Case study: Susan

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 illustrates acute severe asthma and problems of compliance, culminating in a fatal asthma exacerbation.

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

- describe the appropriate response of the primary care team to acute severe asthma
- discuss the A&E and inpatient management of acute severe asthma.

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

- discuss the issues of compliance with therapy
- recognise the warning signs of a fatal acute asthma exacerbation in an adult.

Part 1: notes for participants

History

Susan was diagnosed with asthma at the age of 7 years. She is now 25 years old, a clerical worker living with her 2 year old child, two cats and a dog. Susan is unmarried. Her usual therapy includes: an inhaled corticosteroid in combination with a LABA , theophylline, an anticholinergic agent and an inhaled short-acting β^2 agonists. Susan's best peak flow at the clinic is 405 L/minute.

On 1st June, Susan was admitted to hospital with an acute asthma exacerbation. Susan had two other admissions for asthma in the last 7 months – in November and in December – and she had required eight courses of prednisolone over the preceding 18 months.

Two days previously she developed a sore throat and nasal catarrh. By the afternoon, her asthma had deteriorated with increasing wheeze, cough, yellow sputum and chest tightness. She was seen by her GP and treated with antibiotics. She did not sleep very well at night, and the following night hardly slept at all. At 4.00am she took β^2 agonist via her nebuliser, and repeated the dose at 6.30am when she called her GP. Susan's peak flow was 150 L/minute, so the GP called an ambulance to take Susan to hospital, and gave her hydrocortisone 200mg iv and prednisolone 20mg daily. Susan's mother, who lived nearby, was phoned to come and collect her grandchild.

Examination on admission

On arrival at hospital, Susan was found to have a respiratory rate of 30/minute, a pulse rate of 145/minute, widespread inspiratory and expiratory rhonchi, and a peak flow of 100 L/minute. Blood gases on admission, breathing air, showed a PO2 of 8.4kPa, PCO2 of 7.2kPa and pH 7.29.

Management in hospital

Susan was treated with 60% oxygen, nebulised high dose bronchodilator, oral prednisolone 40mg, intravenous hydrocortisone 200mcg and aminophylline. She was transferred to the intensive care unit, where she made steady improvement. After 24 hours, she was moved to the respiratory medical ward. On 6th June, Susan was discharged. During the preceding 24 hours, her peak flow had reached 400 L/minute, with a lowest reading of 340 L/minute. She was prescribed her usual inhaled and oral medication, together with a reducing course of prednisolone. She was given a follow up appointment at the outpatient chest clinic at the beginning of July.

Part 2: notes for participants

Clinic attendance

Following discharge from hospital, Susan failed to attend her clinic appointment. After three new appointment dates had been issued, she finally attended. Unfortunately, she did not have her asthma action plan with her – she said that it had been eaten by the dog. Although Susan said that she was taking her theophylline, blood levels were very low.

Further acute exacerbation

In mid June, a year later, Susan had another emergency admission. The story from her mother, with whom she was now living, was that on the previous day, Susan had become unwell with her asthma. She woke very early on the morning of the admission, very distressed, and used her nebuliser with β^2 agonist. Her peak flow was 150 L/min, and she took 30mg of prednisolone. Although Susan wanted to call the doctor, her mother said that she should wait until morning, and use the nebuliser again in the meantime. Susan used the nebuliser twice more, before her mother called the doctor. However, by the time the doctor had arrived, Susan had collapsed in the bathroom. She was pulseless, and although immediate resuscitation was successful, she died later in A&E.

Part 1: facilitator's notes

The key questions for discussion are listed below, with points that should emerge during the discussion. Reference is made to the appropriate section of the British Guideline on the Management of Asthma. A number of other topics that could be discussed, together with practical issues, are also indicated.

This case history illustrates the dangers associated with severe asthma, reflected by previous admissions combined with adverse psychosocial or behavioural factors.

Did the GP act appropriately when consulted?

