

Case study: Jessica

About this case study

What is included in this case study?

This case study consists of materials to print out for use directly as they are, or for adaptation to suit particular audiences.

There are pages to print out to form hand out notes for participants, broken down into two parts.

Facilitator notes to print out are also included, to guide the leader of a discussion workshop based on the case.

Pages showing the case summary to prompt questions are also included. These are available as powerpoint slides.

Who can use this case study?

The materials are designed for use by a facilitator with a small group of health care professionals, such as practice nurses, hospital nurses working in respiratory and general medicine care, GPs and junior hospital doctors working with patients with asthma (eg those in paediatrics, respiratory medicine, geriatrics and A&E).

The group should be kept small enough to encourage participation in the discussion.

A group of 8-15 may be ideal, though the materials can also be adapted for use with groups of other sizes or with individuals.

Using this case study

This case study is designed to give plenty of opportunity to discuss asthma management and key points from the revised British Guideline on the Management of Asthma (2008).

The two parts of the case study should be handed out to participants progressively, so that the story unfolds and to allow for discussion around all the salient points.

After each part has been read, the facilitator may like to initiate discussion by posing questions. The facilitator notes give guidance on the points to bring out in the ensuing discussion. In addition to the key issues to be covered, other discussion points are suggested, together with practical issues that could be raised.

The case study should give ample opportunity to tailor the discussion to suit the needs and interests of the participants.

It is possible to use only one part of the case, if more appropriate for the participants concerned or if there are time constraints.

Learning outcomes

This case considers diagnosis of asthma in children, allergen control and acute exacerbations in young people. Issues of compliance in teenagers and management at Step 3 are also covered.

After completing the first part of the case, participants should be able to:

- diagnose asthma in children (section 2.1, page 2)
- advise on appropriate allergen control measures. (section 3.2, page 27)

After completing the second part of the case, participants should be able to:

- describe the management of acute asthma in A&E. (section 6.8, page 62, annex 6, page 100)
- understand the importance of effective discharge policy following an acute exacerbation (section 8.2, page 79)
- discuss the issues that often affect management of teenagers with asthma.
- complete an action plan. (section 9.1, page 82)

Part 1: notes for participants

Presentation

Jessica is a 12 year old who has been coughing for 4 days. She is accompanied by her mother, who has a letter from Jessica's school about her reluctance to join in PE lessons. Although her mother has not noticed anything at home, Jessica says that she coughs more than her friends and has difficulty keeping up with them. Jessica's records show that she has had five courses of antibiotics for cough and upper respiratory tract infections in the past 2 years and Mum is expecting a further course of antibiotics today. When questioned, Jessica's mum reports that during these episodes she has noted that Jessica has mild wheezing and is breathless. She is often woken from sleep during the episodes with coughing and occasional wheezing at night during these episodes. She describes the cough as a dry cough.

Part 2: notes for participants

Diagnosis

You judge, on the basis of the history, that Jessica has a high probability of asthma. Although she was not actually wheezing at the consultation, and her FEV1 was close to the predicted level, you decide to give her a reliever inhaler as a trial of treatment with instructions to take it if her breathing is noisy and if she coughs excessively. You also give her a peak flow meter and ask her to complete a diary card, which you will review on her return, two weeks later. (section 2.1.1, page 2)

A week later

Jessica and her mother return with the diary card, completed rather sporadically but demonstrating peak flow variability with marked reduction after exercise. She had used the reliever inhaler on several occasions, and it had definitely improved the symptoms. Jessica reported feeling a lot better, but she was still not keen on joining in PE lessons, as she had been told off for using the inhaler on the hockey pitch, which was embarrassing. (section 2.1.3, page 5)

Starting regular preventer therapy

You mention the possibility of starting inhaled steroids. Jessica goes very quiet, and eventually admits that she has heard that steroids make you fat. Mum is also upset because she has heard that steroids can stop children growing tall and instead they become very muscular. They insist that there must be an alternative. Mum asks specifically about an expensive vacuum cleaner which she has heard will get rid of all dust. (section 4.2.1 and 4.2.2, pages 34-35)

