NICE National Institute for Health and Care Excellence

NICE guideline

COVID-19 rapid guideline: reducing the risk of venous thromboembolism in over 16s with COVID-19

NICE guideline
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Your responsibility

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Contents

Overview

This guideline covers pharmacological VTE prophylaxis for patients being treated for COVID-19 pneumonia. It includes patients receiving treatment in hospital or in a community setting such as a 'hospital at home' service or COVID-19 'virtual ward'. The guideline applies to all patients with COVID-19 pneumonia, including those who have other conditions.

For guidance on VTE prophylaxis for hospital patients who do not have COVID-19 pneumonia, see the NICE guideline on venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism.

When using this guideline, follow the usual professional guidelines, standards and laws (including those on equalities, safeguarding, communication and mental capacity), as described in making decisions using NICE guidelines.

See a 1-page visual summary of the recommendations.

This guideline is for:

- health and care practitioners
- health and care staff involved in the treatment of patients with COVID-19 pneumonia in hospital and community settings
- commissioners

We developed this guideline using the interim process and methods for guidelines developed in response to health and social care emergencies. We will review and update the recommendations as the knowledge base develops.

1 Patients with COVID-19 pneumonia managed in hospital

1.1 For patients with COVID-19 pneumonia managed in hospital:

- assess the risk of bleeding as soon as possible after admission or by the time of the first consultant review
- use a risk assessment tool published by a national UK body, professional network or peer-reviewed journal, such as the Department of Health VTE risk assessment tool.

1.2 Offer pharmacological VTE prophylaxis, unless contraindicated, with a standard prophylactic dose (for acutely ill medical patients) of low molecular weight heparin (LMWH).

1.3 For patients at extremes of body weight or with impaired renal function, consider adjusting the dose of LMWH in line with the summary of product characteristics and locally agreed protocols.

1.4 For patients who cannot have LMWH, use fondaparinux sodium or unfractionated heparin (UFH).

In November 2020, LMWH, fondaparinux sodium and UFH were off label for patients under 18. See NICE's information on prescribing medicines.

1.5 Start VTE prophylaxis as soon as possible and within 14 hours of admission and continue for the duration of the hospital stay or 7 days, whichever is longer.

1.6 For patients who are already having anticoagulation treatment for another condition when admitted to hospital:

- continue their current therapeutic dose of anticoagulation unless contraindicated by a change in clinical circumstances
- consider switching to LMWH if their current anticoagulation is not LMWH and their clinical condition is deteriorating.

1.7 If a patient's clinical condition changes, assess the risk of VTE, reassess bleeding risk and review VTE prophylaxis.

1.8 For patients who are having advanced respiratory support:

- consider increasing pharmacological VTE prophylaxis to an intermediate dose, taking account of body weight and renal function and basing the decision on multidisciplinary or senior opinion, or locally agreed protocols
- reassess VTE and bleeding risks daily.

In November 2020, the use of intermediate dosing was an off-label use of parenteral anticoagulants. See NICE's information on prescribing medicines.

1.9 Organisations should collect and regularly review information on bleeding and other adverse events in patients with COVID-19 pneumonia given intermediate doses of pharmacological VTE prophylaxis.

1.10 Ensure that patients who will be completing pharmacological VTE prophylaxis after discharge are able to use it correctly or have arrangements made for someone to help them.

For a short explanation of why we made these recommendations see the rationale section on patients with COVID-19 pneumonia managed in hospital.

Full details of the evidence and the panel's discussion are in the evidence reviews.

2 Patients with COVID-19 pneumonia managed in community settings

2.1 For patients with COVID-19 pneumonia managed in community settings:

- assess the risks of VTE and bleeding
- consider pharmacological prophylaxis if the risk of VTE outweighs the risk of bleeding (see recommendations 1.1 to 1.4).

For a short explanation of why we made this recommendation see the rationale section on patients with COVID-19 pneumonia managed in community settings.

Full details of the evidence and the panel's discussion are in the evidence reviews.

