



Royal College
of Physicians

NACAP

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

Children and young people asthma: combined clinical and organisational audit 2019/20

Findings, recommendations
and quality improvement



Key findings and recommendations

National quality improvement (QI) priorities

This report outlines five key national quality improvement (QI) priorities for providers of children and young people (CYP) asthma secondary care. They were chosen based on their strong evidence base and effectiveness for improving care, outcomes and service provision for CYP with asthma.

Further information on why these QI priorities are important and tips for achieving them can be found in the [QI section](#) of this slide set.

The reference number which links the QI priority to the main CYP 2019 report is also given for each priority.

Audit participation

All hospitals in England, Scotland and Wales that admit CYP with asthma attacks were invited to participate in both the clinical and organisational audits for 2019/20.

- > Includes CYP (aged 1-18) admitted to hospital with an asthma attack from 1 June 2019 and discharged by 31 January 2020 and,
- > Structure and resourcing of CYP asthma services between December 2019 and February 2020.



8,506 patient records were entered
for the clinical audit

152 (84%) of eligible hospitals
submitted patient records
119 (66%)* of eligible hospitals submitted
a full organisational audit record

*An additional 23 hospitals provided a partially complete organisational audit record. 78% of all eligible hospitals participated in this audit.

Demographics



Admission and demographics

- > The median age at admission was **6 years old**.
- > More **male CYP (60.1%)** were admitted for asthma attacks than female.



Socioeconomic status

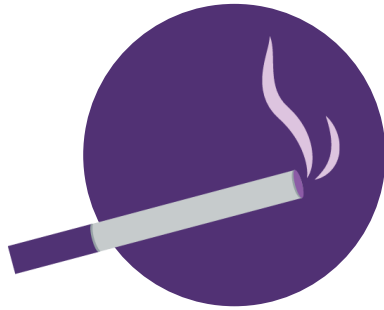
- > **30.8%** of admissions were **CYP** living in the most deprived areas, whereas **10.8%** were from the least deprived areas.



Arrival time

- > The majority of **CYP** presented to hospital in the afternoon and early evening. However, **22%** presented at night and in the early hours of the morning (between 22:00 to 06:00).

Risk factors



Exposure to second-hand smoke was recorded in **57.7%** of admissions. Where it was recorded, **30.1%** were regularly exposed to second-hand smoke in the home.



Recent history of rescue oral corticosteroid use (two or more in the past 12 months) was not recorded in **34.9%** of admissions. Where it was recorded, **30.4%** of CYP had two or more courses of rescue oral corticosteroids in the previous 12 months.

Acute presentation

Severity of the asthma attack



66.8%

of CYP who were admitted to hospital with an asthma attack **presented with severe or life-threatening** features according to heart rate, respiratory rate, oxygen levels and (where measured) peak expiratory flow rate (PEFR). PEFR rate was recorded in **19.5%** of admissions.

Review by a member of the multidisciplinary team (MDT) trained in asthma care



80.8%

of CYP admitted were reviewed by a member of the MDT team trained in asthma care.

Acute presentation

Systemic steroids



88.0%

of CYP aged 6 years or older received systemic corticosteroids during their admission. Only **38.7%** of CYP who had not received them before arrival at hospital **received them within 1 hour of arrival**. The median time to administration of systemic corticosteroids was 1 hour.



Beta agonists

95.2%

of CYP received beta agonists bronchodilators during their admission; the majority of these were administered within 1 hour.



Intravenous

19.5%

of CYP presented with refractory, life-threatening asthma requiring intravenous medication.

9.7% of CYP required admission to critical care.

Management of care

Respiratory review during admission

Of participating hospitals:



52.9 %

have a paediatric oxygen policy.



74.8%

have ward-based paediatric medication charts with a designated space to record the prescription of oxygen.



99.2%

use a paediatric early warning system (PEWS) as part of pre-hospital care. **72%** utilise a PEWS which incorporates space to record subjective nursing concerns about a patient's clinical status.

Discharge planning

Discharge bundle

- > **52.2%** of CYP received some form of discharge bundle before discharge, but components are likely to vary between hospitals.
- > **89.6%** received at least one element of good practice care, but the proportion receiving individual elements of good practice was low.

Education to empower better self-care in CYP and their families

- > **69.1%** had an inhaler technique check.
- > **45.5%** had a personalised asthma action plan (PAAP) given or reviewed.

Reducing the risk of future asthma attacks

- > **70.9%** of children were discharged with inhaled corticosteroids.
- > **68.6%** had a review of their maintenance medication.
- > **41.4%** had a discussion about triggers.
- > **78.1%** of CYP who were smokers had tobacco dependency addressed.
- > **36.6%** of parents/carers who smoked had this addressed.

* See next slide

Discharge planning

Follow up

- > **41.5%** of CYP had a community follow up requested to take place within 48 hours of discharge.
- > **57.7%** were either already in a secondary care clinic or were referred to one.
- > **28.0%** had a secondary care follow up requested to take place within 4 weeks.

