**Guidelines for initial management of suspected or confirmed COVID-19**

**DIAGNOSIS**
Consider a diagnosis of COVID-19 for **ALL** patients presenting to hospital with fever ≥37.8°C OR new respiratory symptom OR clinical/radiological evidence of pneumonia

Other features such as diarrhoea, vomiting, abdominal pain, pharyngitis, headache and anosmia are also recognised. Consider COVID-19 if alternative causes not apparent or less likely.

**BEWARE** diagnostic anchoring; consider alternative pathologies with similar presentations.

**CONSIDER** COVID-19 in hospitalised patients with relevant features without alternative cause.

**Put on appropriate PPE according to IPC guidelines**
**Only send combined nose-throat swab for SARS CoV2 PCR if patient admitted**
**Move patient to designated area according to local guidelines**

**ADDITIONAL DIAGNOSTIC WORK-UP**

**Bloods:** FBC, U+Es, LFTs, CRP, Clotting screen, Lactate and/or ABG (if SpO2 <92% or needing oxygen)

**Microbiological tests:** Blood cultures; additional tests as per Trust CAP guidelines. LIMIT extra swabs for standard respiratory viral PCR to immunocompromised patients

**Imaging:** Chest radiograph; consider chest CT scan if diagnosis unclear or severe disease

**Consider** additional work-up if sepsis suspected in view of NEWS ≥5 or other risk factors; see Trust Sepsis pathway.

**DIAGNOSTIC HINTS:** Total WBC often normal, lymphopenia common; CRP raised in severe disease. Patchy ground glass opacities seen early on, usually bilateral, most commonly peripheral and in lower lobes, overtime coalesce into consolidation; pleural effusion, cavitation uncommon.

**SEVERITY ASSESSMENT & PROGNOSIS**
Clinical deterioration occurs in 15-25% with new or worsening respiratory symptoms after onset of mild symptoms. In hospitalised patients, approximately 3-10% require intubation and 2-5% die.

There is no validated clinical tool to estimate prognosis in COVID-19 at presentation; consider NEWS2 score and CURB65 to guide treatment decisions. See below for suggested grouping.

COVID-19 patients may not appear dyspnoeic despite being hypoxic. Consider testing for exercise desaturation to detect impending respiratory insufficiency/failure.

**Adverse prognostic factors:** Older age, male sex, diabetes (any type), chronic respiratory disease including asthma, hypertension, coronary artery and cerebrovascular disease, immunosuppression.

Pregnant considered vulnerable.

**Be aware of delayed and rapid deterioration (~5-12 days post symptom onset), particularly in vulnerable groups.**

**All patients discharged home should be instructed to return if they develop any worsening of the illness.**

**RISK CATEGORIES:** Low risk, <70 years without chronic comorbid illness; High risk, ≥70 years and/or chronic comorbid illness.

<table>
<thead>
<tr>
<th>Community onset</th>
<th>Hospital onset</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 1</strong></td>
<td><strong>Group 2</strong></td>
</tr>
<tr>
<td><strong>All patients:</strong> Asymptomatic</td>
<td><strong>Low risk group:</strong> Moderate symptoms including dyspnoea or CXR with new opacities/consolidation</td>
</tr>
<tr>
<td><strong>Low risk group:</strong> Mild symptoms without dyspnoea AND negative CXR</td>
<td><strong>High risk group:</strong> Mild symptoms AND negative CXR</td>
</tr>
<tr>
<td>Consider home to complete self isolation</td>
<td>May be able to discharge with clear safety netting following careful assessment</td>
</tr>
</tbody>
</table>

Liverpool University Hospitals NHS Trust - COVID Clinical Management Guideline; Version 2: 28th March 2020
**ESCALATION DECISION**

Take account of functional status including dyspnoea grade, underlying comorbidities and severity of acute illness; consider risks and benefits of critical care support and likelihood of critical care treatment achieving desired outcome.