No, antibiotics are not effective treatment for asthma, and most infective exacerbations are, in any case, due to viruses. Peak flow should have been measured and prednisolone prescribed if appropriate. (section 6, pages 51-60. Section 6.3.8 refers specifically to antibiotics)

Did the GP act appropriately when called?

Yes, satisfactory doses of systemic steroid were prescribed, and Susan was referred to hospital. (section 6, pages 51-60. Section 6.3.3 refers specifically to steroid tablets)

What factors in Susan's history ring alarm bells?

The combination of severe asthma reflected by previous admissions in the last year, coupled with her status as a single parent with a young child, exposed to potential allergens (the furry pets), should all raise concern.

(section 6, pages 51-60. See especially table 9 and page 68)

How would you define Susan's asthma attack?

By definition, Susan had a near fatal attack of asthma. Her PCO2 was raised to 7.2kPa when her blood gases were measured.

(Management of acute asthma, pages 51-60, see especially table 10 on page 54)

Was her management in A&E and as an inpatient appropriate?

Yes, she was given appropriate medication at appropriate doses, and transferred to ICU. (section 6, pages 54-60 and annex 3 on page 97)

Were the discharge arrangements appropriate?

The answer to this question is both yes and no! Susan was discharged at the appropriate time in her recovery, and appropriately, given an appointment for the chest clinic one month after discharge. However, she was not asked to see her GP within 2 days of discharge. Furthermore, Susan was prescribed a fixed duration reducing course of prednisolone, yet evidence suggests that the dose should remain at 40-50mg daily until the asthma is under control symptomatically and objectively on peak flow monitoring. (section 6.6 page 60; section 6.33, page 57)

Key point

- 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.

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

Part 2: 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.

This part of the case illustrates the problem of a patient with severe asthma who is not compliant with medication.

Were there any factors that could have predicted Susan's death?

Yes, most patients who die from asthma have severe asthma together with adverse psychological, social or behavioural factors. Furthermore, a history of near fatal asthma is predictive of asthma death. (section 6, pages 51-53 and table 9 on page 52)

What could have been done about the risk to Susan?

The first important point is to recognise this situation when it occurs. The next step is to take a proactive stance towards the patient – contact the patient if there is non-attendance at consultations, particularly if emergency courses of prednisolone are also required. Contact could be attempted by the GP, practice asthma nurse visiting the patient at home, or a hospital asthma liaison nurse making a home visit. (section 9, pages 82-86)

How did the actions of Susan's mother contribute to the situation?

Susan's mother appears to have misjudged the severity of her daughter's asthma on the morning of her death. This could reflect long-term denial that asthma was a problem. Such an approach may have contributed to Susan's lack of compliance with therapy and the lack of concern about the presence of pets that could be contributing to Susan's breathing problems.

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
- 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)
- Healthcare professionals must be aware that patients with severe asthma and one or more adverse psychosocial factors are at risk of death.

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

Part 1: case summary

25-year old unmarried mother with history of acute severe exacerbations

PEF 150 L/min so admitted

At A&E, respiratory rate 30/min, pulse 145/min

Referred to ICU

Part 2: case summary

Failure to attend clinic appointments and poor compliance with therapy

Acute severe exacerbation in patient with history of previous such attacks and adverse psychosocial/behavioural factors

Fatal attack

Part 1: questions

Did the GP act appropriately when consulted?

Did the GP act appropriately when called?

What factors in Susan's history ring alarm bells?

How would you define Susan's asthma attack?

Was her management in A&E and as an inpatient appropriate?

Were the discharge arrangements appropriate?

Part 2: questions

Were there any factors that could have predicted Susan's death?

What could have been done about the risk to Susan?

How did the actions of Susan's mother contribute to the situation?

Part 1: key point

- 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

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

Part 2: 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
- 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)
- Healthcare professionals must be aware that patients with severe asthma and one or more adverse psychosocial factors are at risk of death

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