

## Anaesthetists in Training Essay Prize Winner

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### Anaesthetic training in 2042- a day in the life of an anaesthetic trainee

Jim wakes up naturally, feeling refreshed from a quality night of uninterrupted sleep. This isn't unusual for Jim, a final year chief resident in anaesthesia. The term 'trainee' was finally abandoned in 2031 after years of collective misunderstanding of what a 'trainee' actually meant. Although the college resisted, the Americanisation was all but inevitable. Since the abolition of training programmes run by geographical areas or (Local Education and Training Boards (LETBs)), as they were once known, and the move to a system in which doctors in anaesthesia are trained in one institution, the role of the chief resident has been embraced.

Jim is refreshed because for the last 2 years of his training he has enjoyed working a 32-hour week. Anaesthetists are strictly forbidden to work in excess of 40 hours in a week and this should only occur under 'extreme and exceptional circumstances'. Rules brought into UK law in 2035 reduced the maximum working week from 48 to 40 hours and in 2040 all rosters within the UK adopted a 32-hour working week pattern. Experience in the early 2000s led in part by the 'up starters' and 'dotcom boomers' in Silicon Valley; reignited the realisation that productivity actually increases when people work fewer hours<sup>1,2,3</sup>. This had the knock-on effect of a reduction in the risk of stroke and heart disease<sup>1,4</sup>. Problems identified by a national survey of anaesthetists in training in 2016-17 identified that 85% of anaesthetists in training were at risk of burnout. This led to wide spread reform in working patterns and hours which culminated in the GMC helping to build this into UK constitutional law<sup>3</sup>.

He saunters downstairs to enjoy his usual breakfast of scrambled eggs and avocado before heading out to cycle the 15km journey into work. He gets a message via the screen in his kitchen at 06:30 to let him know that his daily calorie count for yesterday was sufficient and that his current levels of HDL/LDL and plumbolactin\* are within range, his blood pressure and heart rate are perfect and his BMI is 22; he is allowed to make the journey into work. Mandatory monitoring and weekly drug and alcohol tests were introduced in 2033 after a series of deaths resulting from poor judgments; caused by anaesthetists under undue amounts of stress (raised plumbolactin levels\*). A resulting wellness campaign and drive from the college of anaesthetists ensured that mandatory daily health checks via an inbuilt retinal scanning device that wirelessly sends data to the

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\* Plumbolactin was discovered in 2026 by researchers in Bristol, it is a sensitive biomarker of stress and levels greater than 25 nmol/ml are directly correlated with myocardial infarction and stroke.

departmental A.I. controller were instigated. The controller in turn alerts the theatre coordinating A.I. to any anaesthetists who are not fit for work that day. Anyone failing these daily health checks (in particular raised levels of plumbolactin) are asked to report to the wellness A.I. as soon as they arrive at work. Jim has only suffered this twice due to raised plumbolactin levels. A day with the wellness A.I. is generally considered to be a fantastically replenishing day and an anaesthetist in Newcastle was recently disciplined for falsely elevating her plumbolactin level to increase her time in the wellness suite <sup>4</sup>. All National Health Experience Centres (NHEC<sup>†</sup>), since their roll out in 2033, have had to provide a wellness suite. Minimum standards include 24/7 massage therapists, cognitive behavioural A.I.s, a sauna, swimming pool, Jacuzzi, meditation rooms and relaxation pods. A period of 4 hours of therapy is usually required to restore levels of plumbolactin\*. All employees are entitled to a free weekly visit to the wellness suite.

Jim enjoys his cycle into work, which within the last 5 years has become entirely free of other traffic; the dedicated cycle networks within the UK have recently become world class (under the patronage of Chris Boardman who is a peer in the House of Lords). He parks his bike in his own dedicated 'bike pod' which includes a large cycle locker, a shower booth and changing area. He is issued with a new set of comfortable, perfectly fitting theatre scrubs made from sustainable self-decomposing recycled fabric and receives his cleaned set of comfortable minimalist theatre shoes which are also single use (and of course recycled). Whilst parked, any mechanical problems with his bike are dealt with promptly by the maintenance A.I.

Eighty percent of staff walk or cycle to work; enjoying a significant tax break, with the remaining arriving on public transport (which is paid for by the state). Since the creation of NHECs most resident doctors live within a 20km radius, as they are not required to move to different hospitals during their residency. Campaigning from doctors in training between 2017-2023 led to the reinstatement of 'on call' facilities for all doctors in training, after a series of high profile deaths following prolonged night shifts combined with long commutes. Happily for Jim these long commutes ended long before he started his residency in anaesthesia.

The working day starts at 08:00 with a usual finish time of 16:00. Jim's first task is to attend the morning list allocation meeting with the team of residents and the allocation A.I. Coffee is provided (some things haven't changed). In a typical week a senior resident will run 1 list solo with a consultant supervising distantly but available at the start of the day to discuss the list. The supervising consultant will typically oversee 4 residents simultaneously. This is done in the central control room where he/she has real time video of each theatre suite with virtual reality glasses with all patient observations within their view at all times. The other days are usually split between directly supervised lists (typically 1 day) and 'floating days' where a resident will move between

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<sup>†</sup> The establishment of National Health Experience Centres (NHEC) in 2032 centralised all hospital based care within the UK. These 'super hospitals' reduced the number of hospitals within the UK from over 300 to only 30 within the space of 3 years.

multiple theatres and the ICU performing multiple practical procedures. The remaining time is usually spent utilizing technical and virtual reality support along with 4 hours of dedicated real time in-situ virtual reality simulation team training for the entire theatre suite. This is a mandatory requirement for all theatre practitioners with a minimum of once monthly attendance.

