

COVID-19

Practical Advice for Healthcare Professionals (ED and Ward)

www.hse.ie/coronavirus

www.hpsc.ie

Version 3

20th March 2020





When to Suspect COVID-19

- Fever/ Chills
- Cough
- Respiratory tract infection



CLINICAL PRESENTATION



Based on an early analysis of case series, the most common symptoms are:

MOST COMMON SYMPTOMS

- Cough
- Dyspnoea
- Myalgia
- Fatigue
- Fever

LESS COMMON SYMPTOMS

- Anorexia
- Sputum production
- Sore throat
- Confusion
- Dizziness
- Headache
- Rhinorrhoea
- Chest pain
- Haemoptysis
- Diarrhoea
- Nausea/vomiting
- Abdominal pain
- Conjunctival congestion.





PROTECTING YOURSELF, YOUR COLLEAGUES AND YOUR PATIENTS

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Know How, When & Why to use PPE

For the latest guidance on PPE please visit the HPSC by clicking here :

[HPSC - PPE Guidance](#)





PPE

Know How, When & Why to use PPE

Unnecessary use of PPE will deplete stocks and increases the risk that essential PPE will not be available for you and your colleagues when needed.

It is important for healthcare workers to keep contact with patients who are suspected or confirmed positive with COVID-19 limited to value added interventions





WHO TO TEST FOR COVID-19?

The criteria for testing is being regularly updated by the Expert Advisory Group (EAG) as the situation evolves:

The current recommendations for assessment and testing pathways can be found at the HPSC [here](#) or

<https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/algorithms/screening>

