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Coronavirus (COVID-19): guidance on treating patients

Guidance from the Chief Medical Officer (CMO)

COVID-19 position statement:

Reducing the risk of postoperative mortality due to COVID-19 in patients undergoing elective surgery

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Summary of revisions

Date	Version	Revisions
10/02/2021	2	Format of document changed, layout on page 1 and following sections, and addition of summary of revisions table. Updates to content of recommendations, "if the COVID-19 test is POSITIVE…", starting page 3, last bullet, including sub bullets extending over to page 4.

Contents

1. Purpose of this guidance

The purpose of this guideline is to provide NHSScotland with advice on assessment and isolation of adult and paediatric patients prior to all elective surgery.

The overarching aim of this guideline is to protect patients, as it is known that patients with unsuspected COVID-19 infection undergoing surgical procedures have a very poor outcome. A secondary aim is to contribute to limiting nosocomial transmission of COVID-19 infection.

2. Who is covered by this guidance

- adult and paediatric patients prior to all elective surgery.

3. Who is not covered by this guidance

- patients attending for purely endoscopic procedures.

4. Who this guidance is developed for

This guideline is for:

- healthcare professionals involved in the management of adults and children undergoing elective surgery
- health and care staff involved in planning and delivering services.

5. Updating this guidance

This is interim guidance and will be updated to align with progression through the Scottish Government's phased approach to varying restrictions during the COVID-19 pandemic.

This guidance will be reviewed and updated as new evidence emerges.

6. Recommendations

The recommendations are based on:

- a presurgery pathway developed by Dr Christina Beecroft for NHS Tayside
- a preoperative screening procedure developed by Dr Caroline Whitworth for NHS Lothian
- expert opinion from healthcare professionals in NHSScotland involved in the care of patients undergoing surgery.

These recommendations have been developed in response to the COVID-19 pandemic situation and so have not followed the standard process used by the Scottish Intercollegiate Guidelines Network (SIGN) to develop guidelines. The recommendations are based on available evidence and expert opinion, with fast expert peer review as assurance.

- The date for surgery must be communicated to the patient, parent/carer, and pre-assessment clinic by the surgical team.
- The risks of perioperative and postoperative COVID-19 infection should be discussed with patients, parents/carers, highlighting how risk may vary according to age, gender, comorbidities, etc (see section 7.1).
- All patients undergoing elective surgery should limit their social contacts for a 14-day period prior to the planned surgical procedure and to follow strict physical distancing and hand-hygiene guidance.
- Patients, parents/carers should be provided with presurgical advice, including why they are being asked to limit their social contacts and the importance of complying, and screening questions for COVID-19. They should be offered support to present a fit note, or a self-isolate letter to their employer, in order to be entitled to statutory sick pay. The treating surgeon or NHS organisation should provide a letter for the patient to present to their employer which declares the person unfit for work, if they cannot work from home or work in isolation. This letter should declare the person unfit for work “for precautionary reasons”, namely that the patient will shortly have surgery and must prepare for it. The type of surgery should not be revealed in the letter, if the patient does not wish it.
- Some patients may, after discussion, elect to self isolate completely for this 14-day period, as described in the Scottish Government Test and Protect programme. The local surgical team should provide support for this group of patients.
- Maintaining physical activity before surgery is beneficial and patients should be advised to be as active as possible, while limiting contacts or isolating.
- If a patient declines to isolate preoperatively, carry out a risk assessment and discuss the risks and benefits of delaying or going ahead with the surgery with the patient, parent/carer.

- Screening of patients scheduled for elective treatment should include a patient history taken on day 11 (three days before the date of surgery) recording:
  - any new onset typical symptoms (fever, breathlessness, cough, loss of smell or taste) and any new onset atypical symptoms (dizziness, fatigue, myalgia, gastrointestinal symptoms) OR
  - any history of contact with person(s) with confirmed COVID-19, or, unconfirmed symptoms suggestive of COVID-19.

  If either of these conditions apply, the planned surgery should be postponed for at least a 14-day period or from 10 days after any symptoms consistent with COVID-19. Patients and household members should follow the advice of the Scottish Government Test and Protect programme.