A review by a member of a paediatric asthma MDT before discharge is associated with a higher chance of good practice care being provided to CYP.

CYP who received a MDT review were:

- > nearly three times more likely to receive a discharge bundle than those who did not receive an MDT review
- > nearly three times more likely to have their inhaler technique checked than those who did not receive an MDT review
- > nearly two and a half times more likely to receive a PAAP than those who did not have an MDT review

Access to specialist staff and services

Multidisciplinary staffing

There is a lack of key health professionals in post who can contribute to the care of CYP with asthma.

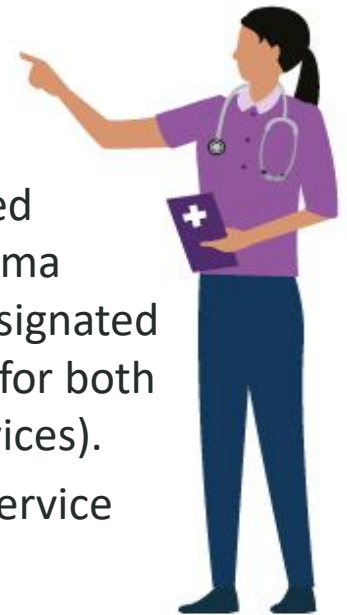
Of participating hospitals:

- > **58.8%** have a respiratory nurse specialist
- > **48.7%** have a paediatric physiotherapist
- > **29.4%** have a paediatric psychologist
- > **76.5%** have a paediatric pharmacist
- > **49.9%** of admitted CYP asthma patients have access to a paediatric respiratory nurse. However, on weekends only 5.2% of centres have a respiratory nurse available to CYP.

Local and network asthma care leadership

Of participating hospitals:

- > **69.8%** are part of a regional paediatric asthma network.*
- > **80.7%** have a designated lead for paediatric asthma services (either as a designated paediatric lead or lead for both adult or paediatric services).
- > **68.9%** have a specific service for paediatric asthma.



*For more information on paediatric networks, please refer to section 3 (3.45, 3.46, 3.47 and 3.5) of the NHS Long term plan <https://www.longtermplan.nhs.uk/publication/nhs-long-term-plan/>

Access to specialist staff and services

Access to services to address socioeconomic, environmental and lifestyle factors that affect asthma in CYP



Of participating hospitals:

- > **72.3%** have a smoking cessation service to which they can signpost parents, carers or CYP asthma patients as required.
- > **52.1%** have a smoking cessation service to which they can refer CYP asthma patients.
- > **30.3%** have a dedicated service for childhood obesity to which they can refer CYP asthma patients.

Access to specialist staff and services

Access to physiology services



Of participating hospitals:

- > **89.9%** have access to spirometry.
- > **41.2%** have access to fractional exhaled nitric oxide (FeNO), as a diagnostic tool for CYP asthma patients.

Access to transitional planning



- > **52.1%** of hospitals have formal transitioning processes in place for young people transitioning from paediatric to adult services.

Patient and carer engagement



Of participating hospitals:

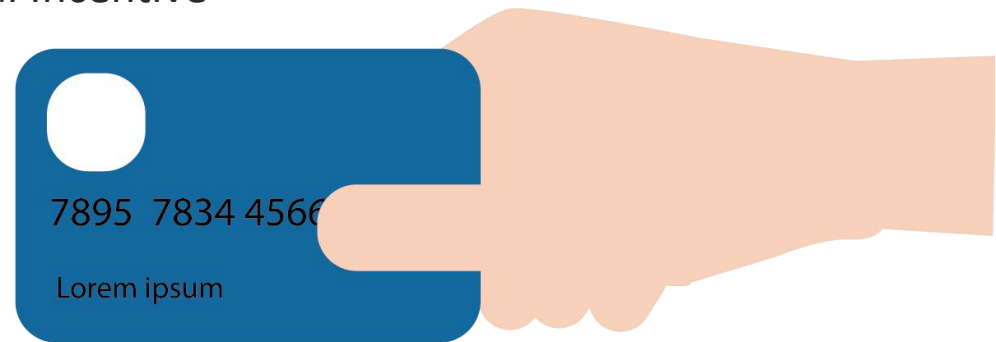
- > **17.7%** have a strategic group* for paediatric services.
- > **23.8%** have strategic groups that include a CYP or a parent or carer of CYP with asthma.
- > **87.4%** routinely conduct surveys of parent/carer views on paediatric services. Of these, 35.3% of hospitals conduct this on a continuous basis with all patients.

* A strategic group is defined as consisting of senior clinical and management representatives who meet regularly, set and review targets, implement a paediatric asthma strategy and make plans for the future of the service.

Reimbursement of costs

Of participating hospitals:

- > **52.9%** receive reimbursement of costs for CYP asthma patients through block contracts.
- > **95.8%** do not have a CQUIN (Commissioning for Quality Innovation)* or LIP (Local Incentive Payment) for CYP asthma care.