Part 3: notes for participants

Deteriorating control

Over the next 4 years, Jessica came to the surgery intermittently, mainly for other requirements (travel immunisations, infected navel piercing, contraception). On each occasion, it was apparent that her asthma was badly controlled and that she was poorly compliant with therapy based on assessment of her prescription record. Her prescription history showed that she used barely a third of the recommended steroid amount. Then, after a visit to an all-night rave, she collapsed and was admitted to hospital with a severe asthma attack. The discharge policy of the hospital included recommending a review at the surgery, and Jessica met the asthma nurse. They quickly established a good rapport. The nurse listened carefully to Jessica's views and let her try out a range of devices. They spent some time together considering what happened in asthma, and how the different types of medication worked. Then they drew up an asthma action plan that both were happy with. (section 8.2, page 79, and 9.1: page 82)

Stability

With the new regimen of regular preventer therapy and inhaled long-acting β^2 agonist taken each night and morning, Jessica stopped suffering symptoms during the day. She was very pleased that she was no longer in the predicament of suffering embarrassment if she took her inhaler and embarrassment from symptoms if she did not! After 3 months without symptoms, Jessica returned for a discussion with the asthma nurse about her future treatment.

Part 1: facilitator's notes

The key questions for discussion are listed below, with points that should emerge during the discussion. A number of other topics that could be discussed, together with practical issues, are also indicated.

What is the likely diagnosis for Jessica?

Jessica has a high probability of asthma. In Jessica's case this is based on the the typical symptoms of recurring cough and wheeze, triggered by exercise, worse at night and particularly troublesome after viral upper respiratory tract infections (section 2.1.1, page 2)

How would you confirm the diagnosis?

The guidelines recommend that, if the probability of asthma is high, a trial of treatment is appropriate, so the improvement in her symptoms with bronchodilator is an important pointer. A peak flow chart may confirm your suspicion that Jessica had asthma, but it is important to remember that asthma is a clinical diagnosis, and a trial of treatment would still have been indicated even if peak flow variability was not clearly demonstrated. (section 2.1.3, page 5)

Another option, if the diagnosis was less clear might have been spirometry. This would have demonstrated an obstructive pattern with reversibility if Jessica had been symptomatic at the time, but it is important to remember that normal spirometry does not exclude asthma. (section 2.1.5, page 6)

Always record the basis for your diagnosis.

Practical discussion point

The GP decided to give Jessica a reliever inhaler without waiting for the results of the peak flow charting.

What are the advantages of this approach? (eg There may be pressure to 'do' something, improvement after bronchodilation can help confirm the diagnosis) Importantly, asthma is a clinical diagnosis and a trial of treatment is appropriate to assess response and confirm the diagnosis.

What are the disadvantages of this approach? (eg Assessment without therapy allows the appropriate first line treatment to be chosen – in this case inhaled corticosteroids rather than bronchodilator).

Part 2: facilitator's notes

What do you say about inhaled steroids to Jessica and her mother?

When reliever medication is used more than once a day to relieve symptoms, or the peak flow chart shows diurnal variations, it is appropriate to move to use of regular preventer therapy. Jessica and her mother need to understand the distinction between locally acting inhaled glucocorticosteroids taken in very low doses and the anabolic steroids that they may have heard about associated with weight lifters and other sportsmen. The starting dose of steroid – 200mcg/day – is unlikely to cause any problems at all, but Jessica's height could be measured regularly to give reassurance. Useful patient information is available from Asthma UK – Jessica might like to access it on-line. There is also a helpline that Jessica and her mother can telephone for advice and to allay fears about inhaled corticosteroids. (section 4.2.2, page 35)

What would you advise about allergen control?

Potential allergens are an important area to explore with Jessica, particularly given the reluctance shown towards therapy. It would be important to establish by testing whether Jessica was sensitized to house dust mites before her family consider investing time and money in avoidance strategies.

Practical discussion point

How practical is allergen avoidance? Some allergens will be much easier to avoid than others. Patients have to be willing to take action for the strategy to work!

Are there any other issues that should be covered?

If she is to comply with therapy, Jessica needs to be happy with the device she is prescribed. Issues about school policy towards asthma therapy should also be discussed. Jessica is old enough to play a full part in her own management, so needs to be fully included in discussions about self-management and asthma action plans.