  Be aware that a patient's concerns about delaying surgery may outweigh their concerns about perioperative COVID-19 leading to under-reporting of symptoms. Discuss with the patient the reasons for the processes and risk of postoperative complications and mortality (see section 7.1).
- A viral nose and throat swab (NTS) should be taken no more than 48 hours before surgery. Options to reduce risk of exposure to infection prior to admission include:
  - self testing using a swab provided at surgical pre-assessment
  - community-based testing delivered to the patient's home
  - patient accessing a 'drive-through' facility for a scheduled swab.
- From the date of the swab, patients should be asked to self isolate until their planned admission. If required, support should be arranged by the responsible surgical team and provision made for advising employers about the patient's availability to work (as set out above).
- If the COVID-19 test is NEGATIVE the patient is admitted on the planned surgery date.
  - The patient is advised to wear a face covering or mask to attend hospital and is admitted to a COVID-19-negative surgical ward. A patient history should be repeated to determine any new onset of typical symptoms and any history of contact with person(s) with confirmed COVID-19, or unconfirmed symptoms suggestive of COVID-19.
- If the COVID-19 test is POSITIVE the patient is advised to start 10 days of self isolation according to NHS Inform guidelines, and their household members advised to self isolate for 10 days.
  - The patient undergoes clinical re-assessment by the surgical team after 10 days of self isolation (or their recovery period) to ensure their symptoms have completely resolved. Surgery should be rescheduled by the local surgical team, depending on the planned procedure and individual patient characteristics. A further test for SARS-CoV-2 is **not** required.

  - If a patient requires admission to hospital because of confirmed COVID-19, surgery should not be considered until 14 days after initial symptoms or first positive test, when their symptoms have completely resolved, and with absence of fever (without antipyretics) for 48 hours.
  - For patients with underlying immunosuppression or other medical condition that might prolong viral clearance, an individual risk assessment should be carried out before surgery is performed.
  - Patients who tested positive and have recovered can enter the low-risk clinical pathway. However, if they develop symptoms consistent with COVID-19 patients should be re-evaluated and tested if required.
  - If, for whatever reason, a further test for SARS-CoV-2 is carried out the result should not alter the above advice.

- If a patient declines the swab, or has not been able to adhere to presurgery isolation, carry out a risk assessment and discuss with the patient or parent/carer the risks and benefits of delaying or proceeding with the surgery.
- Patients or parents/carers should be offered advice on postsurgical precautions to minimise the risk from COVID infection while recovering from surgery.
- If a patient develops symptoms consistent with COVID-19 after discharge they should be advised to contact their surgical team for further advice and to follow the NHS Inform guidelines.

7. Reducing the risk of postoperative mortality due to COVID-19

7.1. Postoperative morbidity and mortality due to COVID-19

A rapid review of the perioperative management of patients with confirmed or suspected COVID-19 who had undergone surgery included 24, mainly small lower-quality, studies[2] and one large, international, multicentre, cohort study (1,128 patients, 235 hospitals in 24 countries). This large cohort study reported an overall 30-day mortality of 23.8% in patients undergoing surgery who had SARS-CoV-2 infection confirmed within 7 days before or 30 days after surgery.[3]

The study defined surgery as any procedure done by a surgeon in an operating theatre under general, regional, or local anaesthesia. No purely endoscopic procedures were included. No control group was used, so the outcomes in those who did or did not have COVID-19 cannot be directly compared.

A higher rate of mortality was reported in patients undergoing elective surgery where the presence of SARS-CoV-2 virus had been confirmed postoperatively rather than preoperatively (20.4% *v* 9.1%). Pulmonary complications occurred in 577 (51.2%) of patients, accounting for 82.6% (219 of 265) of all deaths.[3]

Factors found to be associated with an increased 30-day mortality included male sex, emergency surgery, major surgery, older age (>70 years), poorer preoperative condition as assessed by American Society of Anaesthesiologists (ASA) physical status classification and surgery for malignancy.[3]

In addition, there is an increased risk of poor outcome from COVID-19 in those with certain underlying medical conditions and of different ethnicities. An example of how these personal characteristics influence outcome from COVID-19 is available at: alama.org.uk/covid-19-medical-risk-assessment/.

