

Tackling the elective case backlog generated by Covid-19: the scale of the problem and solutions

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ABSTRACT

Background In April 2020, Covid-19 brought NHS elective procedures to a halt. The aim of this paper is to produce accurate forecasts on the building backlog, highlight the state of waiting lists currently and propose solutions required to prevent a public health crisis.

Method Using data published by NHS digital and NHS England on previous years, we have analysed and used this to produce estimates of cancellations and missed cases. We also analyse government data on waiting lists and show compliance or lack of with these.

Results We show that compliance with waiting list times pre pandemic was falling year on year (83.2% in 2020 down from 87% in 2019). Every month that passes we estimate that 400 000 cases are not being performed. This may include urgent cancer care work in some trusts.

Conclusions Waiting lists have been governed by strict rules since 2004. Given falling compliance with 18-week intention to treat we believe the scale of the backlog combined with NHS capacity diminished due to Covid-19 precautions is a public health crisis waiting to occur. We identify difficulties in resuming elective work and suggest strategies that could be employed to avoid a public health crisis.

Keywords emergency planning, health services, planning

Introduction

The current Covid-19 pandemic faced by the healthcare system is unprecedented in the modern health care setting. The NHS has been re-tasked to treat a large number of COVID 19 patients, suspending the usual business of elective surgery.¹ This jeopardizes the government's stringent guidelines for the pace at which patients should receive treatment for pathology not related to Covid-19. We examine what the challenges faced by the NHS and government in maintaining adherence to these targets, an estimate of the size of the backlog, the delay in management of endemic pathologies in the UK and the strategies that may be employed to combat them. The NHS and government response to the novel coronavirus was in stages. On the 30th of January, a level 4 incident was declared, the highest response on the scale of incidents.^{1–4} On the 17th of March, Sir Simon Stevens sent a letter which instructed trusts to postpone all non-urgent elective operations from 15th April at the latest, for a period of at least

3 months.² Although the plan specifically states 'Emergency admissions, cancer treatment and other clinically urgent care should continue unaffected'.² Experience shows that this was not the case. Several trusts have had to suspend cancer operating to deal with capacity issues in treating Covid-19 patients.^{3,4} It is important to note that pre pandemic (February 2020) 83.2%⁵ of patients waited less than 18 weeks to start treatment (with a target of 90%), a decline from data in February 2019 which showed 87% of patients being treated within 18 weeks.⁶ Although not covered by this paper,

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there will be also be a large scope of inequality by region ongoing, compared to the average wait time of 62 days, 48% of admissions in London waited less than 1 month for treatment.⁷ As of November 2019, there were 4.5 million people waiting for elective treatment. An accurate estimate of the backlog of missed procedures is required to facilitate planning and response by the NHS.

Method and results

It is impossible to tell the exact scale of the cancellations ongoing as NHS Statistics have ceased to record this data during the current Covid-19 pandemic.⁸ A recent paper published in the BJS shows the estimated growing international backlog.⁹ A rough estimate can be made from comparison of the statistics from 2019 for the same period. Table 1 shows the provisional figures from 2019 for procedures and admissions within NHS England by month.¹⁰ The data show the number of Finished Consultant Episode's (FCE's): 'A Finished Consultant Episode (FCE), is a continuous period of admitted patient care under one consultant within one healthcare provider. FCEs are counted against the year in which they end. Figures do not represent the number of different patients, as a person may have more than one episode of care within the same stay in hospital or in different stays in the same year'. Subtracting emergency admissions from total admissions to calculate non-emergency admissions, the percentage of FCE's requiring a procedure can produce an estimate of the number of non-emergency admissions with procedure each month. This is shown in Table 1 below. This estimate is in line with the known data of Finished Admission Episodes (FAE's) by admission method, with comparable figures of 'elective admission method' and 'non-emergency admission with procedure' with an explicable discrepancy due to 'other admission' methods (Table 2). This gives an estimate of between 505 146 and 574 353 admissions per month. Further correlation can be provided using the data from the hospital admission by specialty and eliminating all non-surgical specialties and paediatric specialties we can see that there were 4 871 276 admissions that were 'planned' (1 335 565) or 'waiting list' (3 535 711). This gives us an estimate of 405 939 admissions per month for the surgical specialties, with an average bed stay of 4.3 days.⁷

Discussion

Main finding of this study

Even if we use a low end estimate of ~400 000 cases per month, this will still lead to a back log of 1 200 000 cases over a 3 month period. This will lead to a significant

delay in treatment times. At pre pandemic productivity levels significant resources and time will be needed to meet demand. Using orthopaedics as a case study; 97 792 hip replacements were performed in 2018,¹¹ a 3-month back log would generate ~24 448 hip replacements. NJR data show that an average hip surgeon performs 60 per year. Similarly there were 90 017 knee replacements performed in 2018, with knee surgeons performing an average of 40 joints per year.¹¹ Clearly, patient attendance at general practice will be decreased during the pandemic; however, we should not forget that these patients are still in the community and a surge in referrals post pandemic is likely. Given these figures to clear the backlog of hip replacements would require an extra 407 surgeon/years similarly knee replacements would require a further 562 surgeon/years.