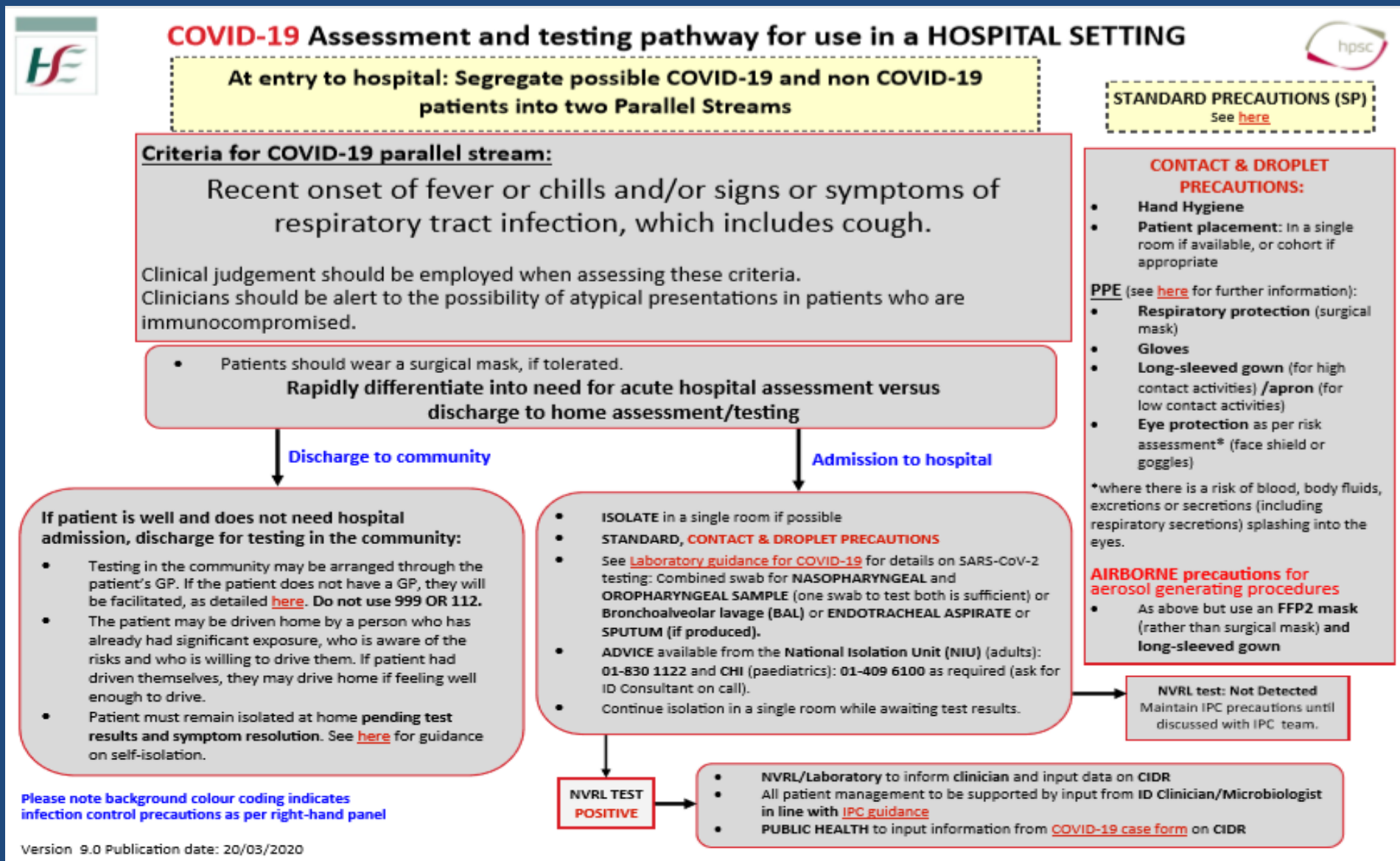


Risk assessment for use in a Hospital Setting

Valid : 20th March'20

Please check [this website](#) for updates

<https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/algorithms/>





Stage of the Pandemic

- Containment/ Delay phase
 - Testing and contact tracing for all patients
- Mitigation phase
 - Testing on patients for admission
 - Testing Healthcare workers





Patient arrives in
Acute Hospital
Setting

Fever and / or signs
symptoms of acute
respiratory tract
infection

NO

Follow non-RTI
pathway i.e.
usual care
pathway

Yes

1. Patient (and any person accompanying) to apply alcohol gel and surgical mask)
2. Follow RTI pathway

Suspect COVID-19 and
adhere to IP and C
guidance



Co-morbidities associated with increased risk

- Age > 60 years
- Cardiovascular disease
- Hypertension
- Diabetes
- Chronic respiratory disease
- Cancer
- Immunocompromised

