. In broader terms, L-theanine is responsible for working in synergy with caffeine to reduce the jitters one might get after drinking a similar amount of coffee, which promotes the state of 'calm alertness' many praise matcha for without the mid-afternoon slump seen in coffee consumption.

While EGCG helps reverse oxidative processes and reduces neuroinflammation, which helps minimise neuronal damage and memory impairment, the impact of L-theanine on the brain is multifaceted and pervasive. It has strong neuroprotective effects due to its ability to cross the blood-brain barrier. This grants it neuroprotectant effects against diseases which are often associated with chronic neuronal damage, such as Alzheimer's disease, Parkinson's disease and other neurodegenerative disorders. The mechanisms underpinning these protective benefits stem from its ability to act as an antioxidant and reduce inflammation. Studies have shown that L-theanine can inhibit glutamate-induced excitotoxicity due to its structural similarities to glutamate. Furthermore, L-theanine also regulates cell signalling pathways involving Ca^{2+} and nitric oxide, thereby protecting neuronal cells from apoptosis.

Aside from alleviating disease symptoms, the effects of matcha were also studied in relation to more mundane activities such as routine memory recall, brain function and attention span. A randomised controlled study (RCT) examined the impact of matcha on these functions and found that participants who consumed matcha regularly showed significant reduction in reaction time, increase perception and enhanced cognitive function against placebo. Another RCT measured the effect of matcha on anxiety and physiological stress, which yielded the result that the participants who drank matcha consistently showed a significant decrease in anxiety and lower physiological compared to placebo. However, its mechanistic interactions with intestinal microflora and its impact on disease states require further study, as their pathways remain difficult to elucidate.

Due its range of bioactive compounds and unique flavour profile, matcha has rightly found itself the centre of a craze for healthier living. However, as with even the best of trends, it has its downsides. Those sensitive to caffeine, or pregnant or breastfeeding individuals should avoid consuming matcha. Additionally, in extremely high quantities, the increased catechin content may interfere with the body's liver functioning.

So, the next time you find yourself haggled and hunched in the library and reaching for that familiar cup of coffee to jolt your attention, instead consider a different pick-me-up: a matcha latte or a strong tea. With less caffeine and more catechins, it is the optimally better option for productivity. But whether you prefer a quick latte or whisk your matcha from scratch in a bowl, the sensory practice matters because it pairs with chemistry: L-theanine tempers arousal to help attention hold, EGCG carries neuroprotective and anticancer signals and nudges metabolic markers, and the modest caffeine stabilises alertness rather than spikes it. For students juggling labs, essays and tutorials (ugh), the matcha latte is both practical and poetic: a portable, evidence-informed nudge toward clearer work, and an aesthetic ritual that signals that it is time to focus.

Compared with the traditional campus quick-fixes that trade substance for style – apps that demand your attention, supplements that promise miracles – this is one that actually earns its look. And so, my advice to you, reader, is this: if you want a single, low-effort productivity addition that feels intentional and reliably useful, make room in your routine for a matcha latte, or if you can spare the time, try the bowl ritual for an even deeper behavioural cue. Order, cradle, sip – then get back to your lecture notes with steadier energy and a clearer mind.

References on request at gktgazette@kcl.ac.uk

The Balance of Division and Death

Alisha Sharma **Year 2 Biochemistry BSc**

By the time you finish reading this article, over 300 million cells in your body will have triggered self-destruction. Apoptosis, as defined by the National Institute of General Medical Sciences, is a process by which cells in the body die in a controlled manner. Unlike necrosis, a cell undergoing programmed cell death shrinks and condenses. The nuclear DNA fragments, and the cell, display signals on their surfaces to prompt rapid phagocytosis. Apoptosis is an essential mechanism within our bodies: it facilitates embryonic development, maintains tissue homeostasis, and regulates the course of an immune response. Much like without death, there can be no growth; the body's survival depends on this delicate balance of cell division and death

Every cell in the body faces a decision: to divide, remain, or die. Various proteins and mechanisms orchestrate cell division. The key transitional stages that trigger cell division – G2/M, metaphase to anaphase, and cytokinesis – are regulated by many signalling pathways and are crucial in determining the cell's fate. These pathways ensure orderly cell division and provide checkpoints to prevent the cell from dividing with damaged DNA or unaligned chromosomes. But what happens if they do?