What is already known on this topic

We know that many of the royal colleges are looking at returning to normal practice. A joint statement by The Faculty of Intensive Care Medicine, Intensive Care Society, Association of Anaesthetists and Royal College of Anaesthetists, has outlined their strategy for resumption of services, 'Space, Staff, Stuff (equipment) and Systems'. For example, for space they will considered the service 'Green' if 85% of baseline ITU capacity is used. Any use of extended capacity illicit an amber code. Only when all four S's are at green do they envisage a return to normal surgery.¹²

The Royal college of surgeons have provided guidance that patient prioritization should have clear local guidelines based on national and local needs.¹³ They also suggest NHS England are undertaking similar gap analysis as this paper offers, although this is not yet available. Given the broad scope of elective procedures available with each specialty vying for theatre time and anaesthetic assistance clear guidelines must be initiated at the least a regional level to avoid a postcode lottery on healthcare. Very recently a paper published in the new 'Transient Journal of Trauma, Orthopaedics and the Coronavirus' orthopaedic surgeons in Croydon have suggested a three phase return specifically for orthopaedic cases, stratifying patients into three risk categories and starting 'Phase 1' with low risk, high benefit patients (e.g. day case arthroplasty) and moving down to phase 3 with resumption of all orthopaedic cases.¹⁴ Both Radha and the FACS suggest antibody testing for staff be available which given the current capacity for testing may further delay resumption of normal activities. It is the opinion of these authors that formally presented guidance by the various colleges would aid greatly in the decision making for management staff and schedulers. Once again the risk of not having national guidance is the

Table 1 Provisional Monthly Hospital Episode Statistics: admitted patient care data with addition of non-emergency admissions requiring a procedure estimate^{7,10}

Month	FAEs	Admission method		
		Elective	Emergency	Other
September	1 367 608	696 475	512 001	159 132
August	1 408 713	723 751	523 269	161 693
July	1 447 287	747 669	535 964	163 654
June	1 412 865	735 677	519 277	157 911
May	1 453 043	750 794	540 049	162 200
April	1 360 043	694 957	512 100	152 986

creation of ‘postcode lotteries’ for patients awaiting elective procedures. Clearly priority will have to be given to missed cancer procedures, which may include diagnostic procedures, we should expect a surge in new cancer diagnosis and, therefore, treatment requirements post pandemic as an estimated 2300 cases per week are being missed.^{3, 15}

What this study adds

This study identifies the large building backlog of elective procedures as well as the potential missed cancer burden to the NHS. We have identified the barriers to restarting elective work and how this may impact the ongoing service the NHS provides. The royal college of anaesthesia and intensive medicine is likely to be a large stake holder in restarting work due to their high level involvement in treatment of Covid-19 patients within the intensive care setting and also work facilitating procedures. Therefore, meeting their ‘4 S’ traffic light system will be key to restarting elective work.

Increase in recruitment of specialty doctors able to perform independently would help achieve green in ‘Staff’. Notoriously difficult and the subject of many manifestos will be challenging to achieve in a meaningful timescale. One option is to shorten training times and instead enact a two-tier consultant system, allowing continued on the job training and assistance for more challenging cases. Another option to increase the workforce is to pay consultants to carry out extra lists instead of working in the private sector or resting. The financial implications of which will be undesirable. Weekend working is already well established within the NHS and weekend theatre lists targeted at reducing waiting times have been successful in the past but are shown to be a temporary measure which requires an injection of funds.¹⁶

To combat the lack of ‘Space’ the NHS could utilize the efficiency of specialist centres already set up. As noted above there is a large discrepancy in waiting times depending on

the geography of the UK. Centres already set up for efficient elective work at cold sites could take patients from further afield in an effort to normalize waiting times. This will of course require good communication set up between the various support specialties (physiotherapy, occupational therapy etc.) and patient selection would be key. So-called ‘cold sites’ are almost universally recommended for use in resumption of services,^{13,14,17} this may further delay hospitals without this capacity already in place. One solution may be to continue to utilize the private beds currently acquired by the NHS for the pandemic but as elective surgery resumes there will be a financial motivation for the private hospitals to retain these for their own use.