- There is a severe asthma CQUIN in place. This is not applicable to all hospitals. Please refer to <https://www.england.nhs.uk/publication/pss8-severe-asthma-flat-final-pss-cquin-indicator/> for further information



Recommendations

National

Recommendation OA1

Nationally there should be a collaborative focus on developing functional regional paediatric asthma networks to facilitate:

- > best practice
- > partnership approaches to the provision of care with appropriate input from different healthcare sectors and non-healthcare agencies
- > the involvement of children and young people, parents and carers to support the development of regional strategies.

These networks should have representation from professional groups, patients and relevant services including:

- > primary care
- > community asthma services
- > district general hospitals
- > tertiary specialist services
- > local area authorities.



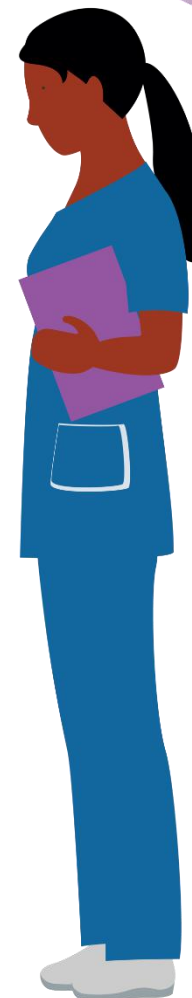
For primary care providers

Recommendation CA1

Clinical teams should work with colleagues in their hospital(s) to ensure correct diagnosis and coding of children and young people being admitted with an asthma attack. This is particularly important for the pre-school age group where diagnosis of asthma is more challenging

Clinical teams should ensure that the following patients are entered into the audit:

- > Children aged 1-5 who have a primary or secondary diagnosis of asthma or a primary diagnosis of wheeze as a reason for admission.
- > CYPs aged 6-18 who have a primary or secondary diagnosis of asthma as a reason for admission.



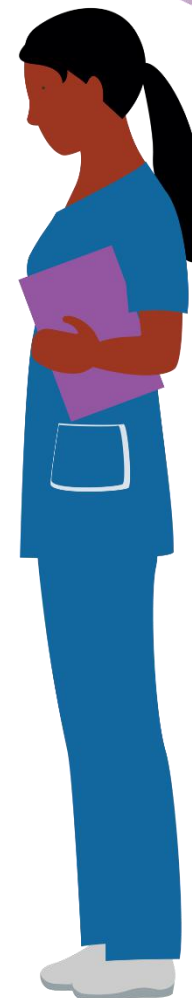
For primary care providers

Recommendation CA2

Record smoking status and exposure to second-hand smoke in every child and young person's notes and ensure this becomes a routine question whenever they see their GP about asthma.

Recommendation CA3

Complete personalised asthma action plan (PAAP) reviews and inhaler technique checks for all children and young people as part of their annual review and/or on issue of new inhalers.



For commissioners

Recommendation OA2

Provide secondary care services with adequate resources to ensure they have a multidisciplinary team (MDT) for children and young people with asthma. This must include at least:

- > a paediatric asthma clinical lead
- > a respiratory nurse specialist with responsibility for inpatient and outpatient management of children and young people with asthma.



For children and young people living with asthma and their families and carers

Recommendation CA4

If you are admitted to hospital with an asthma attack there are some important things that you should know – you may want to discuss these with the team looking after you:

- > You should have a dose of oral steroids within 1 hour of arriving at hospital (unless you had them before you arrived at hospital).
- > Someone should check that you know how to use your inhaler before you go home.
- > You should go home with an up-to-date personalised asthma action plan (PAAP). This might be a new plan, or someone checking your old plan to make sure it is right.
- > If you are admitted to hospital with an asthma attack, you should be seen in a few weeks in a hospital asthma clinic. There should be an expert involved in your care in this clinic, such as a specialist nurse.

In some instances, you may not be able to ask for this yourself, if this is the case, we recommend your parent or carer does this for you.



For children and young people living with asthma and their families and carers

Recommendation OA3

Children and young people and their parents and carers should advocate for the universal implementation of national quality standards across all hospitals.

Recommendation OA4

Children and young people and their parents and carers should consider participating in strategic groups, including those set up at network level, for paediatric asthma.





So, what's
next...?

National QI priorities for CYP asthma services

National QI priority C1

Record smoking status and exposure to second-hand smoke for 95% of children and young people

Rationale

Smoking and exposure to second-hand smoke is a big risk factor for acute asthma attacks and also for accelerated lung function decline and development of COPD later in life. Nicotine is one of the most addictive substances in the world* and specialist services are shown to improve rates of smoking cessation.

[BTS/SIGN 2019 \[6.2.3\]](#), [NICE 2013 QS43 \[QS2\]](#)

Tips to achieve this priority

- > Survey staff working in the emergency department to understand the barriers to asking about smoking habits of CYP and parents on admission.
- > Develop tailored support and systems to overcome identified barriers.
- > Provide education and training to all staff on the importance of smoking or second-hand exposure as a risk for acute asthma attacks.