There are two main pathways in apoptosis: extrinsic and intrinsic. The intrinsic, or mitochondrial, pathway is triggered by DNA or other cellular damage: BH3 proteins are activated, which inhibit pro-survival BCL-2 family proteins. Consequently, BAK and BAX promote the release of cytochrome c, leading to the activation of caspases and the initiation of apoptosis. Conversely, the extrinsic pathway begins in response to signals from the cell's external environment, resulting in cell death. Death receptors facilitate this pathway by activating death caspases after ligand binding, thereby inducing apoptosis. However, even this refined self-destruct system can malfunction, and that's when biology's precision turns into pathology.

When apoptosis fails, the effects ripple throughout the body. Defects in apoptosis pathways that lead to decreased or resistant apoptosis play a vital role in carcinogenesis. Cells that bypass the checkpoints in the cell cycle continue dividing uncontrollably, accumulating mutations that help them evade immune surveillance. On the other hand, excessive activation of apoptosis participates in the pathology of degenerative diseases. Neuronal loss in Alzheimer's and Parkinson's disease, apoptotic loss of cardiomyocytes resulting in myocardial infarction, and degenerative bone conditions are just some of the many consequences of overactive cell death. Understanding how to restore the balance remains a priority in modern medicine. Drugs and treatment strategies aimed at normalising apoptotic signalling pathways have the potential to eliminate cancer cells, while antioxidant therapy is an actively discussed approach to breaking the apoptosis cycle in neurodegenerative diseases. Researchers are studying the complex mechanisms of apoptosis, learning how to restore harmony rather than eliminate it.

Apoptosis isn't the enemy of life, but rather the curator ensuring what persists is functional and beneficial. No system is perfect, but when the scales are balanced, the beauty of the human body is observed: renewal of tissues, shaping of organs, and the quiet continuation of life. After all, life is an act of balance, an eternal equilibrium between division and death.

References available on request at gktgazette@kcl.ac.uk

Mind meets Machine: Brain-Computer Interfaces

Shrivats Gopal **MBBS3**

The brain is inarguably the most sophisticated organ in our body, one whose workings are even today poorly understood. It has a relatively minimal energy input, produces profound computational output- not only basic upkeep of the body but also higher cognitive functions- and even has the ability to perform up to 50 processes in parallel (Georgiou, 2014)! It is then no wonder that it has garnered so much fascination, and has attracted numerous comparisons to computers.

An idea that has long lingered in the minds of neuroscientists is being able to connect our marvelous inner electrical hardware to external electronics. This could lead to leaps and bounds of progress in the burgeoning field of neuroscience. However, perhaps more importantly, it can be used to great effect in clinical settings, and improve the lives of many patients suffering from neurological dysfunction.

Though the existence of neural stem cells means the brain has some regenerative ability in theory, their role is relatively restricted- for instance, only 0.2% of neurons that have suffered ischaemic damage are replaced (Arvidsson et al, 2002). This has led to people turning to electronic hardware to assist or replace damaged and pathological aspects of the neural system when there is loss of functionality. The culmination of years of research in that vein is Brain-Computer interfaces (BCI).

The first step toward BCI was understanding what exactly was going on in the brain. This development was heralded by EEG, which identified various types of brainwaves indicating various functions carried out by the brain. There were several experiments which were done to show this was possible, but one particularly interesting one (Stanley, Li and Dan, 1999) involved showing videos to cats, recording the activity of neurons in the Lateral Geniculate Nucleus of the brain (where the input from the optic nerve is received) and then decoding the brainwaves to reconstruct the visuals originally displayed. This showed that brainwaves directly related to real world events!

