



Royal College
of Physicians

NACAP

National Asthma and Chronic Obstructive
Pulmonary Disease Audit Programme (NACAP)

Adult asthma clinical audit 2018/19

Adults with asthma attacks admitted to hospitals in England, Scotland
and Wales from 1 November 2018 and discharged by 31 March 2019

Clinical audit report

Published December 2019



In association with:

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Royal College of
General Practitioners



The Royal College of Physicians

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NACAP is a programme of work that aims to improve the quality of care, services and clinical outcomes for patients with asthma and COPD in England, Scotland and Wales. Spanning the entire patient care pathway, NACAP includes strong collaboration with asthma and COPD patients, as well as healthcare professionals, and aspires to set out a vision for a service which puts patient needs first. To find out more about NACAP visit: www.rcplondon.ac.uk/nacap.

Adult asthma clinical audit 2018/19 report

This report was prepared by the following people, on behalf of the NACAP asthma advisory group (the full list of members is included on the NACAP resources page here: www.rcplondon.ac.uk/nacap-resources):

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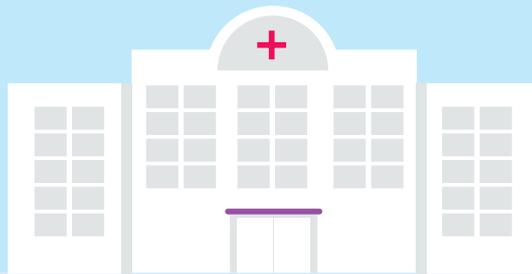
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Report at a glance

10,242

hospital admissions for adults with asthma attacks

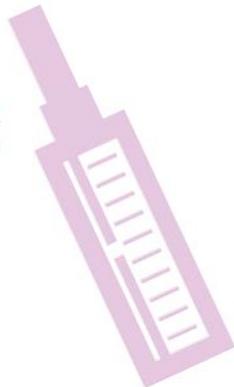


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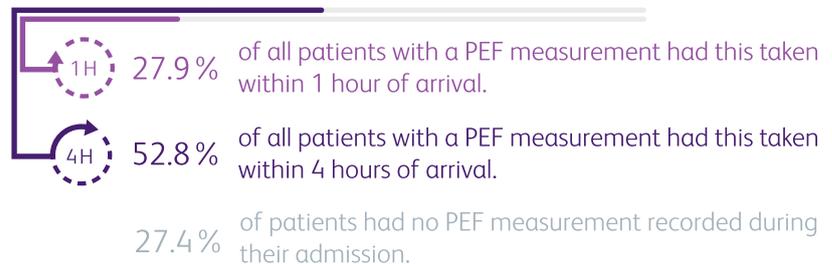
hospitals in England, Scotland and Wales

PEF

QI priority: Ensure 90% of patients are assessed for asthma severity, including measurement of PEF, within 1 hour of arrival to hospital.



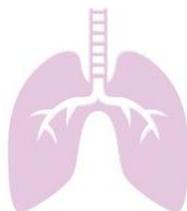
72.6% of patients had a PEF measurement recorded during their hospital admission. Guidelines require measurement of PEF as part of severity assessment.*



*3.9% of patients were too unwell to have PEF taken following arrival at hospital.

Respiratory review

QI priority: Ensure 90% of patients receive a respiratory specialist review before discharge from hospital.



76.8% of patients were reviewed by a respiratory specialist during their admission.



Systemic steroids

QI priority: Ensure 95% of patients who have not been administered systemic steroids as part of pre-hospital care are administered this treatment within 1 hour of arrival to hospital.*



87.7% of patients were administered systemic steroids following arrival at hospital.*



*Please note that the audit dataset did not collect data on the proportion of patients that received their first dose of systemic steroids prior to arrival at hospital in this round of reporting (see section 4 on acute treatment for further information).



How to use this report

1. Scope and data collection

The adult asthma clinical audit, a component of the National Asthma and COPD Audit Programme (NACAP), launched in November 2018 and captures the processes and clinical outcomes of treatment for patients admitted to hospital in England, Scotland and Wales with asthma attacks.*

This report, which is the first since the launch of the audit, presents data describing the cohort of patients that arrived at hospital on or after 1 November 2018, who were admitted to adult services *and* were discharged by 31 March 2019.

The report highlights three key areas for quality improvement (QI) in 2019/20. Providers and commissioners should consider how these can be delivered locally for the benefit of patients and the healthcare system. A selection of case studies, provided by participating hospital teams, are included in the report to showcase good practice. In addition, tips to achieving the QI priorities are included in the relevant sections of the report. For more information about the delivery of QI within the NACAP, please view the programme's QI strategy available at:

<https://www.rcplondon.ac.uk/projects/outputs/national-asthma-and-copd-audit-programme-nacap-quality-improvement-resources>

2. Indicators included

Key process measures included in this report are: review by a member of the respiratory team; measurement of peak expiratory flow (PEF); administration of systemic steroids and β 2 agonists; and provision of elements of good practice care. The outcome measures included in this report are length of stay and inpatient mortality.

An addendum to this report will be published in 2020, detailing 30- and 90-day mortality and hospital readmission rates. The two reports together are designed to provide a picture of the care provided to the cohort of adult patients admitted to hospital with an asthma attack who were included in the audit, as well as their outcomes post-discharge. In each future round of reporting, the NACAP aims to provide an increasingly comprehensive picture of asthma care provided across the country as case ascertainment builds over the length of the continuous audit.