* Pontieri FE; Tanda G, Orzi F, DiChiara G. Effects of nicotine on the nucleus accumbens and similarity to those of addictive drugs. , *Nature* 1996;382255–7 DOI: 10.1038/382255a0. <https://www.nature.com/articles/382255a0>

National QI priorities for CYP asthma services

National QI priority C2

Administer systemic steroids within 1 hour of arrival at hospital to 95% of children and young people aged 6 years old or over, who have not received systemic steroids as part of pre-hospital care.

Rationale

Early administration of systemic steroids prevents hospital admission.

BTS/SIGN 2016 [9.8.4] NICE 2013 QS25 [QS8];, RCEM asthma guidance [standards 5a and 5b]

Tips to achieve this priority

- > Staff should undertake reviews of cases where steroids were not given within 1 hour, to better understand the barriers to effective care and then to implement an improvement change.
- > Provide education and training to staff on when to administer oral steroids, and the evidence behind early administration.
- > Build prompts into electronic and other systems to encourage delivery of oral steroids at triage.

National QI priorities for CYP asthma services

National QI priority C3

Provide 95% of children and young people with the following as part of their discharge bundle:

1. Review or issue of a personalised asthma action plan (PAAP).
2. Check of their inhaler technique.
3. A follow-up appointment in a paediatric clinic requested within 4 weeks.

Rationale

As highlighted in the **National Review of Asthma Deaths** report, one key factor in CYP who died from asthma was a lack of understanding of the basic elements of self-management and this is the same for many CYP admitted to hospital with severe life-threatening asthma. Given that the most consistent risk factor for having an asthma attack is a recent history of an acute exacerbation, it is important to focus on these elements of education using a PAAP before discharge.

Tips to achieve this priority

- > Survey staff to understand the challenges to administering this education to CYP in the emergency department and on the wards.
- > Develop tailored support and systems to overcome identified challenges.
- > Develop standardised written information.
- > Provide education and training to staff on inhaler technique and personalised asthma action plans.
- > Encourage these actions by mandating they be recorded in electronic systems.

National QI priorities for CYP asthma services

National QI priority O1

85% of hospitals should have a respiratory nurse specialist trained in the care of children and young people with asthma.

Rationale

Involvement of a respiratory nurse specialist as part of a multidisciplinary team (MDT) was associated with improvements in care. These improvements and further evidence of improvements in care led by specialist nurses can be seen on page 23 and in the case studies included in the 2019/20 combined report.

Respiratory nurses can improve the care of CYP with asthma in several ways.

National QI priorities for CYP asthma services

National QI priority O1

85% of hospitals should have a respiratory nurse specialist trained in the care of children and young people with asthma.

- > In the inpatient setting they can be involved in the acute management and discharge planning of CYP with asthma.
- > In clinics, they can provide education for CYP and families to empower self-management, conduct physiological testing where needed and with appropriate training can function as independent practitioners. This is important because general paediatric clinics are often busy, and these elements of care can be time-consuming for doctors to do thoroughly.
- > They can fulfil wider roles such as on the training ward, in the emergency department, and as primary care healthcare professionals, and contributing to local governance tasks such as audit.
- > They have a pivotal role in arranging transition to adult services.

Other types of healthcare professional (eg physiotherapists, pharmacists, physician associates, and psychologists) can of course be beneficial for CYP with asthma but they are unlikely to be a protected resource for CYP with asthma in district general hospital settings, and may be better utilised in the management of uncontrolled and severe asthma.

National QI priorities for CYP asthma services

National QI priority O1

85% of hospitals should have a respiratory nurse specialist trained in the care of children and young people with asthma.

Tips to achieve this priority

- > The main step in this process is to develop a business case for a respiratory specialist nurse.
- > Developing a business case for an asthma specialist nurse could initially focus on clinical benefits: improving the quality of care given to CYP may reduce length of stay, and better education before discharge will reduce the rates of readmission. Centres without asthma specialist nurses could work with their local business intelligence team to identify the rates of reattendance and readmission, which can be a useful baseline for calculating cost savings.
- > Use NACAP benchmarking data from the clinical and organisational audit to highlight the need for an asthma specialist nurse. The data suggest that developing an MDT improves the quality of care for CYP.
- > Involve CYP and their parents and carers in identifying the benefits of having an asthma specialist nurse in your department.

National QI priorities for CYP asthma services

National QI priority O2

80% of hospitals should have access to fractional exhaled nitric oxide (FeNO) as a diagnostic tool for paediatric asthma services.

Rationale

Markers of inflammation are more likely to be useful in cases of equivocal diagnosis of asthma than measures of airway obstruction (such as PEFr).* In the largest UK cohort study evaluating different physiological tests for asthma in CYP, FeNO emerged as the most useful first thing to measure.** FeNO is mandated in the NICE guidelines as a necessary test in the asthma diagnosis pathway, and recommended as a useful test in the BTS guidelines, [BTS/SIGN 2019 \[3.3.4\]](#). The accurate identification of asthma in children is important, and the NICE guidelines evaluation has shown that despite an initial investment it is a cost-effective approach to diagnosis.