Use the **Clinical Frailty Scale** (CFS) as part of assessment for patients aged over 65 **without** stable long-term disabilities (e.g. cerebral palsy), learning disabilities or autism. See [NICE COVID-19 rapid guideline: critical care in adults](https://www.gov.uk/government/publications/nice-covid-19-rapid-guideline-critical-care-in-adults). The MRC Dyspnoea Grade will be reviewed upon assessment by Critical Care team.

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**Clinical Frailty Scale**

1. **Very Fit** – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2. **Well** – People who have no active disease symptoms but are less fit than category 1. Often, they exercise or are very active occasionally, e.g. seasonally.

3. **Managing Well** – People whose medical problems are well controlled but are not regularly active beyond routine walking.

4. **Vulnerable** – While not dependent on others for daily help, often symptoms limit activities. A common complaint is being “slowed up,” and/or being tired during the day.

5. **Mildly Frail** – These people often have more evident slowing, and need help in high order IADLs (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6. **Moderately Frail** – People need help with all outside activities and with keeping house. Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (cuing, standby) with dressing.

7. **Severely Frail** – Completely dependent for personal care, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~6 months).

8. **Very Severely Frail** – Completely dependent, approaching the end of life. Typically, they could not recover even from a mild illness.

9. **Terminally Ill** – Approaching the end of life. This category applies to people with a life expectancy <6 months, who are not otherwise evidently frail.

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**MRC Dyspnoea Grade**

1. Not troubled by breathlessness except on strenuous exertion

2. Short of breath when hurrying on the level or walking up a slight hill

3. Walks slower than people of the same age on the level because of breathlessness or stops for breath while walking at own pace on the level

4. Stops for breath after walking about 100 m or after few minutes on the level

5. Too breathless to leave their house or breathless when dressing

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**An ESCALATION PLAN regarding ceiling of care and DNACPR status MUST BE documented on admission and confirmed on post-take ward round. If DNACPR order made, consider if suspension of MET calls also appropriate.**

The threshold for escalation may change over time depending on demand.

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**OXYGENATION and VENTILATION**

Oxygen should be carefully titrated to achieve target saturation range with minimal flow-rate to conserve supply.

| Type 1 Respiratory Failure  
| PaCO₂ <6kPa | Type 2 Respiratory Failure  
| PaCO₂ ≥ 6kPa |
| --- | --- |
| **Target** | Maintain SpO₂ 94-96%*  
| |  
| **Titration** |  
| | maintain bag inflation  
| |  
| |  
| |  
| 1. Nasal cannulae at 2-4 L/min  
| 2. 35% Venturi mask  
| 3. Non-rebreath mask (NRM) at 10-15 L/min to maintain bag inflation  
| |  
| **Monitoring** | If requires NRM: repeat ABG and lactate; senior local medical review.  
| |  
| **Escalation** | If for escalation and unable to achieve target O₂ range or deterioration, Critical Care and/or Respiratory team review. Current strategy is intubation with early tracheostomy or high flow O₂ in negative pressure room in ITU. If not for escalation ensure appropriate consideration given to symptom control including prescribing anticipatory palliative medications where appropriate; see Trust guidance.  
| |  
| |  
| | NIV, CPAP and High-flow nasal cannulae generate aerosols associated with high risk of transmission  
| |  
| | Do NOT start without explicit decision from Critical Care or Respiratory Teams  
| |  
| | Consult Respiratory Team for advice if patient admitted who uses home CPAP or NIV  

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**FLUID MANAGEMENT**

- **Aim** to run patients on ‘dry-side.’ Over aggressive fluid resuscitation may exacerbate ARDS.
- Avoid iv fluids if patient can drink adequately, unless evidence of hypoperfusion and/or hypovolemia.
- For most, aim for maximum **total** input of 2000 ml/day (i.e. all oral and iv fluids incl. drug volumes) unless AKI or systolic BP<90 (See **Trust weight based fluid prescribing guidance**).
- Record fluid balance carefully.
- Use of NSAIDs unless patient already on them for alternative indication.