A separate data analysis and methodology report is available at: www.rcplondon.ac.uk/adult-asthma-2018-19. This provides the following information:

- the full data analyses, presented with England and Wales results, as well as combined results for all three countries denoted as 'All' (England, Scotland and Wales) in tables and figures, with explanatory notes throughout
- nationally benchmarked results for participating hospitals, using variables based on national guidelines and standards
- appendices, including the methodology for the audit.

* The other components of the NACAP will report separately (adult asthma and COPD organisational audit in spring 2020, COPD clinical audit in spring/summer 2020, pulmonary rehabilitation in spring 2020, and children and young people asthma in autumn 2020).

It is not necessary to review the full analysis to appreciate the key messages available in this short report.

Provider-level audit data will be made publicly available on www.data.gov.uk, in line with the government's transparency agenda. In addition, authorised hospital web tool users are able to download their raw audit data via the audit web tool at any point. Run charts for key dataset metrics are also accessible for authorised hospital web tool users to access; these display audit data in real-time at provider- and national-level to support local quality improvement. Copies of our datasets, our good practice repository and all other resources can be found via our website: www.rcplondon.ac.uk/nacap-adult-asthma.

3. Report coverage

The data presented here are based on the first five months of audit data collected as hospitals joined the continuous audit and began entering data onto the NACAP web tool. Therefore, data on only a proportion of eligible admissions for patients with asthma attacks were submitted and included in this audit report. It is important to note that a number of analyses have been calculated using small numbers (for instance, analyses of inpatient deaths). Caution must be used in interpreting analyses where the sample size is small as analyses may be underpowered and associations seen may occur by chance.

National breakdowns in this round of reporting do not account for Scotland. Scottish audit data is included in the 'All' figures, but are not presented separately in this report, or the data analysis and methodology report, unlike for England and Wales. The low rate of hospital recruitment to the audit in Scotland, during the first 7 months of continuous data collection, provides small numbers (96 cases) that cannot be meaningfully analysed as a representative sample of Scottish asthma care. We look forward to providing Scotland level figures in future reports for the adult asthma audit, once hospital and case ascertainment has increased.

4. Audience and links to relevant guidelines and standards

The report is intended to be read by healthcare professionals, NHS managers, chief executives and board members, service commissioners and policymakers, as well as voluntary organisations. A separate report has been produced for patients and the public and is available at: www.rcplondon.ac.uk/adult-asthma-2018-19.

References to the appropriate National Institute for Health and Care Excellence (NICE) quality standards, British Thoracic Society (BTS) / Scottish Intercollegiate Guidelines Network (SIGN) guideline on the management of asthma and National Review of Asthma Deaths (NRAD) 2014 report recommendations are inserted throughout the key findings.

Foreword by James Calvert, adult asthma audit clinical lead



Welcome to the first RCP/HQIP audit report describing care provided to adult patients admitted to hospital with asthma attacks in the UK. Data described are derived from 10,242 patient episodes occurring between 1 November 2018 and 31 March 2019. According to Asthma UK, 5.4 million people in the UK are affected by asthma. In 2016/17 there were 77,124 hospital admissions for asthma and 1,484 people died from their condition.¹

The audit data highlights two immediate areas for improvement; improving severity assessment of asthma attacks at the front door and the need to ensure timely treatment. Severity assessment requires measurement of PEF; ² only 27.9% of patients who received a PEF measurement received it within 1 hour of arrival and 27.4% did not have PEF recorded at any point during their admission. The audit data show that timely administration of systemic steroids are associated with an increased likelihood of a shorter length of stay (OR = 1.26 (95% CI 1.15 to 1.37)); 31.2% of patients who received systemic steroids received these within 1 hour of arrival. It is, however, unclear if some patients were administered treatment prior to arrival at hospital. A planned audit dataset revision will provide information on treatment received as part of pre-hospital care for future analyses.

An admission to hospital represents an opportunity to ensure that all elements of long-term care have been optimised prior to discharge;

- Personalised asthma action plans are associated with a reduction in hospital admissions and a reduction in unscheduled use of medical services; ³ 59.4 % of audited patients were discharged without a personalised asthma action plan in place, or review of their existing plan.
- 10.4% of patients left hospital without inhaled steroids being initiated (excluding patients not prescribed these for medical reasons (0.5%)). This means that a critical opportunity to reduce the risk of further attacks was missed.
- One of the key National Review of Asthma Deaths (NRAD) recommendations is that patients in receipt of more than two courses of systemic steroids in the previous 12 months are referred for secondary care assessment; ⁴ 12.6% of patients who met this criterion were discharged without a referral for hospital follow up in place and 1.1% of patients who met this criterion declined referral for hospital follow up.

The value of care provided by specialist teams is well demonstrated. Patients seen by a respiratory specialist were eight times more likely to have their tobacco dependency addressed (OR = 8.00 (95% CI 6.34 to 10.17)) and 25 times more likely to receive optimal, guideline-defined care (OR = 24.73 (95% CI 20.73 to 29.52)), as described in the BTS asthma care bundle. ² Specialist-led care was also associated with a reduction in risk of death during admission (OR = 0.39 (95% CI 0.17 to 0.89) N=23). Numbers are clearly small, but it is clear that patients reviewed by a specialist receive more elements of guideline-defined care than those not seen by a specialist. In the short term, one of the national QI objectives must be to increase the proportion of patients seen by a member of the respiratory specialist team during admission. Commissioners should ensure that there are sufficient clinicians with expertise in asthma to provide appropriate levels of specialist care in hospital and in the community. In the longer term, medical training in particular, is moving towards generalist training. We must ensure that the benefits of specialist-led care, demonstrated here, are retained.