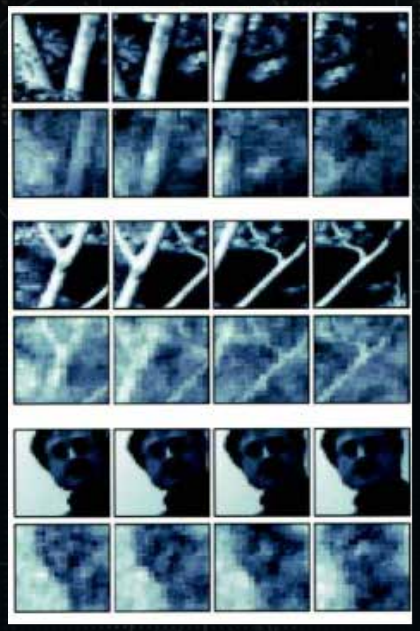


Fig 1. A comparison of the real images shown to the cats (top in each row) with the reconstructed visual obtained by decoding the LGN neuronal activity (bottom in each row)
Figure taken from Stanley, Li and Dan (1999)

The next step was seeing if a person could control their own brainwaves. An elegant experiment to observe this (Wolpaw et al, 1990) involved people trying to move a cursor on a screen, which was programmed to move in accordance with a type of brainwave called mu waves recorded by an electroencephalograph (EEG). Initially, participants had no control over the cursor and helplessly watched it move in random patterns across the screen. But as weeks passed, the participants linked certain movements of the cursor with certain thoughts in their head, and were able to gain an impressive amount of control over the cursor. This paved the way for research into manipulatable neuroprosthetics- which are prosthetics aimed at replacing lapses in neural function.

Neuroprosthetics aren't a thing of the future- some of them are used widely in clinical settings today. One example is a cochlear implant, which is used for people with hearing loss due to problems in the inner ear and nerve conduction ('sensorineural hearing loss'). It consists of two components, one outer and one inner. The outer component picks up sound from the outside world, and is usually worn behind the ear. The sound is converted to electrical signals which are transmitted to the inner component, situated on the cochlea. This component then stimulates the nerve endings in the cochlea, which subsequently transmit impulses to the brain- thereby completely bypassing most of the auditory system. Neuroprosthetics like these are able to transmit information to the brain without the use of sensory organs, which is very interesting. However, they lack the aspect of voluntary control, which is where BCIs come in.

The first step in this regard was taken in 2003, when Carmena et al. demonstrated that monkeys could be taught to control robotic arms for simple tasks simply by using their brains. The monkeys were first taught how to control the arms using a joystick. The motion of the arm was then programmed to be a function of neuronal activity, and the monkeys were then controlling the arms purely through their thoughts- even after the joysticks were removed!

This development was followed by the implantation of a device over the cerebral cortex of a man who had become tetraplegic due to spinal cord injury. The device was placed over the region of the motor cortex responsible for controlling the man's dominant hand, and was connected to a computer to analyse the brainwaves and correlate them with movement. This enabled him to control a cursor on a screen, moving it around and even clicking buttons. He would also be able to control a prosthetic hand, albeit only being able to close and open it.

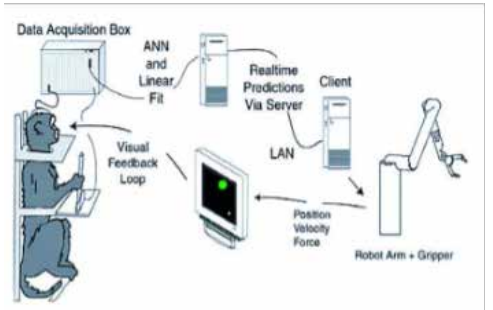


Fig 2. The setup used by Carmena et al. (2003) to get monkeys to learn how to control a robotic arm simply through their thoughts.
Figure taken from Carmena et al. (2003)

Since then, progress has only accelerated, and rapidly at that. In 2013, fine control of a neuroprosthetic arm was demonstrated, and a paraplegic was assisted with walking using non-invasive robotic braces. In 2021, a quadriplegic was enabled to produce sentences by imagining moving his hand to write individual letters. In 2024, a BCI was shown to be able decode sentences in 2 languages in a bilingual individual simply from cortical neuronal activity.