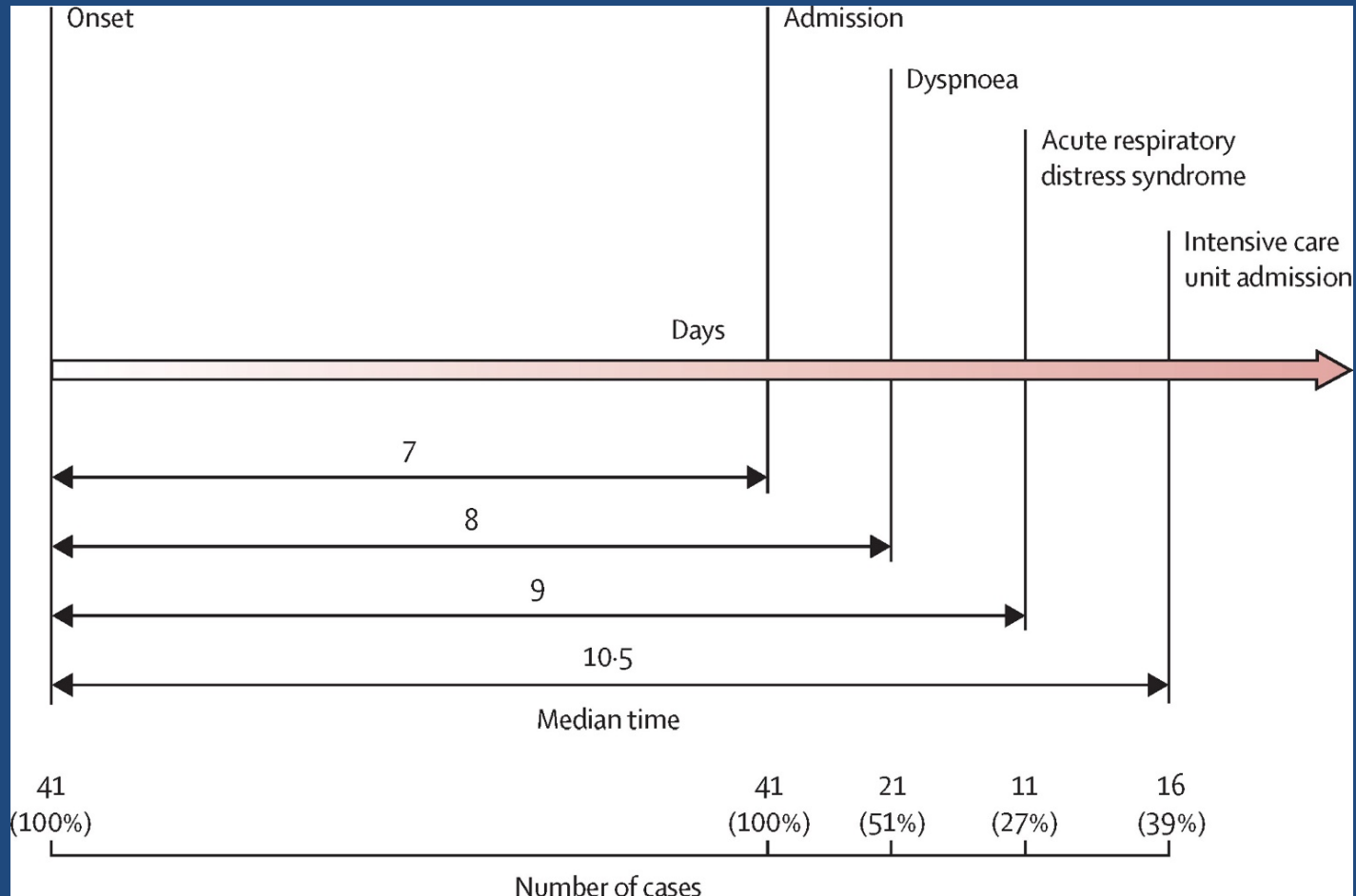




DISEASE PROGRESSION

The Lancet 2020 395, 497-

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The typical timeline of the disease is of a few days of malaise followed by dry cough, fever and dyspnea. The average time from hospital admission to requirement for critical care is 24-48 hours.



HOSPITAL GUIDANCE

Admission Criteria:

- If a patient has a INEWS score of ≥ 3
- Clinical Judgement
- Home or psychosocial circumstance not suitable for isolation.

NB *Irish Maternity Early Warning System (IMEWS) to be used for women who are pregnant and up to 42 days post-partum*



HOSPITAL PROTOCOL: USE INEWS

(for adult ≥ 16 years, non-pregnant patient)

Irish National Early Warning System Scoring (INEWS) Key (2020)

Score	3	2	1	0	1	2	3
Respiratory Rate (bpm)	≤ 8		9 - 11	12 - 20		21 - 24	≥ 25
SpO2 (%)	≤ 91	92 - 93	94 - 95	≥ 96			
Inspired O2 (FiO2)				Air			Any O2
Systolic BP (mmHg)	≤ 90	91 - 100	101 - 110	111 - 249	≥ 250		
Heart Rate (BPM)		≤ 40	41 - 50	51 - 90	91 - 110	111 - 130	≥ 131
ACVPU/CNS Response				Alert (A)			New confusion (C), Voice (V), Pain (P), Unresponsive (U)
Temp ($^{\circ}$ C)	≤ 35.0		35.1 - 36.0	36.1 - 38.0	38.1 - 39.0	≥ 39.1	



