



Resource impact summary report

Resource impact

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This guideline covers diagnosing, assessing, and treating community-acquired and hospital-acquired pneumonia, including bacterial pneumonia secondary to COVID-19, in babies over 28 days (corrected gestational age), children, young people and adults. It updates NICE guideline CG191 (published December 2014) and incorporates recommendations from NG138 and NG139 (published September 2019).

The updated recommendations are not a major shift from current practice and the resource impact is unlikely to be significant. However, where the guideline constitutes a change to current practice, below are the recommendations with potential resource impacts. Further discussion about impacts of these recommendations is in the resource impact section of this report.

- Recommendations on shared decision making may reduce hospital admissions and length of hospital stay.
- Recommendation to recognise that lung ultrasound can be used in the diagnosis of pneumonia in hospital may increase demand for ultrasound. Additional training and accreditation in the use of lung ultrasound may be required.
- Recommendations to consider blood cultures, sputum cultures, pneumococcal urinary tests, and legionella urinary antigen tests for adults with moderate- or high-severity community-acquired pneumonia may reduce volume of blood cultures and sputum tests taken.
- Recommendation to use corticosteroid treatment in hospital may increase drug costs. Eligible population is estimated to be small.
- Recommendation to consider a trial of high-flow nasal oxygen for people with respiratory failure in whom standard oxygen is insufficient to meet target levels may require more staff time compared with standard oxygen therapy.
- Recommendation on follow-up chest X-rays may reduce and prevent unnecessary investigations.

Resource impact

For ICBs where the updated recommendations constitute a change to current practice, the following guideline areas may need to be assessed for potential resource impact.

Shared decisions about place of care (recommendations 1.2.3 and 1.2.9 to 1.2.10)

The recommendations do not represent a major shift from current practice because they have been retained from the previous guideline but with an added option to refer to a virtual ward or same day emergency care unit or hospital at home service. Also, other factors that would need to be discussed with the person when making a shared decision about using home-based models of care. As with current practice, implementation may reduce hospital admissions and length of hospital stay. This in turn would reduce pressure on hospital bed capacity, freeing up beds for patients who require more intensive care and improving this could also improve inpatient capacity.

Lung ultrasound (recommendation 1.4.2)

The recommendation to recognise that lung ultrasound can be used in the diagnosis of pneumonia in hospital may increase demand for lung ultrasound services (capacity impact) if widely adopted. Current practice requires that diagnosis of pneumonia be confirmed by chest X-ray. The use of lung ultrasound could impact point-of-care use in emergency departments or critical care areas to help inform a diagnosis of pneumonia and promptly start antibiotic treatment.

Clinicians may need additional training and accreditation in the use of lung ultrasound time to build up experience of this imaging method, which may be an implementation issue. Any associated costs may be offset by the potential benefits resulting from a quicker diagnosis, timely and appropriate treatment, and identification and treatment of complications.

Blood cultures, sputum cultures, pneumococcal urinary tests and legionella urinary antigen tests (recommendation 1.4.6)

The recommendation to consider the tests for adults with moderate- or high-severity community-acquired pneumonia is unlikely to have significant resource impact. Previously the recommendation was to take blood and sputum cultures and to consider pneumococcal and legionella urinary antigen test. Because the recommendation is now to consider the tests, there is likely to be a decrease in the volume of blood cultures and sputum tests taken. Any reduction would reduce demand on laboratory services.

Blood cultures and sputum cultures, and not routinely use urinary antigen tests (recommendation 1.4.7)

The recommendation to consider the tests and not routinely use urinary antigen tests for children and young people with severe community-acquired pneumonia will lead to a decrease in volume of urinary antigen tests.

Corticosteroid treatment in hospital (recommendations 1.8.1 to 1.8.2)

The use of corticosteroids treatment in hospital for adults with high-severity community-acquired pneumonia is a change in practice but unlikely to have a significant cost impact because the estimated eligible population and the treatment costs are small.

Based on an estimated 463 people with high-severity community-acquired pneumonia treated with hydrocortisone, the additional drug costs for a 7-day course of treatment ranges from £8,515 to £13,871 depending on the type of treatment used. See table 1 and table 2. The additional costs may be offset by benefits such as reduced stay in ICU or overall time spent in hospital and ventilator-free days.

Table 1 shows the estimated number of people with community-acquired pneumonia admitted into hospital ICU who are likely to receive corticosteroids for high-severity community-acquired pneumonia.