Of course, this technology has not been perfected yet. Errors during the decoding process do crop up, the BCI device has to be specialized for a very specific function, and it is hence unlikely to be seen in widespread clinical practice in the near future. But we have cause to be optimistic- it has been shown to make a difference in several people with damage to their nervous system, and with more time and research could prove to be a game-changer for thousands of people around the world.

Sustainability in Healthcare: The Weight of Waste

Vivek Akkinapragada **MBBS1**

The very first time I stepped into a hospital ward not as a patient or visitor, but rather a volunteer, looking to gain experience and prove to myself that medicine was the field I wanted to spend my future in.

Although many great things came out of my two years, from engaging with staff and learning from so many talented and hardworking people to taking part in charity events and simply having a chat with patients, there was something that I could never quite shake—something that kept gnawing at me.

My generation have grown up in a so-called "green revolution", where science has finally translated into everyday conversation about climate change, waste management and sustainability. With stories about new CO_2 targets or environmental initiatives constantly in the news, you can imagine my shock when, each time I sanitised a bed, I was required to change my plastic gloves and apron. It still haunts me to think about how much waste I generated on my own.

I understood the purpose behind it: infection control is essential, and every precaution must be taken to prevent the spread of disease from patient to patient. Yet I couldn't help wondering, *is there really not a better way?*

That question led me to look deeper into how waste is managed within the NHS, including an intriguing conversation with Mr. Colin Butchers the Head of Clinical Skills for Stage 1 of the MBBS Programme and lecturer in medical education, where we discussed how the Clinical Simulation Centres at King's have changed their policies to reduce waste, it also took me into the world of new innovations that could one day transform how we deal with waste in the NHS and beyond.

Current situation of Waste production and disposal in the NHS

Before we dive into innovations and my conversation with Mr. Butchers, it's important to get a grasp of the current situation of waste production and disposal within the NHS, and how these tie into its carbon emissions more broadly. I've picked out a few key statistics to put this challenge into perspective.

To start with, compared to my shock at the amount of waste a single volunteer could produce, the national scale of the problem is immense at almost 600,000 tonnes produced every year by NHS providers. Consider the fact that each household generates one tonne of waste per year on average, highlighting how large a contributor the NHS is to waste in the UK. Furthermore, the NHS is estimated to take up about 4% of the UK's carbon footprint, roughly equivalent to the aviation industry at 7%, notorious for being one of the most egregious emitters in the public conscience and one that garners a lot of attention.

Bringing it back to waste, there's a certain ways in which it is categorised in the NHS, this being clinical, offensive and general. General and offensive waste can often be recycled while clinical waste is always treated with HTI (High Temperature Incineration), not only is this bad for the environment, but due to issues in waste transport and these facilities being on a small scale we don't even use clinical waste sent to HTI to generate electricity. The biggest problem is perhaps the fact that far too much waste is sent to HTI, compared to what is recommended.

Now, all of this should be prefaced with the fact that compared to 1990, the share of the NHS' carbon footprint has decreased by 62% (as of 2019) and the fact that the NHS operates on a massive scale throughout the United Kingdom as our country's largest employer.

However, this is not to excuse the fact that as the National Health Service, we have a duty to do no harm to our patients. For as long as we continue to continue to incinerate a significant portion of our wate, it is our patients and staff who will feel the burden.

Interview with Mr. Butchers

Now with a clearer picture of waste production and its contribution to the NHS's carbon footprint, I wanted to hear what was being done locally to make a difference. I reached out to Mr Colin Butchers, Head of Clinical Skills, who I first encountered during my introduction to clinical skills lecture, which ended with a brilliant Star Wars themed credit scene, but what intrigued me most was his brief mention of an ongoing project to assess and reduce the waste produced by our Clinical Simulation Centres here at King's, The Clinical Skills Sustainability Project (a QIP – Quality improvement project).