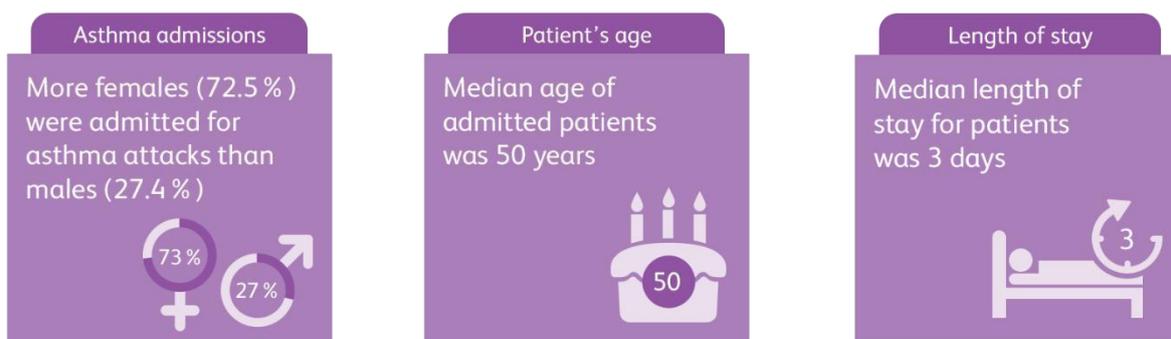
Finally, I would like to thank all the participating hospital teams who have provided the data that will help us to understand how we can improve the standard of care which we provide to our patients.

Key findings and quality improvement priorities



Section 1: General information

To see the data analysis in full, please access the data analysis and methodology report available at: www.rcplondon.ac.uk/adult-asthma-2018-19.



Admission and demographics

- A significantly higher proportion of adult patients admitted with **asthma attacks** were female (72.5%).
- The **median age** at admission was **50 years** (interquartile range (IQR) 34–65).
- More patients were admitted on **weekdays**, from **late morning to early afternoon** (10am to 2pm). Fewer patients were admitted overnight (10pm to 8am) and on weekends.[†]

Length of stay

- The **median length of stay** for an admission was **3 days**.

Inpatient mortality

- **23 (0.2%)** audited patients admitted for asthma attacks died during their hospital stay.

Patient numbers included in the audit (case ascertainment)

- The **overall case ascertainment figure** for the period **1 November 2018 to 31 March 2019** was 39% (10,242/26,164 admissions).[‡] Case ascertainment will be variable across participating hospitals.
- Data presented in the report should be interpreted taking into account that results are based on a non-random sample of eligible patients, rather than the full cohort of eligible individuals.

[†] A detailed breakdown of arrival activity can be found in Table 1.4.2 of the data analysis and methodology report (day and time of arrival to hospital) available at: www.rcplondon.ac.uk/adult-asthma-2018-19.

[‡] This percentage was calculated using admission figures as recorded by Hospital Episode Statistics (HES) for England, the Patient Episode Database for Wales (PEDW) and the electronic Data Research and Innovation Service (eDRIS) for Scotland. For more information on the methodology used to calculate this figure, please review Appendix A of the data analysis and methodology report, available at: www.rcplondon.ac.uk/adult-asthma-2018-19.

Case study: University Hospital of North Tees (North Tees and Hartlepool NHS Foundation Trust)

Resource support

- Following the launch of the continuous COPD audit in 2017, the hospital team were able to ensure sufficient personnel to support data collection and entry through team awareness and communication of the work involved. This subsequently ensured sufficient resource to support the adult asthma audit.
- A multidisciplinary team (MDT) managed case identification and participation in the adult asthma audit and included team members from the following departments:
 - clinical data input
 - clinical effectiveness
 - service improvement
 - respiratory (consultants and specialist respiratory nurses)
 - in-hospital care management.
- The main members of the team involved in web tool data entry included:
 - two clinical data input clerks
 - one clinical effectiveness coordinator
 - two clerical officers.



172 patient records were entered at University Hospital of North Tees between 1 November and 10 May 2019 for the audit

Data collection and entry process

- Coding reports were used to identify patients discharged under the ICD-10 codes listed for inclusion in the audit. The clinical effectiveness coordinator ran these coding reports every 2 weeks and removed any patients already uploaded onto the web tool.
- These reports were then sent to the clinical data input clerks who checked that the remaining patients listed were eligible for inclusion.
- Once this list was finalised, a notes request was sent through to the clinical effectiveness coordinator for the clerical officers or the medical records department to source depending on location of the notes.
- Upon receipt of the notes, the clinical data input team clerks uploaded the relevant data to the web tool, with clinical support where needed.
- Running the coding report every 2 weeks allowed enough time for the notes of eligible admissions from each report to be received and uploaded onto the web tool.
- Regular meetings were also held with the wider MDT to discuss progress with the audit, address any issues and make further improvements to internal processes.