Tips to achieve this priority

- > Work with existing adult physiology departments to identify if this is a service they can offer. If not, use successful business cases from neighbouring centres in your network for ideas.
- > Refer to NICE guidelines which advocate the use of FeNO in the diagnosis of asthma. [NICE NG80 \[1.3.3\]](#)
- > Ensure that whoever will do the tests has appropriate training in the conduct of the test and maintenance of the machines.

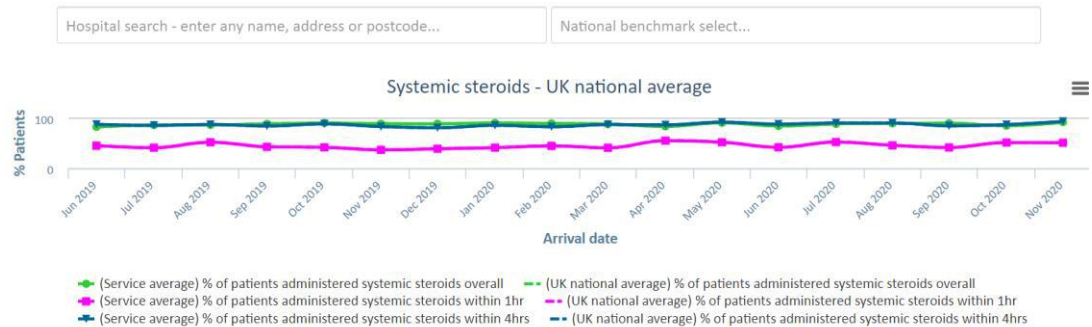
* PEFr (peak expiratory rate flow)

**Murray C, Foden P, Lowe L, et al. Diagnosis of asthma in symptomatic children based on measures of lung function: an analysis of data from a population-based birth cohort study. *Lancet*, 2017; 1:114-23 [https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642\(17\)30008-1/fulltext](https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(17)30008-1/fulltext)

Quality improvement resources

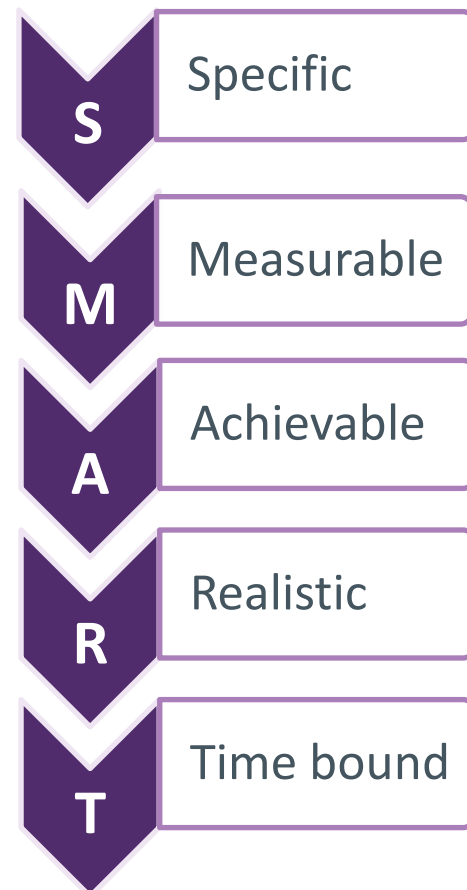
Getting started

- > Use the QI aims from the previous slide and look at your run charts to help you identify areas where you can realistically make improvements.
- > Run charts can be viewed by logging onto the web tool and going to the 'Reports' tab.
- > Look to see if there are any issues that stand out (eg deterioration or inconsistencies in performance).
- > Build a team to lead your improvement work that includes your stakeholders.
- > Have regular performance management meetings with your team, to ensure everyone is clear about their responsibilities.