During our interview, Mr. Butchers delved into the overarching aim of the QIP which is to reduce waste by 25% starting in August 2025 to August 2026, our discussion was centred around how this would be measured, and what needed to change to achieve the target. One of the first things he highlighted was how the project had grown from involving the Faculty of Nursing, Midwifery, and Palliative Care to the Faculty of Life Sciences & Medicine, ensuring that the team was able to get a full assessment of the waste generation at the centres and that the project was funded by the One King's Impact fund aligning the project with wider sustainability goals of the university.

Now, when he casually mentioned that the primary mode of data collection was in his own words "We do bin diving to see what's thrown away — that's our starting point.", I remember smiling widely feeling like I'd been thrown a curve ball. But of course, this is the only way to measure the type and quantity of waste being generated by the centres, as from measuring the waste from a few bins, the numbers can be scaled up as the team knows how many bins are in the centres and how many times the rooms are used. The project will compare if the changes (which I'll mention later) result in reduced waste production.

Another aspect to consider was the 'tension' between wanting to teach students how to act in a clinical setting and "recognising that simulation wasn't clinical waste". It's important to mention that as of now, all of the waste in the clinical bins at our simulation centres is treated exactly the same as any hospital and is incinerated. As we discussed, this is both highly expensive and increases our carbon footprint. One potential solution would be to reuse things like dressing packs, putting them back together once opened so they may be re-used in the future and creating a separate bin for gloves from which they can be recycled, while increasing awareness of sustainability via education with both staff and students.

From a wider angle, Mr. Butchers told me that the project was focused on "behavioural change more than anything", it's the most cost-effective way to enact change rather than immediately going to install expensive, and often novel waste processing technologies. Another example of this which he mentioned was the NHS' Gloves Off campaign, which aims to increase awareness of the fact that non-sterile gloves are not needed for every interaction, and more thought should be put into whether gloves are needed or not in a

particular procedure, task or interaction.

I would like to thank Mr. Butchers for his time and insight into the project and this domain more widely, if this article has interested you so far, I would highly encourage you to check out the project's webpage which can be found on google at the link below:

https://www.kcl.ac.uk/research/clinical-skills-sustainability-project

Innovation

Yet, even with projects like this leading the way with regards to changing behaviour and reducing waste in the first place, it is still the case that for the near future, vast amounts of clinical waste will be processed through HTI. So, I began to research the potential innovations that could be crucial in transforming this part of the waste-CO2 cobweb.

The first and most promising is autoclaving and shredding, where steam is used to sterilise infectious waste before it is then sterilised and compacted. The final product is a dry, inert substance which is easy to dispose of, or could be sent to a energy from waste plant where incineration is used to create energy which is far more sustainable and is the basis of many countries' entire waste processing systems. This treatment method can be used for clinical waste such as used dressings, personal protective equipment (as long as they are not chemically contaminated) and contaminated plastics. However, it cannot be used for chemical waste such as solvents, disinfectants, reagents and drug contaminated compounds along with anatomical (human waste) and radioactive waste.

Another potential processing route is offered by microwave disinfection and pyrolysis treatments. Microwave disinfection uses moist heat to sterilise waste within compact chambers, which makes them ideal in compact hospital environments. While pyrolysis, specifically converts plastic waste into useable synthetic fuel under low oxygen conditions, through this method, it has been shown that we can capture around 80% of the plastic's energy. However, both suffer similar drawbacks as autoclaving where they can't handle all types of clinical waste.

One final innovation I looked at was a more experimental one, being only run at pilot scale so far in the Uk is plasma gasification. This technique uses ultra-high temperatures from 3000 to 5000˚C to turn almost all types of waste (except radioactive) into syngas which is reusable fuel like in pyrolysis and produces inert slag which is harmless. Sadly, this is currently extremely expensive to set up and will not be seen in your local hospital anytime soon.

Conclusion

With all this new information I sought out, I came to the realisation that the greatest difference comes from a change in thought. We shouldn't be comfortable being in a system which causes a large amount of ecological harm and is widely unsustainable. It is all healthcare staff and especially students who should think carefully about where they are disposing specific wastes and not simply throw everything into clinical waste because it saves time or it's easy. This shift in mindset, along with developments in waste tracking, better sourcing of materials and waste treatment will not only help the NHS achieve its goal of being net-zero carbon wise by 2040 but also help saves lives just as the staff do each day.