Tips to improve case ascertainment:

- Involve the emergency department team and acute clinicians in the audit, as many patients will be managed by these team members.
- Present your hospital's initial audit data to trust / health board management and make a business case for more data collection support to monitor and implement improvements in care. Involve patients in the process to support this.



Section 2: Smoking

To see the data analysis in full, please access the data analysis and methodology report available at: www.rcplondon.ac.uk/adult-asthma-2018-19.



of current smokers had their tobacco dependency addressed⁵

Key standards:

- [BTS/SIGN 2019 \[6.2.3\]](#): People with asthma and parents/carers of children with asthma should be advised about the dangers of smoking and second-hand tobacco smoke exposure, and should be offered appropriate support to stop smoking.²
- [NICE 2013 QS43 \[QS1\]](#): People are asked if they smoke by their healthcare practitioner, and those who smoke are offered advice on how to stop.⁵
- [NRAD 2014 \[Patient factors and perception of risk – recommendation 2\]](#): A history of smoking and/or exposure to second-hand smoke should be documented in the medical records of all people with asthma. Current smokers should be offered referral to a smoking cessation service.⁴

Audit results:

- **20.7%** of patients admitted for asthma attacks were **recorded as current smokers**. 22.8% of patients admitted were ex-smokers and 46.9% of patients had never smoked.
- **59.2% of current smokers** had their **tobacco dependency addressed** prior to discharge.

⁵ Addressing tobacco dependency includes identifying patients who smoke on admission and offering and/or prescribing smoking cessation advice and/or pharmacotherapy.

Case study: Ealing Hospital (London North West University Healthcare NHS Trust)

- Initially the trust had a smoking cessation nurse as well as online referral for smoking cessation using an electronic request system. However, the smoking cessation nurse left the trust. The respiratory specialist nurses therefore focused on discussing tobacco dependency with all patients admitted under the care of the acute medical team and other teams whenever they reviewed a patient.
- In a departmental teaching programme, the respiratory specialist nurses asked drug representatives to educate the juniors about the options available for smoking cessation. As a result, the juniors proactively started prescribing smoking cessation therapies.
- A matron obtained information leaflets from the British Lung Foundation (BLF) and distributed these to patients admitted under the care of the respiratory team. At the point of discharge, the team also proactively encouraged people to seek help for their tobacco dependency at their GP surgery to continue their smoking cessation therapies.
- The hospital pharmacist prescribed Champix⁶ as a take home prescription. Nicotine patches, oral lozenges, gum and nasal sprays were also options that could be offered.
- As part of a local QI initiative, the hospital team wrote a smoking cessation plan and provided this to all patients at the time of discharge.



100% of patients included in the audit, who were recorded as current smokers at Ealing Hospital, had their tobacco dependency addressed



Section 3: Acute observations

To see the data analysis in full, please access the data analysis and methodology report available at www.rcplondon.ac.uk/adult-asthma-2018-19.



of patients had a PEF measurement taken at some point during their admission to hospital

Key standards – peak expiratory flow (PEF):

- [BTS/SIGN 2019 \[9.2.3\]](#): Measurements of airway calibre improve recognition of the degree of severity, the appropriateness or intensity of therapy, and decisions about management in hospital or at home. PEF or FEV1 are useful and valid measures of airway calibre. PEF is more convenient in the acute situation.²
- [BTS/SIGN 2019 \[9.2.6\]](#): Patients whose peak flow is greater than 75% best or predicted 1 hour after initial treatment may be discharged from the emergency department unless they meet any of the following criteria, when admission may be appropriate: still have significant symptoms; concerns about adherence; living alone / socially isolated; psychological problems; physical disability or learning difficulties; previous near-fatal asthma attack; asthma attack despite adequate dose of oral corticosteroid prior to presentation; presentation at night; pregnancy.²
- [NICE 2013 QS25 \[QS7\]](#): People with asthma who present with an exacerbation of their symptoms receive an objective measurement of severity at the time of presentation.⁷

Audit results – PEF:

- **72.6%** of patients had a **recorded PEF measurement** while 23.5% had no PEF measurement recorded during their admission and 3.9% of patients were too unwell to have a measurement taken.
- The **median time to PEF measurement** following arrival at hospital was **4 hours** (IQR 1–16 hours).
- **27.9%** of all patients with a PEF measurement, and a time for their measurement, had PEF taken **within 1 hour of arrival**.
- **52.8%** of all patients with a PEF measurement, and a time for their measurement, had PEF taken **within 4 hours of arrival**.
- **58.7%** of patients had a **previous best PEF recorded**. Where a previous best PEF was not recorded, **33.4%** of admissions had a **predicted PEF recorded**.
- Of the patients who had a recorded PEF measurement taken, **84.7%** had a record of either **previous or predicted PEF**.
- The **median PEF on admission** as a percentage of previous best PEF or predicted PEF was **60.0%** (IQR 45.5–75.0%).

- **74.3%** of patients who had a PEF measurement taken and a measurement for either best/predicted PEF had a **PEF measurement of less than 75% as a percentage of best/predicted PEF** following arrival.
- Patients with **PEF taken within 4 hours** were more likely to have a **length of stay of 3 days or less** compared with those who had a PEF taken more than 4 hours after arrival (OR = 1.66 (95% CI 1.50 to 1.84)).