7.2. General principles

The possibility of subjecting a patient, who has asymptomatic or presymptomatic COVID-19, to surgery can be minimised in a number of ways. Limiting social contacts as much as possible for a 14-day period prior to planned surgery, and following physical distancing and hand-hygiene guidance will reduce the risk of acquiring COVID-19 in this period. There is an increased relative risk of poor outcome from surgery in a patient with COVID-19 if they are undergoing a major procedure, are over 70 years of age and have a poorer preoperative condition as assessed by ASA criteria. Some of these patients at higher risk may elect to self isolate completely in the 14-day preoperative period.

7.2.1. Paediatrics

The aim of this guidance is to reduce potential COVID-19-related perioperative risk to all patients. When considering paediatric patients, no COVID-19-associated mortality in people below the age of 30 years was reported,[3] suggesting that the risks of perioperative COVID-19 infection in children are low. Even so, all steps to avoid risk of transmission to paediatric patients when they are in hospital, or to staff, must be taken.

When a child is undergoing presurgical isolation, other members of their household may go out as long as they follow physical distancing and hand-hygiene guidance.

The parent/carer accompanying the child does not need to be tested, but they should wear a fluid resistant mask whilst in any clinical area.

Paediatric units should ensure that parents/carers are informed of any infection prevention and control measures required prior to arriving at hospital. Guidance on the use of face masks in hospitals is available from the Scottish Government.

7.2.2. Elective cancer surgery

Intercollegiate guidelines for preoperative COVID-19 testing for elective cancer surgery are available.[4]

7.2.3. Obstetrics

This guideline is only applicable for women undergoing elective surgery during pregnancy or for delivery where a general anaesthetic is planned from the outset. Although a proportion of caesarean sections are planned, the limited gestational time window means many of these cannot be delayed if the woman is COVID-19 positive. Most elective caesarean sections are performed under regional anaesthesia. There may be benefit from testing obstetric patients to manage transmission in hospital. When a pregnant woman is undergoing presurgical isolation, other members of their household may go out as long as they follow physical distancing and hand-hygiene guidance.

7.3. SARS-CoV-2 testing

Protocols for laboratory testing were not standardised across participating centres in the multicentre cohort study.[3] However, it is expected that preoperative screening would be done to benefit patient outcomes, such that:

1. a positive screen result should lead to deferral of surgery until the patient has recovered from SARS-CoV-2 infection (minimum of 10 days post-test). Subsequent care would be, if clinically indicated, through the community COVID-19 pathway (NHS 111).
2. a negative screen result does not exclude the risk of the patient incubating SARS-CoV-2 or of developing COVID-19 in the perioperative period, as combined viral nose and throat swab (NTS) for SARS-CoV-2 RT-PCR is predicted to have a low sensitivity in asymptomatic/presymptomatic patients.[1]

The post-test probability of infection being present after a positive or negative test result will be affected by the test sensitivity and prevalence.[5]

Although good, the specificity of the PCR test is less than 100%, so there will be a low level of 'false' positive results. When population prevalence is low the proportion of positive results that are false will increase. Virology laboratories are instituting measures to retest samples that are only just above the threshold for positivity. This may require additional laboratory time, and patients should be advised to maintain isolation pending confirmation of the test result. Further advice on interpretation of a test result can be obtained from local virology services.

NHS Lothian has reported 91% sensitivity and ~100% specificity from a properly taken combined viral NTS swab and RT-PCR in patients who have had symptoms and signs of COVID-19 for 24–72 hours (personal communication).[6] There are no data to demonstrate the sensitivity of viral NTS in patients who are asymptomatic. It is likely that the viral NTS has a low sensitivity as a test in presymptomatic patients who are incubating SARS-CoV-2. A model for estimating false-negative rate found that over the 4 days of infection before the typical time of symptom onset (day 5), the probability of a false-negative result in an infected person decreased from 100% on day 1 to 68% on day 4. On the day of symptom onset, the median false-negative rate was 38%.[1]

Various studies have shown a low incidence of positive results in populations of asymptomatic people, but some are flawed by not excluding presymptomatic people.[7] Prevalence of true asymptomatic infection is likely to be linked to prevalence of infection in the community. As the population prevalence of SARS-CoV-2 infection falls, the pretest probability falls. This impacts on the post-test probability of infection after a negative swab.[1]

7.3.1. Self testing

Self testing involves using a swab given at the time of the presurgical assessment (with instructions on how to do the swab), which would be collected (eg by blood bike, volunteer etc) for processing. Self testing is not practical in young children and alternative arrangements need to be made. Advice on self testing can be sought from Public Health Scotland and surgical waiting list teams.