Improving the capacity of the ‘System’ could involve optimizing the efficiency of lists currently running—a review found that 30% of lists started late and 38% finished early.¹⁸ However, strategies must be either incentivized or stringently managed to be effective, given the strain on the workforce currently it may not be effective or appropriate to increase pressure on staff. Incentivizing the current workforce to increase workload is another option but this would require a large financial commitment from central government, most hospitals operate a ‘two-session’ theatre working day. If the new norm was increased to ‘three sessions’, this may in some way go to eliminate loss of capacity from Covid-19 added precautions.

Supply chains seem now in place to provide adequate ppe for work to continue, if there is a second surge/wave of cases then further investment may be required to meet demand—a second surge would of course have implications for elective work.¹⁹

Limitations of this study

This study is limited by ramifications of using historical data to predict future or current outcomes. In addition, any plan-

Table 2 FAEs by admission method⁷

2019	Finished consultant episodes	FCEs with a procedure	% FCEs with a procedure	Ordinary episodes	Day case episodes	Day case with a procedure	% Day case episodes with a procedure	Finished admission episodes	Emergency admissions	Non-emergency admission and procedure
Oct 19	1 840 455	1 009 412	54.8%	1 166 818	673 637	600 033	89.1%	1 525 178	565 326	526 438
Sep 19	1 725 979	1 015 939	58.9%	1 105 315	620 664	582 690	93.9%	1 428 181	535 056	525 708
Aug 19	1 713 472	1 012 009	59.1%	1 108 339	605 133	568 563	94.0%	1 414 682	532 720	520 903
Jul 19	1 846 274	1 101 264	59.6%	1 172 130	674 144	633 149	93.9%	1 526 850	563 945	574 353
Jun 19	1 709 597	1 010 989	59.1%	1 102 241	607 356	571 396	94.1%	1 414 451	531 335	522 240
May 19	1 800 193	1 060 876	58.9%	1 161 064	639 129	601 609	94.1%	1 483 667	560 004	544 326
Apr 19	1 725 301	1 004 293	58.2%	1 121 169	604 132	569 322	94.2%	1 413 927	546 124	505 146

ning or estimate on resuming must account for the reduced capacity of the elective service given the extra precautions that must be put in place, current guidance recommends a 20-min waiting period after the last aerosol generating procedure, followed by a clean of the theatre (AGP).²⁰ We have seen locally that this can significantly disrupt theatre flow and planning. Clearly, guidance may change and adapt but it is unrealistic to expect the same efficiency from theatres/procedure rooms as pre pandemic. Cancellation of a procedure on the day of the procedure (usually due to unforeseen circumstances) is not uncommon and an increase in these despite preoperative screening should be expected as surgeons and physicians will be understandably risk adverse.

Conclusions

The novel Covid-19 virus has disrupted elective work within the NHS to an extent not seen before. Resumption of service to approaching normal will take months if not years and will result in a large backlog of elective cases. Strategies for resumption of work differ between college and specialty with new guidelines being produced on a weekly basis. We estimate across the NHS ~400 000 procedures are backlogging per month. Resumption of services will be slow and less time efficient than pre pandemic. These patients who wait may have a significant reduction in quality of life, gall stones causing frequent biliary colic, arthritic joints disrupting sleep due to pain. This in turn will increase the burden on primary care and also have knock effects to tertiary care. Patients who have had multiple attacks of cholecystitis end up staying in hospital a week longer,^{21, 22, 23} whereas those who wait too long for a joint replacement see a significant reduction in benefit.²⁴

In conclusion, the current crisis presents many challenges to the NHS, we believe the backlog of elective cases will have a real impact on patient care and wellbeing. Unless the Government recognizes this paradigm shift in treatment and responds appropriately, the current measures will result in large fines being levied on NHS trusts. Ongoing waiting times must be adjusted to provide reasonable expectations to patients and allow critical cases such as cancer diagnostics to proceed in a timely manner. Strategies to reduce waiting times include continued investment in private hospital capacity, expansion of the workforce and increase in conservative management strategies. Finally, a national level response is needed to prevent 'post code lotteries' and could be used to redistribute workload evenly amongst the workforce.

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Conflict of interest

We have no conflict of interest to declare.

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