Audit results – asthma attack severity:

- Asthma attack severity was classified according to the NICE guideline** and BTS guideline†† thresholds. Please note that the audit dataset is limited to collection of a smaller subset of physiological variables compared to the full list provided in the NICE/BTS guidelines and therefore asthma severity categorisation provided here is indicative only. The physiological variables used to categorise asthma severity of patients included in the audit were heart rate, respiratory rate, oxygen saturation (where measured) and PEF (where measured). In addition, patients with a heart rate of less than 30 beats per minute or a respiratory rate of less than 10 breaths per minute were classified as severe. Patients recorded as '*Patient too unwell*' for PEF measurement, whose other physiological measurements were normal, were classified as severe.
- A breakdown of asthma severity in the audit patient cohort is as follows:
 - **34.6%** of patients had **moderate** acute asthma
 - **51.4%** of patients had **severe** acute asthma
 - **14.0%** of patients had **life-threatening** acute asthma.
- 80.2% of patients with severe asthma and 83.5% of patients with life-threatening acute asthma were reviewed by a member of the respiratory specialist team during their admission. This means that 16.5% of those with life-threatening asthma and 19.8% of those with severe acute asthma did not receive the benefit of specialist review for their condition.
- The **median time to specialist review** in patients with moderate, severe and life-threatening acute asthma was 19.5 hours, 19.9 hours and 21.4 hours respectively.

** NICE guidance on classification of asthma severity is available at: <https://bnf.nice.org.uk/treatment-summary/asthma-acute.html>

†† BTS guidance on classification of asthma severity is available at: www.brit-thoracic.org.uk/quality-improvement/guidelines/asthma/



QI priority: Ensure 90% of patients are assessed for asthma severity, including measurement of PEF within 1 hour of arrival. ([BTS/SIGN 2019 \[9.2.3, 9.2.6\]](#))

Rationale:

There is low attainment nationally for measurement of PEF within 1 hour of arrival. Assessment of severity by PEF measurement is required in order to make the necessary care management plans for the patient's admission ([BTS/SIGN 2019 \[9.2.3, 9.2.6\]](#)). Therefore, a 90% QI target has been set, taking into account exception cases where this cannot be recorded (i.e. where the patient is too unwell).^{††}

Tips to achieve this priority:

- Survey staff to understand the barriers to measuring PEF in the emergency department.
- Review whether there is sufficient availability of PEF meters in the emergency department, particularly during the busiest periods for admissions (see Table 1.4.2 of the data analysis and methodology report (day and time of arrival to hospital)).
- Provide education and training to staff on PEF measurement and interpretation.
- Encourage use of PEF as part of triage by mandating entry of PEF measurement in electronic systems.
- Work with the ambulance service to include PEF measurement as part of initial assessment.

^{††} 3.9% of audited patients were too unwell to have PEF measurement taken (see Table 3.2.1 of data analysis and methodology report available at: www.rcplondon.ac.uk/adult-asthma-2018-19).



Section 4: Acute treatment

To see the data analysis in full, please access the data analysis and methodology report available at www.rcplondon.ac.uk/adult-asthma-2018-19.



of patients were reviewed by a respiratory specialist during their admission

Key standards – respiratory specialist review:

- [NICE 2013 QS25 \[QS9\]](#): People admitted to hospital with an acute exacerbation of asthma have a structured review by a member of a specialist respiratory team before discharge.⁷

Audit results – respiratory specialist review:

- Patients were judged to have had a respiratory specialist review if they were seen by any member of the respiratory MDT with training and skills in care of patients with asthma. **76.8%** of patients were **reviewed by a respiratory specialist** at some point during their admission.
- The **median time to respiratory specialist review** was **20 hours** (IQR 11–36 hours).
- **61.8%** of patients who received a respiratory specialist review were **reviewed within 24 hours** of arrival to hospital.
- Respiratory specialist review during admission was associated with:
 - **increased length of stay;** patients who received a respiratory specialist review stayed in hospital for a longer period of time (3 days vs 1 day).
 - **addressing tobacco dependency;** current smokers who received a respiratory specialist review were eight times more likely to have their tobacco dependency addressed (OR = 8.00 (95% CI 6.34 to 10.17)).
 - **provision of asthma care bundles;** patients who received a respiratory specialist review were 25 times more likely to receive a care bundle (OR = 24.73 (95% CI 20.73 to 29.52)).
 - **delivery of the elements of guideline defined care;** 92.2% of patients who received a respiratory specialist review received at least one or more elements of guideline-defined care, compared with 53.7% of patients that did not have a respiratory specialist review.
 - **decreased inpatient mortality;** patients who received a specialist review were 2.5 times less likely to die as an inpatient, compared with patients who did not receive a specialist review (OR = 0.39 (95% CI 0.17 to 0.89)). However, please note that as there was a small number of deaths (N=23) the confidence intervals for the odds ratio are wide. The analysis has also not been adjusted for variables such as age or socioeconomic status.



QI priority: Ensure 90% of patients receive a respiratory specialist review before discharge from hospital. ([NICE 2013 QS25 \[QS9\]](#))

Timely access to / review by a respiratory specialist is the **patient priority for the adult asthma clinical audit**, as chosen by the NACAP patient panel. For more information on how this priority was selected, please visit: www.rcplondon.ac.uk/nacap.