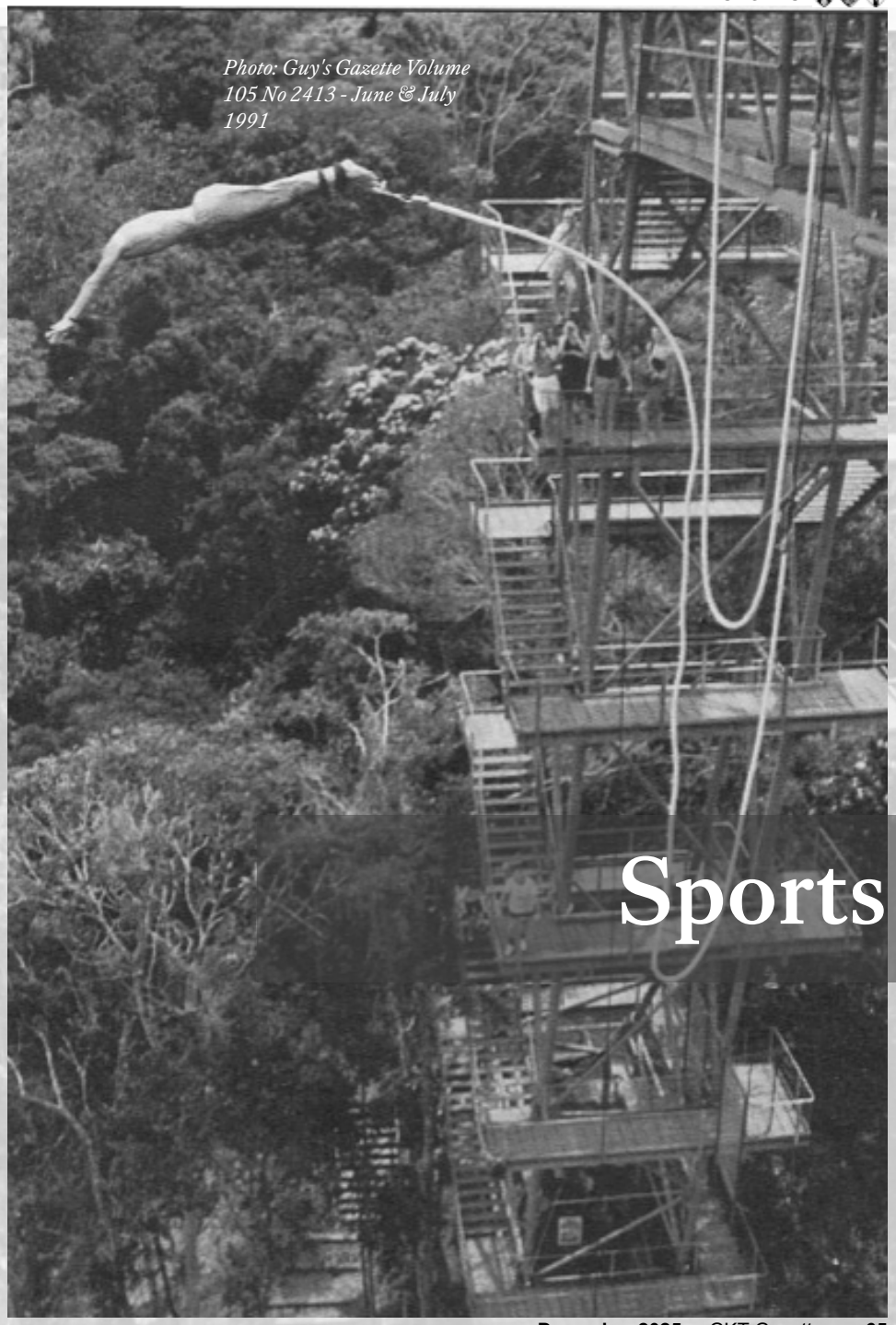


Photo: Guy's Gazette Volume 105 No 2413 - June & July 1991

Sports

GHRFC vs Charlton Park RFC

Saturday 18th October Match Report

The men of Guy's stand resolute once more, securing a third win from three in the league. After a few travel hiccups (Fresher Max Wight turning up to HOP with all the kit and requiring a frantic Uber across London), our squad arrived to find a somewhat depleted Charlton Park side of only 12 men. 12 aside was agreed upon and the game began.