INEWS

Score	3	2	1	0	1	2	3
Respiratory Rate (bpm)	≤ 8		9 - 11	12 - 20		21 - 24	≥ 25
SpO ₂ (%)	≤ 91	92 - 93	94 - 95	≥ 96			
Inspired O ₂ (F _i O ₂)				Air			Any O ₂
Systolic BP (mmHg)	≤ 90	91 - 100	101 - 110	111 - 149	≥ 250		
Heart Rate (BPM)		≤ 40	41 - 50	51 - 90	91 - 110	111 - 130	≥ 131
ACVPU/ONS Response				Alert (A)			New confusion (C), Voice (V), Pain (P), Unresponsive (U)
Temp (°C)	≤ 35.0		35.1 - 36.0	36.1 - 38.0	38.1 - 39.0	≥ 39.1	

The INEWS track and trigger tool is an ADJUNCT to clinical judgement

Key early signs of deterioration in **all** patients are:

- A change in respiratory rate; RR should be counted for a full 60 seconds
- A new requirement for supplemental oxygen or an increasing requirement to sustain SpO₂ levels
- New confusion/altered mental status

The amendment of INEWS scores and/or parameters is **PROHIBITED**; what may be amended is the medical response to care



AMENDED INEWS Escalation & Response Protocol COVID-19 (20th March 2020)

Total Score	Minimum Observation Frequency	ALERT	RESPONSE
0 – 1	12 Hourly	Nurse in charge	Nurse in charge to review if new score1
2	6 Hourly	Nurse in charge	Nurse in charge to review
3	4 Hourly	Nurse in charge & Team/On-call SHO	1. SHO to review within 1 hour
4-6	1 Hourly	Nurse in charge & Team/On-call SHO/Urgent Response Team	<ol style="list-style-type: none"> 1. SHO to review within hour 2. Screen for Sepsis 3. If no response to treatment within 1 hour contact Registrar 4. Consider continuous patient monitoring 5. Consider transfer to higher level of care
≥ 7	½ hourly	Nurse in charge & Team/On-Call Registrar Inform Team/On-Call Consultant/Emergency Response Team	<ol style="list-style-type: none"> 1. Registrar to review immediately 2. Continuous patient monitoring recommended 3. Plan to transfer to higher level of care 4. Activate Emergency Response System (ERS) (as appropriate to hospital model)
CRITICAL CARE REVIEW			
Note: Single Score triggers			
Score of 2 HR ≤ 40 (Bradycardia)	½ hourly	Nurse in charge & Team/On-call SHO	1. SHO to review immediately
*Score of 3 in any single parameter	½ hourly or as indicated by patient's condition	Nurse in charge & Team/On-call SHO	<ol style="list-style-type: none"> 1. SHO to review immediately 2. If no response to treatment or still concerned contact Registrar 3. Consider activating ERS 4.



Critical Care NEWS response

Score	3	2	1	0	1	2	3
Respiratory Rate (bpm)	≤ 8		9-11	12-20		21-24	≥ 25
SpO2 (%)	≤ 91	92-93	94-95	≥ 96			
Inspired O2 (FiO2)				Air			Any O2
Systolic BP (mmHg)	≤ 90	91-100	101-110	111-149	≥ 150		
Heart Rate (BPM)	≤ 40		41-50	51-90	91-110	111-130	≥ 131
ACVPU/GCS Response				Alert (A)			New confusion (C), Voice (V), Pain (P), Unresponsive (U)
Temp (°C)	≤ 35.0		35.1-36.0	36.1-38.0	38.1-39.0	≥ 39.1	

- **Critical care review for NEWS ≥ 7**
- Consider critical care advice in deteriorating patient with NEWS ≥ 5
- Do not offer critical care to patients in advance of critical care review
- The final decision on admission to critical care rests with the duty Consultant Anaesthesiologist / Critical Care Physician