Rationale:

The audit data highlights that patients in receipt of a respiratory specialist review were more likely to receive an asthma care bundle and the associated elements of good practice care on discharge, as well as more likely to have their tobacco dependency addressed if a current smoker. Therefore, an ambitious 90% QI target has been set for this priority.

Tips to achieve this priority:

- Work with the admitting medical teams to put a simple system in place whereby the respiratory team can be notified of new patients at the point of admission.
- Work with the local IT department to set up an alert system to support identification of relevant patients for review.
- Undertake a respiratory round of the admitting ward(s) and the emergency department each morning.

Key standards – oxygen prescription and administration:

- [BTS 2017 \[Guideline for oxygen use in healthcare and emergency settings\]](#): Every healthcare facility should have a standard oxygen prescription document or, preferably, a designated oxygen section on all drug-prescribing cards or guided prescription of oxygen in electronic prescribing systems.⁸
- [BTS 2017 \[Guideline for oxygen use in healthcare and emergency settings\]](#): A prescription for oxygen should always be provided, except in sudden illness when it must be started immediately and documented retrospectively.⁸

Audit results – oxygen prescription and administration:

- Oxygen should be prescribed to ensure patients are managed safely. However, the audit data shows **16.8%** of patients were administered oxygen **without a prescription**.

Key standards – systemic steroids:

- [BTS/SIGN 2019 \[2.7.1, 9.3.3\]](#): Give steroids in adequate doses to all patients with an acute asthma attack.²
- [NICE 2013 QS25 \[QS8\]](#): People aged 5 years or older presenting to a healthcare professional with a severe or life-threatening acute exacerbation of asthma receive oral or intravenous steroids within 1 hour of presentation.⁷

Key standards – β_2 agonists:

- [BTS/SIGN 2019 \[2.7.1, 9.3.2\]](#): Use high-dose inhaled β_2 agonists as first-line agents in patients with acute asthma and administer as early as possible. Reserve intravenous β_2 agonists for those patients in whom inhaled therapy cannot be used reliably.²

Audit results – systemic steroids:

- **87.7%** of patients were **administered systemic steroids** following arrival at hospital.
- **31.2%** of all patients who received systemic steroids as an inpatient received these **within 1 hour** of arrival at hospital.
- **65.3%** of all patients who received systemic steroids as an inpatient received these **within 4 hours** of arrival at hospital.
- Patients administered systemic steroids **over 4 hours after arrival** at hospital were **26% more likely to have a length of stay longer than 3 days** when compared with patients who received systemic steroids within 4 hours (OR = 1.26 (95% CI 1.15 to 1.37)).

Audit results – β_2 agonists:

- **42.2%** of all patients who received β_2 agonists as an inpatient received these **within 1 hour** of arrival to hospital.
- Patients administered β_2 agonists **over 4 hours after arrival** at hospital were **14% more likely to have a length of stay of over 3 days** when compared with patients who received these within 4 hours (OR = 1.14 (95% CI 1.03 to 1.26)).

Caveats to systemic steroids and β_2 agonists audit data:

- The audit dataset does not record pre-hospital care so it is possible that some patients received their first dose of systemic steroids and β_2 agonists in primary care or in the ambulance.
- Data on administration of systemic steroids and β_2 agonists in the first 4 hours of hospital admission should be interpreted with the above caveat.
- Early administration of systemic steroids is associated with better outcomes.⁹ Therefore it is our intention to add a question to the pending revision of the audit dataset on pre-hospital care. This will allow us to examine attainment against timely treatment for asthma attacks on arrival to hospital with greater detail in future reports.



QI priority: Ensure 95% of patients who have not been administered systemic steroids as part of pre-hospital care are administered this treatment within 1 hour of arrival to hospital. ([NICE 2013 QS25 \[QS8\]](#))

Rationale:

Early administration of systemic steroids for asthma attacks is associated with better patient outcomes.⁹ The audit data suggests that administration of systemic steroids within 4 hours of arrival to hospital is associated with reduced length of stay. Therefore, a 95% QI target has been set, taking into account exception cases where systemic steroids cannot be administered.

Tips to achieve this priority:

- Incorporate a clear record of any pre-hospital systemic steroid treatment for the asthma attack into the ambulance handover or pre-admission triage to avoid delay in treatment with steroids or unnecessary duplication on arrival to hospital.
- Ensure that all emergency department staff are aware of the importance of steroid administration within 1 hour.



Section 5: Review and discharge

To see the data analysis in full, please access the data analysis and methodology report available at www.rcplondon.ac.uk/adult-asthma-2018-19.



of patients admitted received six elements of good practice care set out in the British Thoracic Society Asthma Care Bundle before discharge^{§§}

Key standards – elements of good practice care on discharge:

- [BTS/SIGN 2019 \[5.2.2\]](#): A hospital admission represents a window of opportunity to review self-management skills. No patient should leave hospital without a written personalised asthma action plan.²
- [BTS/SIGN 2019 \[5.3.2\]](#): Prior to discharge, inpatients should receive written personalised asthma action plans, given by healthcare professionals with expertise in providing asthma education.²
- [BTS/SIGN 2019 \[9.6.2\]](#): Prior to discharge, trained staff should give asthma education. This should include education on inhaler technique and PEF record keeping, with a written PEF and symptom-based personalised asthma action plan being provided allowing the patient to adjust their therapy within recommendations. These measures have been shown to reduce morbidity after the asthma attack and reduce relapse rates.²
- [BTS/SIGN 2019 \[9.6.3\]](#): A careful history should elicit the reasons for the asthma attack and explore possible actions the patient should take to prevent future emergency presentations.²
- [BTS/SIGN 2019 \[9.6.3\]](#): Medication should be altered depending upon the assessment and the patient provided with an asthma action plan aimed at preventing relapse, optimising treatment and preventing delay in seeking assistance in the future.²
- [BTS/SIGN 2019 \[9.6.3\]](#): Prior to discharge, follow up should be arranged with the patient's general practitioner or asthma nurse within 2 working days, and with a hospital specialist asthma nurse or respiratory physician at about 1 month after admission.²
- [NICE 2018 QS25 \[QS4\]](#): People who receive treatment in an emergency care setting for an asthma attack are followed up by their general practice within 2 working days of discharge.⁷
- [NICE 2018 QS25 \[QS5\]](#): People with suspected severe asthma are referred to a specialist multidisciplinary severe asthma service.⁷

^{§§} The six elements of good practice care before discharge included in this analysis were: inhaler technique check, maintenance medication reviewed, adherence discussed, personalised asthma action plan issued/reviewed, tobacco dependency addressed (if a current smoker) and follow up (either community follow up requested within 2 working days and/or specialist review requested within 4 weeks).

Audit results – elements of good practice care on discharge:

- **48.2%** of patients **received an asthma care bundle.*****
- **31.1%** of all patients received **all six elements of good practice care.** The six elements were:
 1. inhaler technique checked
 2. maintenance medication reviewed
 3. adherence discussed
 4. personalised asthma action plan issued/reviewed
 5. tobacco dependency addressed (if a current smoker)
 6. follow up (patient provided either: community follow up requested within 2 working days **and/or** specialist review requested within 4 weeks).
- **83.3%** of all patients received **at least one of the elements** of good practice care. This figure includes the elements listed above, also in addition to ‘triggers discussed’ as an option. The figure excludes current smokers who only had tobacco dependency addressed.
- The **least frequently provided** elements of good practice care were:
 - community follow up requested within 2 working days (33.9%)
 - issue/review of a personalised asthma action plan (40.6%).
- The **most frequently provided** elements of good practice care were:
 - inhaler technique checked (58.6%)
 - maintenance medication reviewed (69.9%).

*** The content of asthma care bundles may vary at local level.

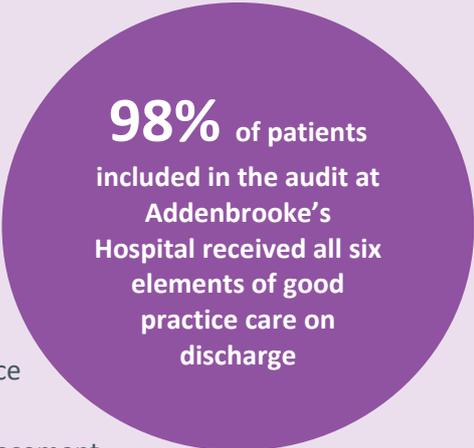
Case study: Addenbrooke's Hospital (Cambridge University Hospitals NHS Foundation Trust)

Identification and review of admissions

- The Addenbrooke's Hospital team worked collaboratively to deliver tailored care to their patients. The team used their electronic medical records system to identify emergency asthma admissions on a daily basis, allowing for prioritisation of team tasks. A respiratory specialist (respiratory consultant, respiratory SpR, respiratory nurse specialist or respiratory specialist physiotherapist) then reviewed all patients admitted with an exacerbation of asthma within 24 hours of admission.

Completion of an asthma bundle

- The team completed an asthma care bundle on all patients admitted to hospital with a diagnosis of 'exacerbation of asthma'. In the bundle the team:
 - checked inhaler technique
 - reviewed whether the device/drug was appropriate for them
 - assessed concordance/compliance/adherence
 - checked smoking status – if the patient was a current smoker they ensured nicotine replacement therapy (NRT) patches were prescribed during the admission, and referred the patient to local smoking cessation services on discharge
 - reviewed and amended existing personalised asthma action plans accordingly and provided new personalised asthma action plans for patients who had never received one previously
 - advised patients to see their GP / practice nurse within 48 hours of discharge – the team ensured this was documented on the discharge summary so GPs were aware of the need to review the patient
 - requested clinic follow up in the hospital's specialist asthma clinic 4–6 weeks post-discharge.
- In order to capture the discharge data for the NACAP adult asthma audit, the team devised a template asthma care bundle checklist, completed when the patient was reviewed by a respiratory nurse specialist, making the data input process for the audit more efficient.



98% of patients included in the audit at Addenbrooke's Hospital received all six elements of good practice care on discharge



Section 6: Steroids and referral for hospital review

To see the data analysis in full, please access the data analysis and methodology report available at: www.rcplondon.ac.uk/adult-asthma-2018-19.



of patients prescribed more than two courses of oral steroids in the previous 12 months were not referred for hospital assessment/follow up

Key standards – inhaled steroids and oral steroids:

- [BTS/SIGN 2019 \[Management of acute asthma in adults in hospital \(Annex 5\)\]](#): When discharged from hospital, patients should have treatment with oral steroids (prednisolone 40–50 mg until recovery – minimum 5 days) and inhaled steroids in addition to bronchodilators.²

Audit results – inhaled steroids and oral steroids:

- **89.1%** of patients were prescribed **inhaled steroids at discharge**.
- **90.2%** of patients were prescribed at least **5 days of oral steroids for treatment** of their asthma attack.
- **29.9%** of patients had been prescribed **more than two courses of oral steroids in the last 12 months**.