**ANTIMICROBIAL THERAPY**

See Severity Assessment section above

<table>
<thead>
<tr>
<th>Initial regimen</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotic indication</td>
<td>Consider antibiotics if features suggest bacterial infection.</td>
<td>If <strong>low risk</strong> with new opacities/consolidation or <strong>high risk</strong> with evidence of bacterial LRTI (e.g. IE COPD)</td>
<td><strong>All patients</strong> with severe pneumonia or <strong>high risk</strong> with any new opacities/consolidation</td>
<td>Clinically assess whether IV or PO treatment appropriate based on disease severity or risk group.</td>
</tr>
<tr>
<td>Regimen as per Group 2</td>
<td>Doxycycline 200mg stat, then 100mg BD</td>
<td>Co-amoxiclav 1.2g TDS IV <strong>PLUS either</strong> Doxycycline 200mg stat, then 100mg BD PO or Clarithromycin 500mg IV (if PO route is not possible)</td>
<td><strong>Non-severe Penicillin allergy:</strong> Cefuroxime 1.5g TDS PLUS either Doxycycline 200mg stat, then 100mg BD PO or Clarithromycin 500mg IV</td>
<td><strong>Severe Penicillin allergy:</strong> Teicoplanin (per protocol) <strong>PLUS either</strong> Doxycycline 200mg stat, then 100mg BD PO or Clarithromycin 500mg IV</td>
</tr>
<tr>
<td><strong>Hospital onset</strong></td>
<td><strong>Community onset</strong></td>
<td></td>
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<tr>
<td>Antibiotic indication</td>
<td>Regimen as per Group 2</td>
<td>Doxycycline 200mg stat, then 100mg BD</td>
<td>Co-amoxiclav 625mg TDS (if not penicillin allergic) <strong>PLUS either</strong> Doxycycline 200mg stat, then 100mg BD PO or Clarithromycin 500mg IV (if previously given IV)</td>
<td>Co-amoxiclav 625mg TDS <strong>Penicillin allergy:</strong> Doxycycline 200mg stat, then 100mg BD PLUS Ciprofloxacin 500mg BD</td>
</tr>
<tr>
<td>Duration</td>
<td>5 days</td>
<td>7 days</td>
<td>7 days</td>
<td></td>
</tr>
<tr>
<td>Review</td>
<td>For patients with confirmed COVID-19 infection, consider stopping empirical antibiotics early if no suspicion of secondary bacterial infection</td>
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</tr>
</tbody>
</table>

*Suspends divalent cation supplements (e.g. calcium, iron) which reduce absorption of doxycycline; use alternative if not possible.

**CLINICAL TRIALS AND OTHER RESEARCH**

Highlight confirmed COVID-19 patients to the Infectious Diseases (RLUH) or Respiratory (Aintree) research teams for consideration for enrolment in clinical trials of specific anti-COVID-19 treatment and other observational studies.

**OTHER ASPECTS**

**Nutrition:** Encourage normal eating and drinking. If inadequate intake, give 3 supplement drinks per day. Avoid NG feeding for first 3 days.

**VTE:** Give LMWH prophylaxis unless contraindicated.

**Corticosteroids:** May be given for recognised indications (e.g. exacerbation of asthma or COPD) but should not be routinely given to treat COVID-19; there is no clear evidence of benefit and they may be harmful.

**Palliative care:** Ensure symptom management appropriately considered, particularly if not for escalation to Critical Care; see **Trust guidance on COVID-19 symptom control guidelines.**

**THINGS TO AVOID:**

- Use of NSAIDs unless patient already on them for alternative indication
- Use of fans to cool patients
- All NIV or CPAP outside of ITU/NIV locations

**Patients with COVID-19 are rarely shocked on admission even if severely ill; if shocked consider other/additional causes.**