Develop a SMART aim

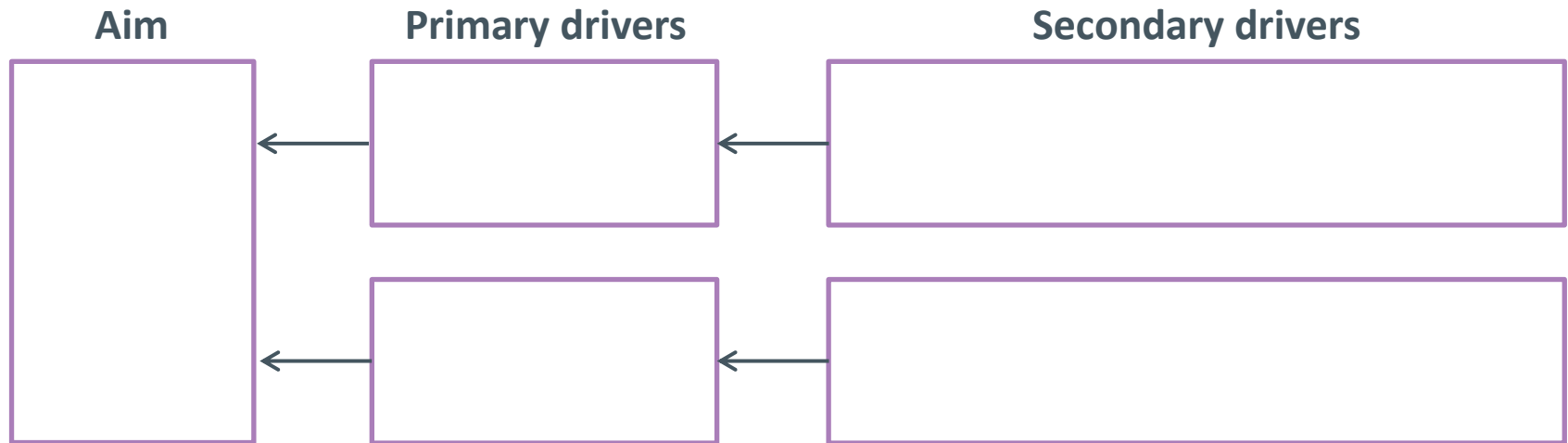
- > Decide on an **aim**. This should be **SMART**.
- > A **specific** aim is one that describes exactly **what you want to do** eg increase the number of patients having a respiratory review.
- > A **measurable** aim is one that allows you to **track progress** eg increase the number of respiratory reviews from 10% to 20% of all patients.
- > An **achievable** and **realistic** aim is one where **success would be likely** eg don't aim to increase respiratory review by 100%
- > A **time bound** aim is one that has a **defined end point** when success can be measured eg within 6 months.



Using driver diagrams

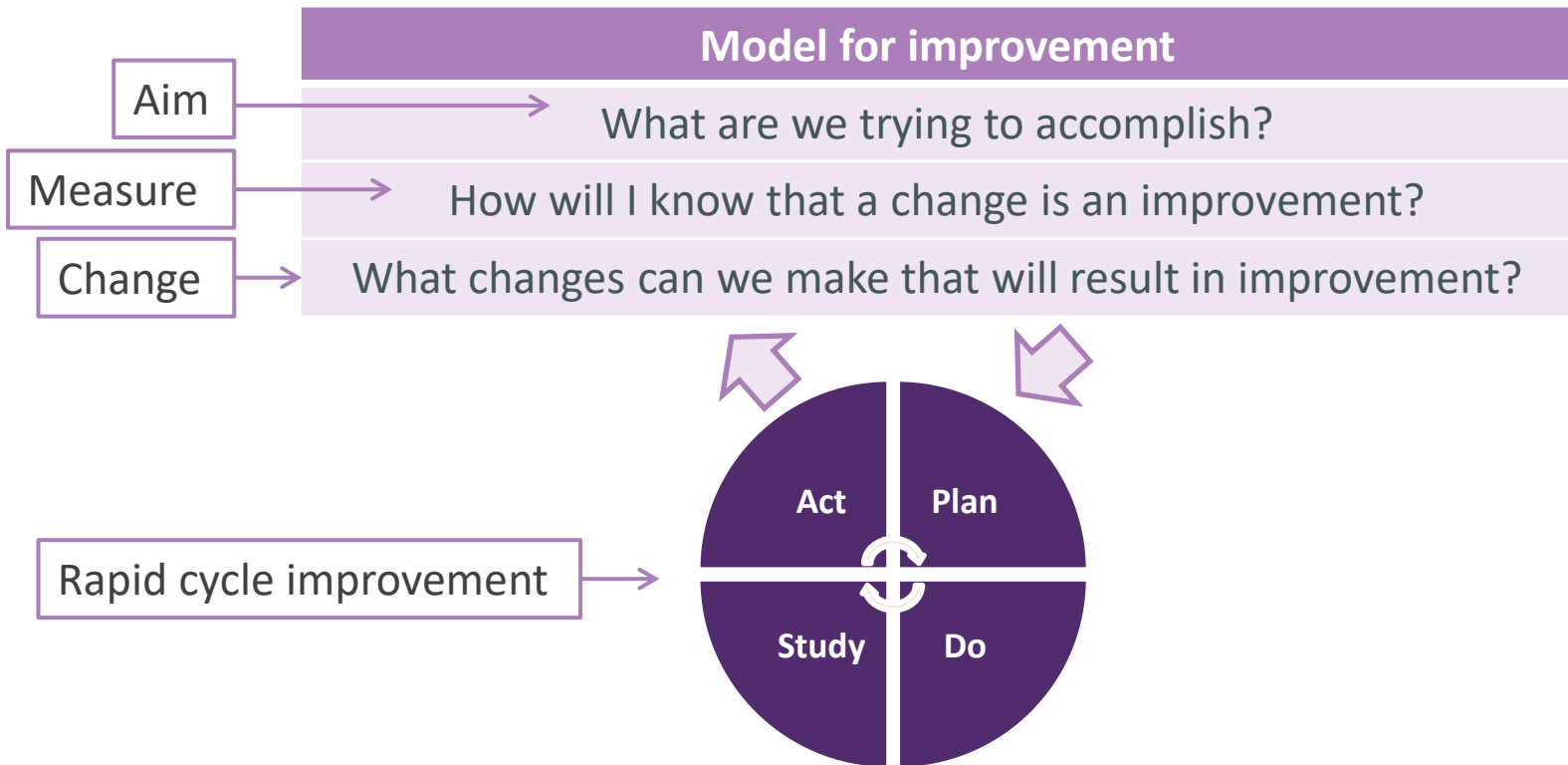
Once you have established your aim, you can start to think about change priorities. To decide on your change priority, you may find it helpful to understand the drivers behind your aim. A driver diagram can help you to do this. The Institute for Healthcare Improvement has a helpful guide on how to use them.