Key standards – referral for hospital assessment

- [BTS/SIGN 2019 \[Management of acute asthma in adults in hospital \(Annex 5\)\]](#): When discharged from hospital, patients should have a follow-up appointment in a respiratory clinic within 4 weeks.²
- [NRAD 2014 \[Organisation of NHS services – recommendation 2\]](#): Patients with asthma must be referred to a specialist asthma service if they have required more than two courses of systemic corticosteroids, oral or injected, in the previous 12 months or require management using BTS stepwise treatment 4 or 5 to achieve control.⁴
- [NRAD 2014 \[Organisation of NHS services – recommendation 3\]](#): Secondary care follow up should be arranged after every hospital admission for asthma [...].⁴

Audit results – referral for hospital assessment:

- **55.8%** of patients were **referred for hospital assessment / follow up**. A further **12.2%** of patients were **already being seen** in a secondary care clinic.

Audit results – oral steroids history and referral for hospital assessment:

- Where patients were **prescribed more than two courses of oral steroids in the previous 12 months**, 58.1% were referred for hospital assessment / follow up and 25.3% of patients were recorded as already being seen in secondary care clinic.
- **12.6%** of patients **prescribed more than two courses of oral steroids in the last 12 months** were **not referred for hospital assessment / follow up**.

Recommendations

For providers

We have defined three key national quality improvement (QI) priorities for 2019/20, selected for their effectiveness in improving outcomes. These priorities are as follows for the next year:

1. **QI priority 1:** Ensure 90% of patients are assessed for asthma severity including measurement of PEF within 1 hour of arrival. ([BTS/SIGN 2019 \[Guideline 9.2.3, 9.2.6\]](#))
2. **QI priority 2:** Ensure 90% of patients receive a respiratory specialist review before discharge from hospital. This is also the **patient priority** for the adult asthma clinical audit, as selected by the NACAP patient panel. ([NICE 2013 QS25 \[QS9\]](#))
3. **QI priority 3:** Ensure 95% of patients, who have not been administered systemic steroids as part of pre-hospital care, are administered this treatment within 1 hour of arrival to hospital. ([NICE 2013 QS25 \[QS8\]](#))

For commissioners / health boards / sustainability transformation partnerships (STPs) and integrated care systems (ICSs)

1. Ensure that your local secondary care providers are participating in the NACAP adult asthma audit. ([NRAD 2014 \[Organisation of NHS services – recommendation 6\]](#))
2. Ensure that your local secondary care providers have sufficient trained staff in the specialist respiratory team to review all patients admitted with an asthma attack.
3. Ensure that patients who are current smokers have access to high-quality smoking cessation services. ([BTS/SIGN 2019 \[Guideline 6.2.3\]](#) / [NICE 2013 QS43 \[QS1-5\]](#))

For primary care

1. Ensure that all asthma patients have a personalised asthma action plan. ([BTS/SIGN 2019 \[Guideline 5.2.2, 14.3.1\]](#))
2. Identify asthma patients in receipt of more than two courses of systemic steroids in the last 12 months, or who are poorly controlled at BTS step 4 or 5, for review. Refer to secondary care if options for optimising care are unclear, or where there is diagnostic uncertainty. ([NRAD 2014 \[Organisation of NHS services – recommendation 2, 3\]](#))
3. Ensure that staff are adequately trained and updated in asthma care. ([BTS/SIGN 2019 \[Guideline 14.2\]](#))

For people living with asthma and their families and carers

1. If you are admitted to hospital with an asthma attack, make sure that arrangements have been made to follow you up in outpatients after discharge. ([NRAD 2014 \[Organisation of NHS services – recommendation 3\]](#))
2. If you are admitted to hospital with an asthma attack, ensure you ask for, and are provided, with a copy of your asthma care bundle (this includes having a personalised asthma action plan updated or issued). ([BTS/SIGN 2019 \[Guideline 9.6\]](#))

For more patient-specific recommendations please view the adult asthma clinical audit patient report, available at: www.rcplondon.ac.uk/adult-asthma-2018-19.

Appendix A: Document purpose

Document purpose	To disseminate the results of the national adult asthma clinical audit of adults with asthma attacks admitted to adult hospital services in England, Scotland and Wales 2018/19.
Title	Adult asthma clinical audit 2018/19
Authors	National Asthma and Chronic Obstructive Pulmonary Disease Audit Programme (NACAP), Royal College of Physicians
Publication date	13 December 2019
Audiences	Healthcare professionals, NHS managers, chief executives and board members, service commissioners, policy makers and voluntary organisations.
Description	<p>This report presents the results of the cohort of patients that arrived at hospital on or after 1 November 2018, who were admitted to adult services, and were discharged by 31 March 2019.</p> <p>The information, key findings and recommendations outlined in the report are designed to provide readers with a basis for identifying areas that are in need of change, and to facilitate the development of improvement programmes that are relevant not only to secondary care providers but also to commissioners and policymakers. There is no scheduled review date for this report.</p>
Supersedes	Not applicable
Contact	asthma@rcplondon.ac.uk

Appendix B: References

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