3 Patients with COVID-19 and additional risk factors

3.1 For women with COVID-19 who are pregnant or have given birth within the past 6 weeks, follow the advice on VTE prevention in the Royal College of Obstetricians and Gynaecologists guidance on coronavirus (COVID-19) in pregnancy.

For a short explanation of why we made this recommendation see the rationale section on patients with COVID-19 and additional risk factors.

Full details of the evidence and the panel's discussion are in the evidence reviews.

4 Information and support for patients

4.1 Give patients, and their families or carers if appropriate, information about the benefits and risks of VTE prophylaxis.

4.2 Follow the recommendations on giving information and planning for discharge in the NICE guideline on venous thromboembolism in over 16s, including information on alternatives to heparin for patients who have concerns about using animal products.

4.3 Offer patients the opportunity to take part in ongoing clinical trials on COVID-19.

Terms used in this guideline

Advanced respiratory support

Invasive mechanical ventilation, bilevel positive airway pressure (BiPAP) via translaryngeal tube or tracheostomy, continuous positive airway pressure (CPAP) via translaryngeal tube, or extracorporeal respiratory support.

Community settings

Settings in which patients who would otherwise be admitted to hospital receive acute medical care provided by members of the hospital team, often working with the patient's GP team. They include 'hospital at home' services and COVID-19 'virtual wards'.

Intermediate dose

For LMWH this is double the standard prophylactic dose for acutely ill medical patients.

Recommendations for research

We have made the following recommendations for research.

1 Standard-dose compared with intermediate-dose pharmacological VTE prophylaxis

What is the effectiveness and safety of standard-dose compared with intermediate-dose pharmacological VTE prophylaxis for patients with COVID-19 pneumonia, with or without additional risk factors for VTE?

Suggested PICO (population, interventions, comparators, outcomes)

Population	Patients aged 16 and over being treated for COVID-19 pneumonia in hospital or the community who have: • no additional risk factors for VTE • additional risk factors for VTE
Interventions	Intermediate-dose: • LMWH • UFH • fondaparinux sodium • direct-acting anticoagulant • vitamin K antagonists

Comparators	Standard-dose: • LMWH • UFH • fondaparinux sodium • direct-acting anticoagulants • vitamin K antagonists • antiplatelets
Outcomes	• incidence of VTE • mortality (all-cause, inpatient, COVID-19 related) • admission to critical care (including use of advanced organ support) • serious adverse events such as major bleeding or admission to hospital

For a short explanation of why we made this recommendation see the rationale section on patients with COVID-19 pneumonia managed in hospital.

Full details of the evidence and the panel's discussion are in the evidence reviews.

For a short explanation of why we made this recommendation see the rationale section on patients with COVID-19 and additional risk factors.

Full details of the evidence and the panel's discussion are in the evidence reviews.

2 Extending pharmacological VTE prophylaxis after discharge

What is the effectiveness and safety of extended pharmacological VTE prophylaxis for patients who have been discharged after treatment for COVID-19 pneumonia?

Suggested PICO (population, interventions, comparators, outcomes)

Population	Patients aged 16 and over who have been discharged after treatment for COVID-19 pneumonia
Interventions	Extended (2 to 6 weeks) pharmacological VTE prophylaxis with standard-dose: • LMWH • UFH • fondaparinux sodium • direct-acting anticoagulant • vitamin K antagonists
Comparator	No extended pharmacological VTE prophylaxis
Outcomes	Incidence of VTE • mortality (all-cause, inpatient, COVID-19 related) • admission to critical care (including use of advanced organ support) • serious adverse events such as major bleeding or admission to hospital

For a short explanation of why we made this recommendation see the rationale section on patients with COVID-19 pneumonia managed in hospital.

Full details of the evidence and the panel's discussion are in the evidence reviews.

For a short explanation of why we made this recommendation see the rationale section on patients with COVID-19 pneumonia managed in community settings.

Full details of the evidence and the panel's discussion are in the evidence reviews.

Rationales

These sections briefly explain why we made the recommendations.