Irish Maternity Early Warning System (IMEWS)

- (IMEWS should be used for patients who are diagnosed with Covid19 and are pregnant or who are within 42 days post-partum)
- A clinical decision support tool is available

Woman's Name: _____
 Date of Birth: _____
 Healthcare Record No: _____
 Addressograph: _____

Document Number (Pg. 1, 2): _____
 Booking BP: _____
 Gestation at Booking (weeks): _____
 Booking BMI: _____
 Date of Admission: _____
 Large BP Cut (Y/N): _____

Contact appropriate doctor for early intervention if the woman triggers one **OR** more, or two **OR** more scores at any one time

Time	Systolic BP	Diastolic BP	Pulse	Respiratory Rate	SpO2	Temperature	Uterine Contractions	Fetal Heart Rate	Points
08:00									
10:00									
12:00									
14:00									
16:00									
18:00									
20:00									
22:00									
00:00									
02:00									
04:00									
06:00									

Total Points Score: _____
 0-20 (Yellow)
 21-100 (Pink)

Updated Sep 2020/2021

Irish Maternity Early Warning System (IMEWS)

Escalation Guide

Chart A | Version 2.0

IMPORTANT

- If concerned about a woman, escalate care regardless of vital signs.
- Complete a full set of vital signs and record on the IMEWS chart.
- Communicate any triggers to the midwife/nurse in charge.
- Implement the clinical management plans without delay.
- Document the management plan and communication details in the clinical notes.
- Any changes in the standard recording of the vital signs should be written by the doctor in the clinical records.

1 YELLOW

Repeat full set of observations on IMEWS after 30 and before 60 minutes.

2 YELLOWS OR 1 PINK

Call the obstetrician to review.
Repeat a full set of observations after 30 minutes.

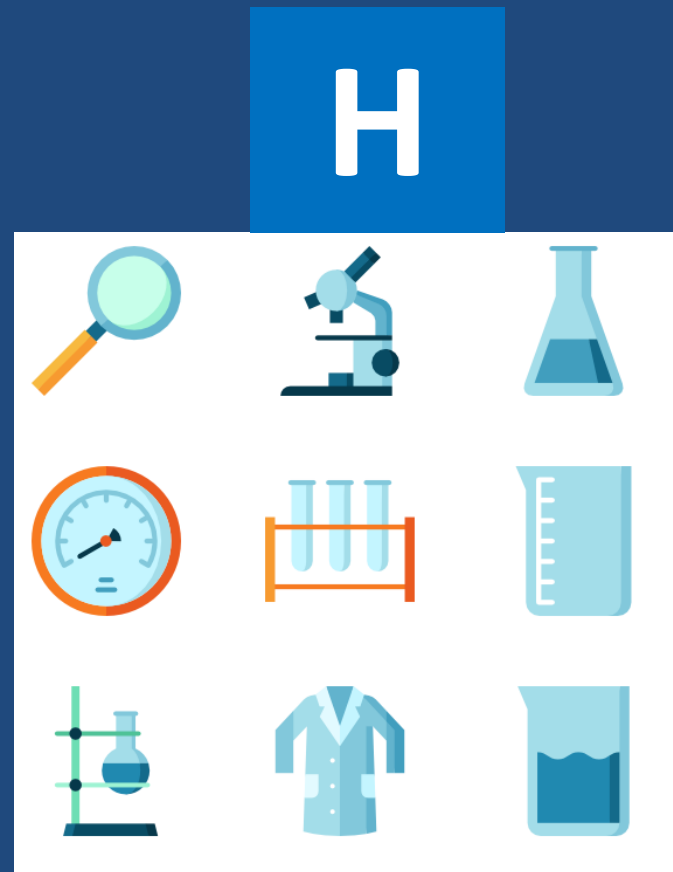
>2 YELLOWS OR >1 PINK

Call the obstetrician and request immediate review.
Repeat a full set of observations within 15 minutes or monitor continuously.

