Table S1 Benefits of Different Therapies (based on GOLD\textsuperscript{[10]})

**Pharmacological Therapy**

- Bronchodilators:
  - Short acting inhaled bronchodilators (Evidence A)
  - Theophylline (Evidence B)
- Systemic corticosteroids (Evidence A)
- Antibiotics (Evidences B and C)

**Non-Pharmacological Therapy**

- Controlled oxygen therapy (Evidence A)
- Assisted mechanical support:
  - Non-invasive ventilation (Evidence A)
  - Invasive ventilation (Evidence A)
- Pulmonary rehabilitation (Evidence D)
**Table S2 Indications for Non-Invasive Ventilation**
(adapted from GOLD\textsuperscript{[10]})

- Moderate-to-severe dyspnoea, use of accessory muscles and paradoxical abdominal motion
- Moderate-to-severe acidosis (pH ≤7.35) and hypercapnia (PaCO\textsubscript{2} >6.0 kPa)
- Respiratory frequency >25 breaths/min

**Indications for Invasive Ventilation**

- Severe dyspnoea, use of accessory muscles and paradoxical abdominal motion
- Respiratory frequency >35 breaths/min
- Life-threatening hypoxaemia (PaO\textsubscript{2} <5.3 kPa or PaO\textsubscript{2}/F\textsubscript{I}O\textsubscript{2} <27 kPa)
- Severe acidosis (pH <7.25) and hypercapnia (PaCO\textsubscript{2} >8.0 kPa)
- Respiratory arrest, somnolence and/or impaired mental status
- Cardiovascular complications (hypotension, shock, heart failure)
- Other severe complications (metabolic abnormalities, sepsis, pneumonia, pulmonary embolism)
Table S3 Indications for Hospitalisation (adapted from GOLD\textsuperscript{[10]})

- Marked increase in symptoms severity
- Severe COPD background
- Onset of new physical signs (i.e. cyanosis, peripheral oedema)
- Failure of exacerbation to respond to initial pharmacological therapy
- Significant co-morbidities; diagnostic uncertainty
- Poor socioeconomic conditions

Indications for Intensive Care

- Severe dyspnoea with inadequate response to initial emergency therapy
- Confusion; lethargy; coma
- Persistent or worsening hypoxaemia ($\text{PaO}_2 < 5.3$ kPa), and/or severe-worsening hypercapnia ($\text{PaCO}_2 > 8.0$ kPa) and/or severe-worsening respiratory acidosis (pH $< 7.25$) despite supplemental oxygen therapy or non-invasive ventilation

Figure S1 Diagram to manage hypoxaemia with supplemental oxygen therapy (OT) in patients with exacerbation of COPD. ABG=arterial blood gases; $\text{SaO}_2$=arterial oxygen saturation (adapted from ref 9).
Assess patient
Obtain ABG
Begin OT

Assure PaO₂ > 8.0 kPa
Adjust OT to SaO₂ ≥ 90%

Hypercapnia (?)
(PaCO₂ > 6.7 kPa)

No
Yes

Hypercapnia (?)
PaCO₂ > 6.7 kPa

No change in
OT setting

Reassess ABG in
1 h

Yes

pH < 7.35 (?)
(with PaO₂ > 8.0 kPa)

No
Yes

Maintain OT
SaO₂ ≥ 90%

Reassess ABG in 1 h

No
Yes

pH < 7.35 (?)
(with PaO₂ > 8.0 kPa)

No
Yes

Consider mechanical support

No change in OT

Yes