<http://www.ihl.org/resources/Pages/Tools/Driver-Diagram.aspx>

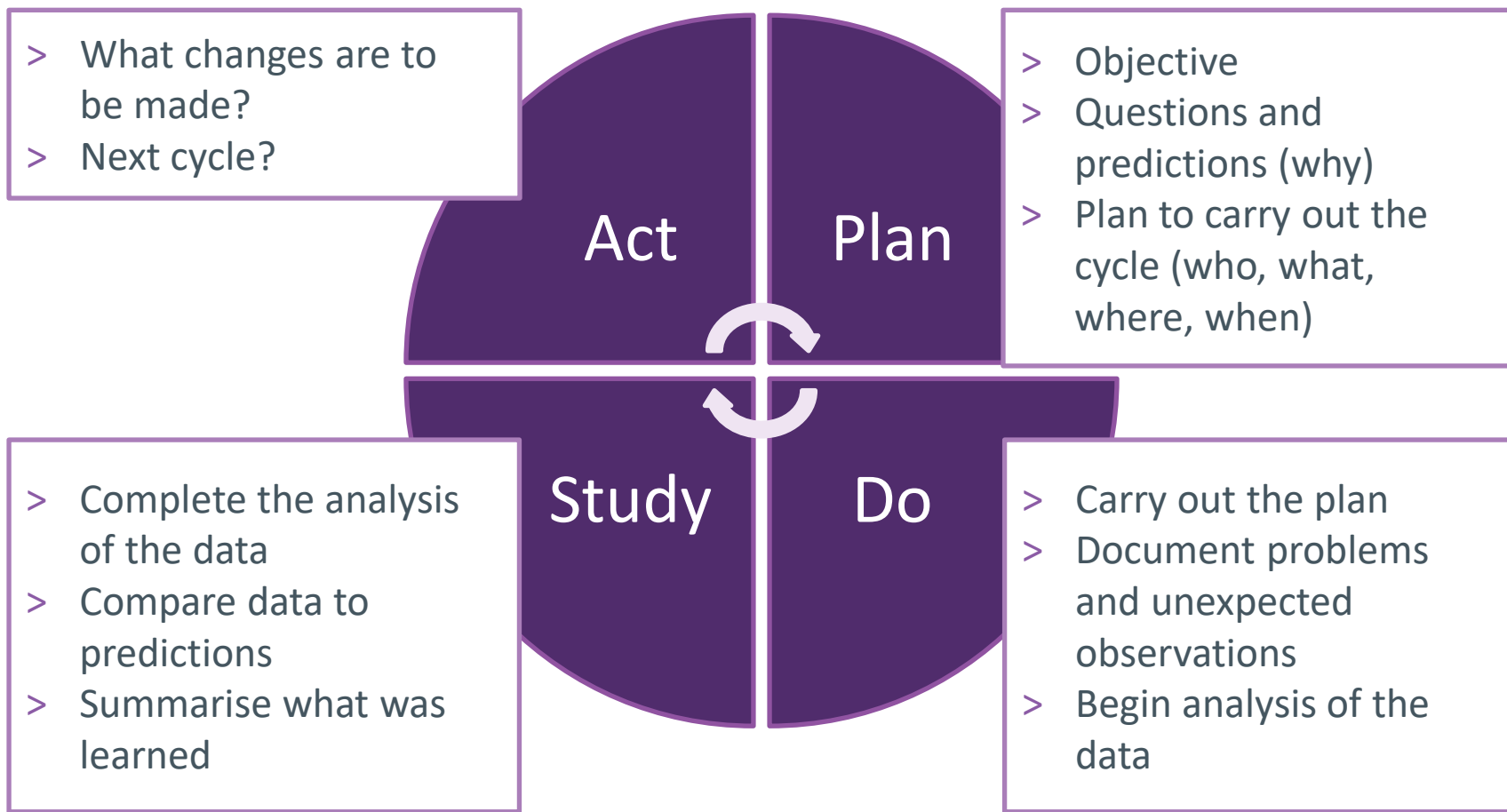


The model for improvement

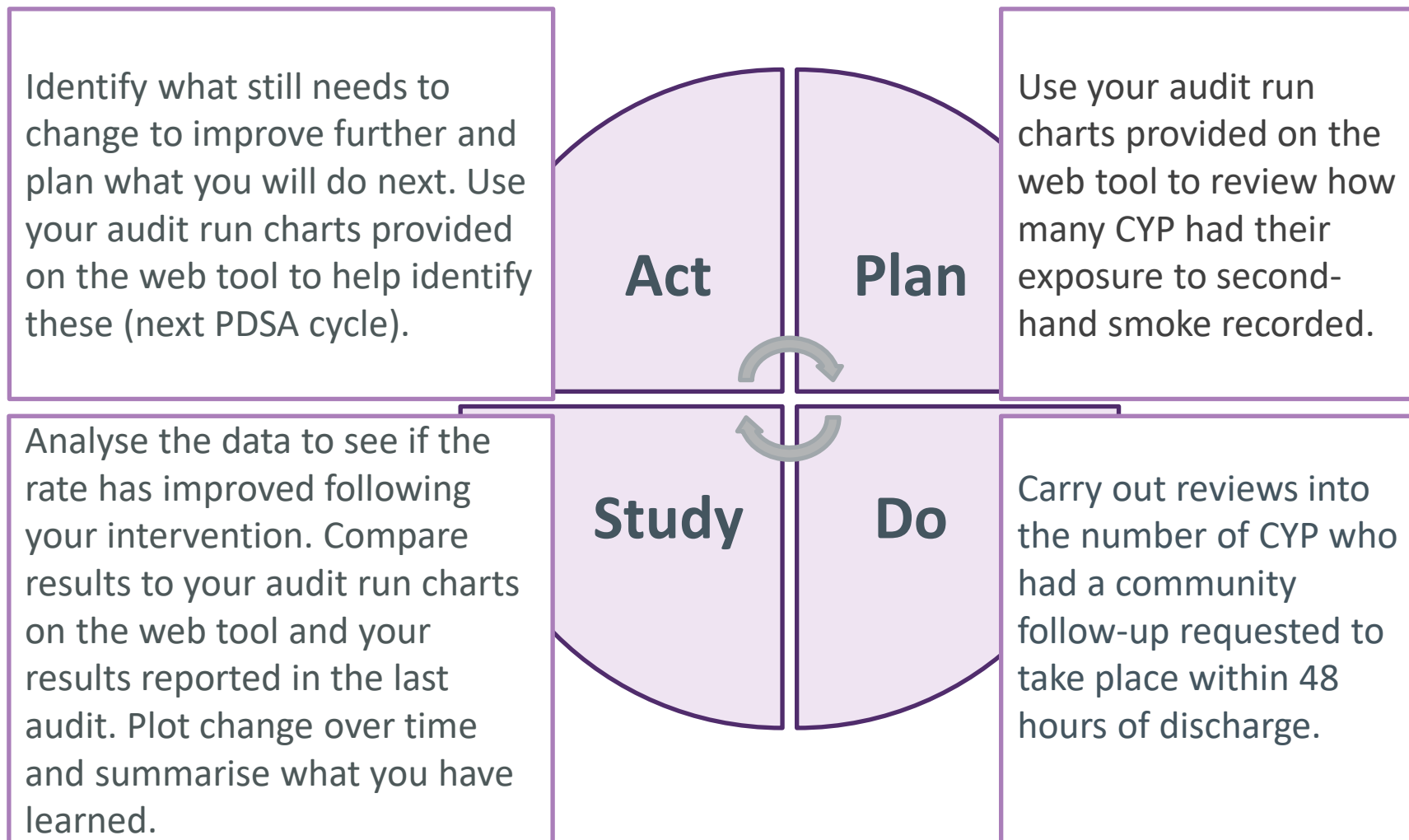
To plan your change, it is important to regularly measure and study your activity using:



PDSA cycles



An example of a PDSA cycle



Other NACAP QI resources

NACAP quality improvement resources

Good practice repository

We are in the process of producing a CYP audit good practice repository which will share stories from services across the country about their challenges and achievements in the provision of quality CYP services. If you have any examples of good practice you would like to share, please contact us on asthma@rcplondon.ac.uk.

Once complete it will be made available here: www.rcplondon.ac.uk/nacap-cyp-asthma-resources

Quality improvement workshops

In 2019, the NACAP team ran a series of QI workshops. A selection of QI resources from the events have been published online: www.rcplondon.ac.uk/projects/national-asthma-and-copd-audit-programme-nacap-quality-improvement.

Hospital teams are encouraged to attend a second series of NACAP QI workshops which will be held in 2021. Further details regarding these workshops will be circulated to participating hospital teams in due course.

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