The ISBAR communication tool should be used when communicating information in relation to deteriorating and/or critically ill women.

Initial Investigations for all patients with an INEWS ≥ 3

- Pulse oximetry
 - ABG/ VBG with lactate
 - FBC
 - U&E, LFT
 - PT/ APTT
 - CRP
 - Troponin
 - Serum lactate dehydrogenase
 - Serum creatine kinase
 - D-dimer
 - Ferritin
- (BMJ Best Practice)



Initial Investigations (cont.)

- Throat / Nasal Swab (use same swab for both)
- Blood and other Cultures, as indicated
- Viral & bacterial testing
- Imaging
 - CXR
 - CT- consider in patients with suspected pneumonia who have a normal CXR due to greater sensitivity to detect infiltrates
i.e. not needed for everyone!



Clinical decision support tool

(This can be downloaded by clicking here)



PDF File



Clinical Decision Support for Suspect Adult COVID-19 for Acute Hospitals



Use this tool if the patient has fever/chills and/or signs/symptoms of respiratory tract infection

Actions:

For Patient: alcohol gel hands, put on a surgical mask and be appropriately isolated (minimum requirement is social distancing > 1m (ideally 2m).

For IPC: Use contact and droplet precautions and avoid unnecessary or ineffective aerosol generating procedures (AGPs)*.

Addressograph here

Signs and Symptoms:

Most common:

Cough Shortness of breath Myalgia
Fatigue Fever

Less common:

Anorexia Sputum production Sore throat
Dizziness Headache Rhinorrhoea
Haemoptysis Nausea/vomiting Diarrhoea
Abdominal pain Conjunctival congestion Chest pain

Red flags:

Consider critical care early for assessment:

- RR > 30 breaths/min
- Severe respiratory distress
- New onset SpO₂ < 90% on room air
- New onset confusion
- Hypotension
- Oliguria > 12 hours
- Initial INEWS ≥ 7
- Clinically deteriorating patient with INEWS ≥ 5

Risk factors for severe disease:

Ischaemic heart disease Hypertension
Cerebrovascular disease Type II diabetes
Obesity Active malignancy in last 5 years
Chronic lung disease Chronic renal disease,
Chronic liver disease Extremely medically vulnerable

Monitor all non-pregnant adult patients using the INEWS, follow escalation and response protocols.

IRISH NATIONAL EARLY WARNING SYSTEM (INEWS) Scoring Key							
SCORE	3	2	1	0	1	2	3
Respiratory Rate (bpm)	≤ 8	9 - 11	12 - 20	21 - 24	≥ 25		
SpO ₂ (%)	≤ 91	92 - 93	94 - 95	≥ 96			
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Temp (°C)	≤ 35.0		35.1 - 36.0	36.1 - 38.0	38.1 - 39.0	≥ 39.1	

Consider admission for:

- INEWS ≥ 3 **OR**
- Clinical Judgement **OR**
- Home or psychosocial circumstances not suitable for isolation

Initial management:

- Oxygen for sats ≥ 94% (88-92% in chronic hypoxic lung disease)
- Community acquired pneumonia (CAP) antibiotics (local antimicrobial guideline)
- Anti-virals (as per Acute Hospitals guideline)
- Paracetamol (for fever and/or myalgia)
- Don't forget VTE prophylaxis

Preliminary Tests & Investigations:

COVID** swab ABG/ VBG CXR
Blood cultures FBC U&E, LFTs
Coagulation screen CRP Troponin
Creatinine Kinase LDH d-dimer
Ferritin
**Refer to www.hpsc.ie

Fluid management:

COVID-19 may cause severe lung injury, which can be aggravated by excess intravenous fluid administration.
IV fluids should only be given if there is a clinical indication such as hypotension; raised lactate or the patient is unable to tolerate oral fluids.