Jim happens to be training to become a specialist in shared decision making (SDM). This means that he also attends a bi-weekly SDM clinic, which has input from surgeons, anaesthetists, intensivists, physiotherapists, occupational therapists, exercise physiologists and psychologists. They are coordinated by the perioperative medicine A.I. Jim receives feedback after each session and has a structured 30 minute debrief with his supervisor where they analyse the key consultations.

Today Jim has been allocated to a hand regeneration list. Jim enjoys these lists and has a good working relationship with the theatre staff and the surgical team. As Jim has been within the same institution for his entire training he has been able to foster healthy professional relationships. Jim can't remember the last time that a list overran and once every 4 months the team all go out for dinner, which is paid for by the NHEC. The list usually involves the grafting of genetically profiled and laboratory generated hands for trauma victims. Due to advances in such therapy the cell lines are completely stem cell generated and are therefore auto-transplants. Patients' injuries are now mostly due to recreational accidents due to the huge UK wide reduction in road traffic accidents since the ban on traffic within a 30 km radius of all UK urban areas.

Surgical techniques have advanced greatly in Jim's short career but the anaesthetist who is overseeing Jim for the list explains that the anaesthetic technique of choice actually hasn't advanced all that much since the early 2000s when ultrasound guided regional anaesthesia became commonplace. He says that he can even remember when 4D ultrasound became commonplace in 2025. The vast majority of these procedures are done fully awake and only take around 1.5 hours. Jim uses a computer driven needle guide to target the needle to the brachial plexus (under real time 4HDS<sup>‡</sup> ultrasound) from an axillary approach and anaesthetises with a local anaesthetic agent called levotriamethecaine developed in 2024. It is perfect for this procedure as it is very fast acting and lasts for 72 hours. The needles used have a powerful ultrasonic sensor that can detect intraneural placement 99% of the time. They alarm when the epineurium is breached to prevent injection. Nerve damage from regional anaesthesia is now of course vanishingly rare due to the safety profile of levotriamethecaine alongside the extremely low rates of local anaesthetic being injected epineurally.

There are 4 patients on today's list. Jim has seen all of them 8 weeks ago due to a well-organized pre-assessment service that ensures that all necessary pre-op investigations and treatments are

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<sup>‡</sup> High definition scartilintographic ultrasound was brought in around 2028 and dramatically improved image quality.

carried out at least 8 weeks before surgery. He quickly pops up to the admission lounge to find all of the patients warming up on exercise bikes using their targeted training programme based on their personalised anaerobic threshold that was determined shortly after referral; which in most cases was between 8 and 10 weeks ago. These cases typically have a much longer time to surgery due to the psychological profiling that must be undertaken and the multiple sessions with the psychologist and physiotherapist to prepare for the transplant.

After their warm up patients are allowed to eat and drink before this procedure as there is a zero percentage conversion to general anaesthesia in Jim's institution. The meal provided is however in accordance with their personalised dietetics plan that was established 8 weeks ago. Patients are not offered this particular operation unless their BMI is under 30 and body fat percentage is <30%. This model is common in 2042 and there is a slightly different cut off point for different procedures but elective surgery is now very rare for patients with a BMI>35.

All residents get a 45 minute protected lunch break; the cost of this is that once a month you have to be the 'lunch relief resident' (LRR)'. Since the resident contract was renegotiated in 2030 it became mandatory to provide a free lunch to residents to fall in line with what the New Zealanders had been doing since the 1990s! The overall rise in UK state taxation to fund and sustain the NHEC centres in 2028, alongside compulsory charges to see a general practitioner and for attendance at emergency departments and minor injury units, improved state spending on healthcare as a proportion of GDP within the UK to the highest in Europe at 26% (2041).

All cases are automatically logged and retinal scanning detects who the anaesthetist was for each case so Jim doesn't have to worry about logging any cases or procedures. All reflective practise and feedback is also automatically logged. At the end of each day there is usually time for a debrief with the theatre team for around 15 minutes to review the day. The team then review the patients in the recovery pod prior to going home. There is no need to handover elective patients as the recovery A.I. has a complete recording of all events each day and is able to tell staff the exact doses and timings of any intervention for any patient.

Jim leaves at 16:06 and heads home via an extended route through his local regenerated parkland<sup>§</sup>. He is meeting some friends for dinner and looking forward to a day off tomorrow.

### Abbreviation list

- A.I.- Artificial intelligence (In this essay refers specifically to advanced robots acting like human droids)
- BMI- Body mass index
- GDP- Gross domestic product

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<sup>§</sup> Regenerated parklands are areas of greater than 20 square kilometers built between 2025-2030 within the 30mk urban ring of all UK cities. They provide a much needed green landscape and used mostly derelict and brownfield land.

- GMC- General Medical Council
- HDL/LDL- High/low density lipoprotein
- HDS- High definition scartilintographic ultrasound
- ICU- Intensive care unit
- LETBs- Local education and training boards
- LRR- Lunch relief resident
- NHEC- National health experience centers
- SDM- Shared decision making

## References

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- 4 <http://www.economist.com/blogs/freeexchange/2013/09/working-hours> (Accessed 16/02/2017)
- 5 <https://www.rcoa.ac.uk/sites/default/files/Newsletter17-Feb2017.pdf> (Accessed 16/02/2017)
- 6 <http://www.extremelytenuoushealthcarenews.com> (Not actually accessed but completely made up)