Practical discussion point

Do you have placebo devices for patients to try out? All practices should have a range of devices available for patients to examine and try. These are usually available from the manufacturers of branded products. It is important that patients using dry powder devices can generate sufficient inspiratory flow for optimal use – devices to measure inspiratory flow are now available to assist in device selection, however in most patients it is possible to tell by observation of their technique.

The guidelines advocate that inhaler technique should be assessed before a device is prescribed. The small theoretical risk of cross infection with placebo devices must be balanced against the considerable actual risk of a patient receiving no/minimal medication as they are unable to use the prescribed device. This necessitates the use of placebo inhalers, and an appropriate infection control strategy needs to be in place:

- Ideally there should be placebo inhalers available which are single patient use only
- Placebo devices must be decontaminated between use
- Appropriate hygiene strategies, including hand washing between patients, should be implemented
- In cases of known infection, the placebo must be discarded after use

Further information on the use of placebo inhaler devices, peak flow meters and inspiratory flow meters in clinical practice can be found on the BTS web site <http://www.brit-thoracic.org.uk/ClinicalInformation/Asthma/OtherUsefullinks/tabid/255/Default.aspx>

Key point

In children with a high probability of asthma, remember to evaluate the response to treatment carefully. If there is a poor or no response to treatment, it is important to review the evidence for a diagnosis of asthma. (section 2.1.3, page 5)

- Inhaled steroids are the recommended preventer drug (section 4.2, page 34)

Further details on SIGN and BTS websites (www.sign.ac.uk and www.brit-thoracic.org.uk).

Part 3: facilitator's notes

The key questions for discussion are listed below, with points that should emerge during the discussion. Sections and page numbers from the British Guideline on the Management of Asthma that support the discussion points are also indicated. A number of other topics that could be discussed, together with practical issues, are also indicated.

How should Jessica be managed in A&E

Initial assessment of Jessica would have included measurement of respiratory rate, pulse rate, peak flow and oxygen saturation. Management would depend on the findings of these assessments of severity. Assuming Jessica had characteristics of a severe acute exacerbation (respiration ≥ 25 /min, pulse ≥ 110 breaths/min, PEF $< 50\%$ predicted), management would have included high dose bronchodilator and prednisolone 40-50mg orally. Normally, emergency bronchodilators (salbutamol or terbutaline) should be administered by repeated single actuations of the metered dose inhaler into an appropriate large volume spacer, each followed by inhalation. Oxygen driven nebulisation is the preferred option in life-threatening asthma. A course of oral steroids (prednisolone 40-50mg) should have been commenced. All patients who have required emergency treatment for asthma should be followed up promptly by their primary care practice. (section 6.8, page 62, annex 6, page 100)

Practical discussion point

Do you find that discharge arrangements work? How do you verify that they work? Is it something that is audited regularly? For A&E professionals, who deals with acute asthma in children – nurse? SHO? paediatrician? What are the indications for admission? Do A&E professionals have any responsibility for patient education? What information should be given on discharge?

What issues are raised by the case?

Jessica had rejected the diagnosis and management of asthma, until a severe attack forced a reappraisal. The case underlines the importance of an effective discharge policy that ensures patients are reviewed soon after an acute exacerbation, when they may be in a heightened emotional state and more willing to understand the importance of preventative therapy. The case also illustrates the importance of rapport, and actively listening to the concerns of the patient when drawing up action plans. (section 9.1, page 82)

Practical discussion points

Does the management of teenagers require special handling? The transition from childhood, where health was the responsibility of the parents, to teenager, with growing self-responsibility for health, may present particular problems. However, it also presents an opportunity to reassess general health issues.

What could the surgery do to facilitate care if Jessica had not attended the review? Possibilities include contacting her a week later to offer an appointment, or the asthma nurse could talk to her on the phone to establish a relationship.

At her age, Jessica is likely to be considering career options – she should be aware that some occupations will not be open to her (e.g. armed forces, fire service) and some may make her asthma worse (eg paint spraying, baking, working with animals).

What information and advice should be included in Jessica's personal action plan? (section 9.1, page 82)

Jessica's severe acute exacerbation may have arisen from chronic under treatment.