From the outset we made use of the extra space, Caleb Adamu scoring two tries in quick succession. I wish I could pretend that these were well constructed team tries, but we all know they weren't. Ben Sullivan misses his first of many from under the posts and inside three minutes the score is 12-0.

Charlton Park were not to go down without fighting and, with some ferocity, came right back at us. They strung together some abrasive phase play before their elusive fly half's chip in behind gave their large pack an easy task. With a prop flopping over and a simple conversion, the score tightened to 12-7. Recognising our complacency, the team were galvanised and a string of impressive scores came on.

Recognising the importance of phase play against their strong but tiring pack, our forwards fronted up with strong defensive work and carrying from Robert Emslie, Fresher Freddie Clarke and the ever excellent Paul Oregi. Building upon this dominance, Will Beardmore cut an imperious line between defenders, running the ball 40 meters before throwing a perfect pass to Ben Sullivan on the support line. From here, despite being on the line, Ben felt compelled to step their full back three times before putting the ball down and ticking the scoreboard on. Naturally unconverted, 17-7.

Caleb then secured his hat-trick (boring). Moving on...

After a blistering carry from Suyog Naharki, we made our way into the Charlton Park twenty-two once again. Now a familiar terrain for us, some powerful carrying and sharp offloading saw Oli Vij secure quick ball and, with his even quicker feet, he danced past much of the opposition 12 to score. Unconverted once again - we really must question what those backs are doing when lining up kicks during training. Another from Fresher (but not really) Oli would follow soon after, as the spirit of Ben Awosika allowed him to find the line with ease after some terrific stepping. Sullivan with another miss (this is getting silly now), 34-7. A ball over the top to Zain Arif unlocked their defence and he strode 40 meters to the line. The half was at an end, but not before Caleb's conversion attempt (can't be worse than Sullivan) flew wide (so, about the same as Sullivan). 39-7.

I must confess that the second half is something of a blur from here; scoring 13 tries does have its downsides! Some highlights from the half then to satisfy the most eager of readers: Fresher Peter Wood, playing his first game of rugby, flew up in defence on the wing to demolish his opposite man and stop a certain try; Noah Worral demonstrating some blistering pace to score on his first club appearance and first game in 4 years; Charlie Giles continuing to make use of his 30+ BMI with many a monstrous hit; Oli bringing up a third try, Caleb a fourth and a two for both Will Beardmore and Zain Arif, for which there was appropriate gin. The game ended 67-7 and beer and revelry followed.

Onto Bexley away next in the league on the 8th November, as we look to continue the streak that sees us well clear of the competition at the top of the table.

Man of the Match - Caleb Adamu (who'd have thought!)

Dick of the Day - Max Wigh

GUY'S HOSPITAL RFC BECOMES A BRITISH AND IRISH LION'S ORIGINS CLUB

On 5 September, Guy's Hospital RFC was officially recognised as a British and Irish Lions Origins Club. The award is given to clubs that have helped produce and develop players who went on to pull on the famous red jersey.

The Lions Origins programme exists to highlight the grassroots side of the game. It connects today's supporters and players with the local clubs that shaped the Lions' story and gave so many of their players a start.

At Guy's Campus, representatives from Howden, the Lions' official sponsor, presented two plaques to the club; one confirmed our new status as an Origins Club, the other listing the 15 Lions who began their rugby journeys with GHRFC. Players, alumni and supporters were there to watch and celebrate what was a proud moment for the club.