WHEN TO ESCALATE TO CRITICAL CARE:

Consider critical care review in a patient with a INEWS ≥ 7 or clinically deteriorating patient with a INEWS ≥ 5.
The decision to admit to ICU rests with the duty anaesthesiology/critical care team.

*Aerosol generating procedures (AGPs):

- Intubation, bronchoscopy and certain chest physiotherapy – should occur in a single room and with the **minimum** staff present and using airborne precautions, www.hpsc.ie
- Non-invasive ventilation and high-flow nasal oxygen therapy are AGPs and are **NOT** recommended outside of isolation rooms, senior decision makers should be involved. Individuals who use NIV at home should continue this therapy in an isolation room. (Nebulisers and throat/nasal swabbing are NOT aerosol generating.)

Mochua Print & Design | www.mochuaprint.ie | 1/04/2020

Clinician's Name:

Signature:

MCRN/PIN:

Date/Time: DD/MM/YY HH:MM



Management of patients with pneumonia



The median time from onset of symptoms to hospital admission is reported to be approximately 7 days.

Patients with impending or established respiratory failure should be referred to critical care.

Start supportive care depending on the clinical presentation.





Supportive therapies



- **Oxygen:** give supplemental oxygen with severe acute respiratory infection and respiratory distress, hypoxaemia, or shock.
- Titrate flow rates to reach a target $SpO_2 \geq 94\%$
- 88-92% in patients with chronic lung disease





Supportive therapies

IMPORTANT



- **Fluids:** Manage fluids conservatively in patients with severe acute respiratory infection when there is no evidence of shock as aggressive fluid resuscitation may worsen oxygenation





Supportive therapies

Symptom Relief

- Give an antipyretic/analgesic for the relief of fever and pain such as paracetamol
- **DON'T FORGET VTE PROPHYLAXIS**





H

Antimicrobials

- Consider starting empirical antimicrobials in patients with suspected infection to cover other potential bacterial pathogens that may cause respiratory infection according to local protocols.
- Give within 1 hour of initial patient assessment for patients with suspected sepsis.
- De-escalate empirical therapy based on test results and clinical judgement.
- Some patients with severe illness may require continued antimicrobial therapy once COVID-19 has been confirmed depending on the clinical circumstances.





Respiratory support in the ward setting



- Involve critical care promptly- early intubation is key
- NIV/ HFNO may be used in an isolation room, preferably negative pressure, using airborne precautions (as per WHO guidance), with minimum staff present, otherwise 100% via full non-rebreather mask
- Never put type 1 respiratory patient on BiPAP
- CPAP may have a role (half/full mask/ helmet); in a negative pressure room
- Manual ventilation requires airborne precautions



Managing hypotension in ward setting



- Conservative fluid management strategy is recommended
- Consider peripheral phenylephrine while awaiting critical care input





HOSPITAL GUIDANCE

H

Experimental Therapies

- Research is being published almost daily on the use of different antivirals for COVID-19 at different stages of disease progression.
- For up to date guidance please see the National Guidance Document at:
<https://www.hse.ie/eng/about/who/acute-hospitals-division/drugs-management-programme/>
- The administration of any antivirals must be by direction of Infectious Disease / Consultant Microbiologist





Summary

- Patient care is straight forward
- IPC & PPE is hard to do right, every time
 - **But it is your safe-guard**
- Monitor for deterioration
- Early Critical Care input
 - They'll be busy so use ISBAR & INEWS





Useful Resources

WHO: Clinical management of severe acute respiratory infection when novel coronavirus (nCoV) infection is suspected. Interim guidance 13th March 2020

Publication Click [here](#)

<https://bestpractice.bmj.com/topics/en-gb/3000168/guidelines>

<https://www.bmj.com/coronavirus>

<https://www.hpsc.ie/az/respiratory/coronavirus/novelcoronavirus/casedefinitions/>

[https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected)

<https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/algorithms/>

<https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/guidance/>

WWW.hse.ie/



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