Table 1 Eligible population for corticosteroids per year, England

Details	Number of people	Percentage (%)
Average number of people with community-acquired pneumonia	351,331	-
People hospitalised	77,293	22
People admitted in ICU	7,729	10
People in ICU with high-severity community-acquired pneumonia	463	6

Data on number of people with community-acquired pneumonia hospitalised, admitted to ICU and with high-severity community-acquired pneumonia was based on: [Severe community-acquired pneumonia, Continuing Education in Anaesthesia, Critical Care & Pain. Volume 9 Number 3 \(2009\)](#).

Table 2 shows drug costs for a 7-day treatment course with corticosteroids.

Table 2 7-day corticosteroids treatment costs per person

Treatment	Dosage	Treatment duration (days)	Cost per person
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Hydrocortisone	200 mg IV bolus (first day), then 10 mg/h IV infusion for 6 days	7	£18.39
Dexamethasone	6 mg daily	7	£29.96

Unit costs based on the [BNF](#).

Clinical experts suggest that in practice hydrocortisone is likely to be administered as 50 mg boluses four times a day. Therefore, costs could be higher than estimated and should be assessed locally.

Intravenous (IV) hydrocortisone administration takes about 1 to 10 minutes for injections and 20 to 30 minutes for infusions or as a continuous infusion (see the [Specialist Pharmacy Service webpage on switching between oral prednisolone and IV hydrocortisone](#)). The administration cost is not considered to need any incremental staffing as these people are already in an ICU hospital setting.

Non-invasive respiratory support (recommendations 1.9.1 to 1.9.3)

The recommendation to consider a trial of high-flow nasal oxygen for people with respiratory failure in whom standard oxygen therapy is insufficient to meet target saturation levels may have a resource impact. This is a new recommendation, but clinical experts suggest that trusts are likely to already be routinely using high-flow nasal oxygen in acute areas. High-flow nasal oxygen therapy may require more staff time compared with standard oxygen therapy, particularly in the initial stages of treatment and during monitoring. There may be reduced need for intubation and improved patient comfort, but it requires more intensive monitoring and management. For NHS trusts without the resources to use high-flow nasal oxygen therapy, investment in equipment and training may be needed.

Follow-up chest X-rays (recommendations 1.12.1 to 1.12.3)

The recommendation to not routinely offer follow-up chest X-rays and only consider follow-up chest X-rays at 6 weeks following discharge for people with risk factors for lung cancer or other underlying respiratory disease or persisting or deteriorating symptoms will reduce and prevent unnecessary investigations. The recommendation also reflects the [British Thoracic Society guideline for the management of CAP in adults \(2009\)](#) and other NHS trust policies available online. Therefore, the recommendation is unlikely to result in any significant reduction in follow-up chest X-rays.

Population covered

Table 3 shows the incidence of community-acquired pneumonia in adults and in children aged 0 to 17 years old and the number of cases (all ages) of hospital acquired pneumonia in England.

Table 3 Incidence of community-acquired, and hospital-acquired pneumonia

Groups of people	Number of people	Number of people	Percentage (%)
Adult population	46,844,130	234,221 to 468,441	0.5 to 1.0
Children 0 to 17 years	11,998,646	17,398	0.145
Hospital acquired pneumonia	n/a	82,410	n/a

Incidence of community-acquired pneumonia in adults based on NICE's guideline on pneumonia in adults: diagnosis and management (CG191).

Incidence in children based on [Harris et al. 2011](#). Incidence covers children 0 to 16 years old and is assumed to include children aged 17 years old.

Hospital-acquired pneumonia based on the [Advanced Quality Alliance Hospital Acquired Pneumonia Policy Project phase 2 report in 2023](#).

Capacity impact

Implementation of the guideline may:

- help reduce use of hospital beds if people in hospital are referred to hospital at home services, virtual wards, or same-day emergency care services
- lead to an increase in demand for lung ultrasound services
- lead to an increase in C-reactive protein tests being performed
- lead to a reduction in blood culture tests
- lead to an increase in corticosteroid administrations
- lead to a reduction in follow up chest X-rays.

Key information

Table 4 Key information

Speciality	Respiratory
Disease area	Pneumonia
Programme budgeting category	11A Problems of the Respiratory System – obstructive airways disease
Commissioner(s)	ICB
Provider(s)	Primary care and secondary care – acute

About this resource impact summary report

This resource impact summary report accompanies the [NICE guideline on pneumonia: diagnosis and management](#) and should be read with it.