Stepping down therapy once asthma is controlled is recommended but often not implemented which may leave some patients over treated. Once stability has been achieved, therapy can be reduced to the lowest doses consistent with maintained control, though there is limited evidence for the most appropriate way to step down therapy. When deciding which drug to step down first and at what rate, the severity of asthma, side-effects and benefits of the treatment, and patient preferences should all be taken into account. Jessica should be reviewed regularly as therapy is reduced, in order to make sure that control of her asthma is not lost. (section 4.6, page 45)

Practical discussion point

Does stepping down occur? If so, does it occur in a managed way, or does it happen by default? If Jessica does not wish to accept routine clinical care, it may be possible to capitalise on all consultations to address important health issues, such as management of chronic conditions, smoking and diet.

Key points

Assess and act promptly in acute asthma – admit patients with any features of a life threatening or near fatal attack, or severe attack persisting after initial treatment (section 6.8 and 6.8, page 62, annex 6, page 100)

- Prescribe inhalers only after patients have been trained and have demonstrated satisfactory technique (section 5.1, page 48)
- Self-management is effective – offer self-management to all patients with asthma; reinforce with a written asthma action plan that gives patient-specific advice on signs of deteriorating asthma and appropriate actions to take (see Asthma UK website, www.asthma.org.uk) (section 9.1, page 82)
- In primary care, people with asthma should be reviewed regularly by a healthcare professional with training in asthma management. (section 8.1.2, page 77)

Further details on SIGN and BTS websites (www.sign.ac.uk and www.brit-thoracic.org.uk)

Part 1: case summary

12-year old presenting with cough and wheeze related to exercise

History of cough following upper respiratory tract infections.

Part 2: case summary

Peak flow charting confirms evidence of variability

Symptoms improved by a reliever inhaler

Reluctant to use inhaled steroids

Part 3: case summary

History of failure to comply with regular preventer therapy

A&E admission for acute exacerbation

Treatment at step 3 accepted

Good rapport important in establishing effective self-management

Part 1: questions

What is the probable diagnosis for Jessica?

How would you confirm the diagnosis?

Part 2: questions

What do you say about inhaled steroids to Jessica and her mother?

What would you advise about allergen control?

Are there any other issues that should be covered?

Part 3: questions

How should Jessica be managed in A&E?

What issues are raised by the case? What processes can you put in place to be sure that Jessica is reviewed in the practice after her acute attack?

What information and advice should be included in Jessica's personal action plan?

Part 1: key point

Focus the initial assessment of children suspected of having asthma on:

- presence of key features in the history and clinical examination
- careful consideration of alternative diagnoses.

Record the basis on which the diagnosis of asthma is suspected.

Using a structured questionnaire may produce a more standardised approach to the recording of presenting clinical features and the basis for a diagnosis of asthma.

1. In children with a high probability of asthma:

- move straight to a trial of treatment
- reserve further testing for those with a poor response.

2. In children with a low probability of asthma:

- consider more detailed investigation and specialist referral.

3. In children with an intermediate probability of asthma who can perform spirometry and have evidence of airways obstruction, offer a reversibility test and/or a trial of treatment for a specified period:

- if there is reversibility, or if treatment is beneficial, treat as asthma
- if there is insignificant reversibility, and/or treatment trial is not beneficial, consider tests for alternative conditions

Further details on SIGN and BTS websites (www.sign.ac.uk and www.brit-thoracic.org.uk)

Part 2: key points

- Inhaled steroids are the recommended preventer drug for adults and children for achieving overall treatment goals.
- inhaled steroids should be considered for patients with any of the following asthma-related features:
 - exacerbations of asthma in the last two years
 - using inhaled β^2 agonists three times a week or more
 - symptomatic three times a week or more
 - waking one night a week.
- titrate the dose of inhaled steroid to the lowest dose at which effective control of asthma is maintained.

Part 3: key points

- Assess and act promptly in acute asthma – admit patients with any features of a life threatening or near fatal attack, or severe attack persisting after initial treatment
- Prescribe inhalers only after patients have been trained and have demonstrated satisfactory technique
- Self-management is effective – offer self-management to all patients with asthma; reinforce with a written asthma action plan that gives patient-specific advice on signs of deteriorating asthma and appropriate actions to take (see Asthma UK website, www.asthma.org.uk)
- In primary care, people with asthma should be reviewed regularly by a nurse with training in asthma management

Further details on SIGN and BTS websites (www.sign.ac.uk and www.brit-thoracic.org.uk).