Patients with COVID-19 pneumonia managed in hospital

Recommendations 1.1. to 1.10

Why the panel made the recommendations

The panel acknowledged that there was a lack of good-quality evidence specific to people with COVID-19 and used their clinical knowledge and experience to build on the limited evidence base to develop the recommendations.

The panel agreed that all patients with COVID-19 pneumonia have an increased risk of VTE. Initial risk assessment for these patients should focus on identifying those whose bleeding risk contraindicates pharmacological VTE prophylaxis.

The NICE guideline on reducing the risk of VTE in over 16s in hospital (NG89) recommends pharmacological VTE prophylaxis for at least 7 days for acutely ill medical patients. The panel agreed that, in their experience, pharmacological VTE prophylaxis is often provided for less than the recommended 7 days in general medical patients, and emphasised the importance of following this recommendation for patients with COVID-19 pneumonia.

The panel indicated that, in their experience, a standard dose of pharmacological VTE prophylaxis is sufficient for most patients, but dose adjustments may be needed for patients at extremes of body weight and those with renal impairment. To ensure that all patients are given an appropriate dose, the panel included dose adjustment in their recommendation, adding that the summary of product characteristics and local protocols should be used to guide decisions on dose adjustment.

The panel agreed that parenteral anticoagulants offer benefits including fewer drug-drug interactions, better absorption and ease of measurement, compared with oral anticoagulants.

There was limited evidence on extending VTE prophylaxis for patients who have been discharged after treatment for COVID-19 pneumonia. The panel made a recommendation for research on

extending pharmacological VTE prophylaxis after discharge to explore the effectiveness and safety of extended pharmacological VTE prophylaxis for these patients.

The panel noted the high incidence of VTE in patients with COVID-19 pneumonia who need advanced respiratory support. There is some evidence available on the use of higher doses of anticoagulant for VTE prophylaxis in these patients. The panel, based on their experience, agreed that consideration should be given to increasing the standard prophylactic dose of parenteral anticoagulation, such as LMWH, to an intermediate dose to mitigate the increased risk of VTE while minimising the risk of bleeding associated with higher doses. The panel emphasised the importance of monitoring bleeding and other adverse events in patients with COVID-19 pneumonia who are given intermediate-dose anticoagulants. They also made a

Return to recommendations

Patients with COVID-19 pneumonia managed in community settings

Recommendation 2.1

Why the panel made the recommendation

There was no evidence to inform recommendations on reducing the risk of VTE in patients with COVID-19 pneumonia managed in community settings with input from hospital clinicians, such as 'hospital at home' services or COVID-19 'virtual wards'. Patients managed in these settings have an increased risk of VTE that is similar to that of patients managed in hospital. The panel therefore included a recommendation to consider pharmacological VTE prophylaxis for these patients, to ensure they receive the same care as those admitted to hospital.

The panel also made a recommendation for research on extending pharmacological VTE prophylaxis after discharge in patients who have received treatment for COVID-19 pneumonia.

Return to recommendations

Patients with COVID-19 and additional risk factors

Recommendation 3.1

Why the panel made the recommendation

The panel noted the lack of evidence on pharmacological VTE prophylaxis for patients with COVID-19 and additional risk factors. They agreed that VTE risk in women with COVID-19 who are pregnant or have given birth in the past 6 weeks should be managed in line with advice on COVID-19 in pregnancy published by the Royal College of Obstetricians and Gynaecologists.

There was no evidence on pharmacological VTE prophylaxis for specific groups with additional risk factors for VTE, including people who are receiving treatment with sex hormones, have or have previously had cancer, are receiving renal replacement therapy or extracorporeal membrane oxygenation, have a clotting condition or history of venous thromboembolism, or have obesity (BMI 30 kg/m² or higher). The panel made a recommendation for research on standard-dose compared with intermediate-dose pharmacological VTE prophylaxis in people with COVID-19 who have additional risk factors for VTE.

Return to recommendations

Update information

Minor changes since publication

December 2020: In recommendation 1.8 we clarified that the use of intermediate dosing is an off-label use of parenteral anticoagulants.

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