The efficacy of obtaining a suitable specimen with unsupervised self swabbing is not well defined. A study (in preprint) of self-collected samples (n=533) from three anatomic sites (tongue, anterior nares (nasal), and mid-turbinate (MT)) compared with nasopharyngeal (NP) samples collected by a healthcare worker calculated the sensitivity of nasal and MT patient-collected methods to be above 90%.[8] Written instructions were provided and the samples stored appropriately after collection. A smaller preprint study (n=45) comparing self-collected oral fluid swab specimens with and without clinician supervision, clinician-supervised self-collected MT swab specimens, and clinician-collected NP swab specimens found that supervised self-collected oral fluid and nasal swab specimens performed similarly to clinician-collected nasopharyngeal swab specimens for the detection of SARS-CoV-2 infection.[9]

However, preliminary results from NHS Lothian suggest that unsupervised self swabbing may have a lower sensitivity than expected (personal communication).[6] Self testing with saliva (collected before eating or cleaning teeth) may be an option, and may offer better sensitivity than a properly collected nasopharyngeal swab alone but depends on a cold chain for maintaining the sample.[10]

7.3.2. Community-based testing

Community-based testing involves a swab being delivered to the patient's home and then the patient performing the test themself.

7.3.3. Drive-through testing

Accessing a 'drive-through' facility for a scheduled swab requires patients to have their own transport or to be transported by a household member or to access hospital provided transport.

7.3.4. Considerations around testing

It should be recognised that patients' concerns about delaying surgery may outweigh their concerns about their risks from perioperative COVID-19, leading to a lack of compliance with presurgery advice.

8. Methodology

This guidance has been produced on behalf of the Scottish Government's Chief Medical Officer in response to the COVID-19 pandemic situation and so has not followed the standard process used by SIGN to develop guidelines. The recommendations are based on expert opinion, with rapid expert peer review as assurance.

8.1. Updating the guidance

This guidance will be considered for review if significant new evidence emerges.

8.2. Contributors

Dr Christina Beecroft	Consultant Anaesthetist, NHS Tayside
Dr Alistair Campbell	Consultant Obstetrician and Gynaecologist, Royal Infirmary of Edinburgh
Professor Michael Griffin	President, Royal College of Surgeons of Edinburgh
Dr Rosie Hague	Consultant in Paediatric Infectious Diseases and Immunology, Royal Hospital for Sick Children, Glasgow
Dr Roberta James	Programme Lead, SIGN
Mr James Mander	Consultant Colorectal Surgeon, Western General Hospital, Edinburgh
Mr Fraser Munro	Consultant Paediatric Surgeon, Royal Hospital for Sick Children, Edinburgh
Professor Steve Turner	Consultant Paediatrician, Royal Aberdeen Children's Hospital
Dr Caroline Whitworth	Medical Director (Acute), NHS Lothian

8.3. Peer review

The document was reviewed by the following:

Mr Alan Grant	Consultant General Surgeon, Clinical Director for Surgery, Raigmore Hospital, Inverness
Ms Helen Lindsay	Clinical Adviser, Area Drug and Therapeutics Committee (ADTC) Collaborative, Medicines and Pharmacy Team, Healthcare Improvement Scotland
Ms Caroline Rapu	Programme Manager (Quality Assurance of Resources), Royal College of Nursing and representative on SIGN Council
Dr Simon Watson	Medical Director, Healthcare Improvement Scotland
Linda Patterson	Chief Nursing Officer Directorate, The Scottish Government
Scottish Clinical Virology Consultants	
Clinical Guidance Cell	

8.4. Editorial review

As a final quality check, the guideline was reviewed by an editorial group, as follows:

Professor Tom Evans	Professor of Molecular Microbiology, Institute of Infection, Immunity & Inflammation, University of Glasgow and Consultant Infectious Disease Physician, NHS Greater Glasgow & Clyde
Dr Safia Qureshi	Director of Evidence, Healthcare Improvement Scotland
Dr Karen Ritchie	Head of Knowledge and Information, Healthcare Improvement Scotland

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