Speeches were given by Club President, Dr Ben Challacombe, and First Team Captain, Luca Marsella. Both highlighted the pride this recognition brings, reiterating the importance of carrying on the club's tradition, and how rugby at Guy's has roots going back to the very founding of the RFU.

The event wasn't only about the past, however. It was also a reminder that joining GHRFC means becoming part of a much bigger story. Forging ahead into the new season, the club is excited to build on its past.

We are proud to have been recognised in this way and look forward to making more history in 2025/26.

GKT Gazette

Games Section

£0/month

✓ Unwind/challenge yourself with our mini games and brain teasers...

send us your answers...

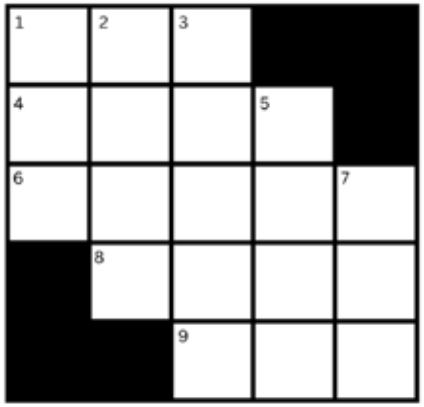
GKT Gazette

Crossword

MINI

How to Play

The goal is to fill the white squares with letters, forming words or phrases that cross each other, by solving clues in the Across and Down columns which lead to the answers.



ACROSS

1. Systolic murmur + split S2
4. "NOW!" but for doctors
6. Pick a card, any card...
8. Rudolph the Red Nosed _____deer!
1. Region of white matter in the spinal cord containing descending pathways motor control, pain modulation, and autonomic function

DOWN

1. Can be deranged in hepatic disease
2. Top of the Christmas Tree!
3. To have had the courage to do something
5. Right before PTs...
7. One of the most profitable drugs in the world targets this...

GKT Gazette

Strands

How to Play

Find theme words to fill the board by joining the letters in order. No theme words overlap. There are 7 words total, good luck!

TODAY'S THEME

Tis the season...

C	H	V	O	R	N
U	F	R	I	T	O
U	L	I	R	F	S
B	A	S	U	G	I
L	B	T	M	S	R
E	S	S	A	U	K
A	N	T	R	T	E
S	T	A	E	E	Y

GKT Gazette

Connections

How to Play

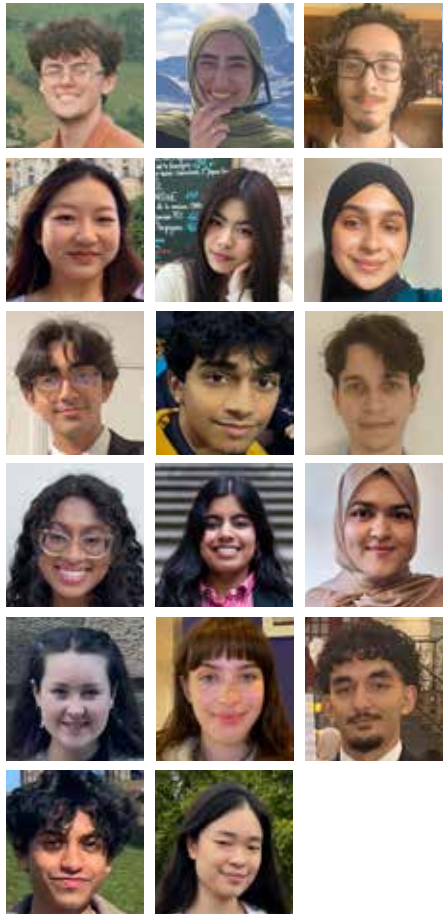
Find groups of four words that share something in common.

Category example:

- FISH: Bass, Flounder, Salmon, Trout

Each puzzle has exactly one solution, watch out for words that seem to belong to multiple categories!

CAST	GARLAND	PRESCRIPTION	CHART
STAGE	RIBBON	BARREL	STOCKING
CHIMNEY	SCRIPT	VESSEL	SCARF
BANDAGE	SANTA'S LIST	ID	PRODUCTION



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