



# Difficult-to-manage asthma

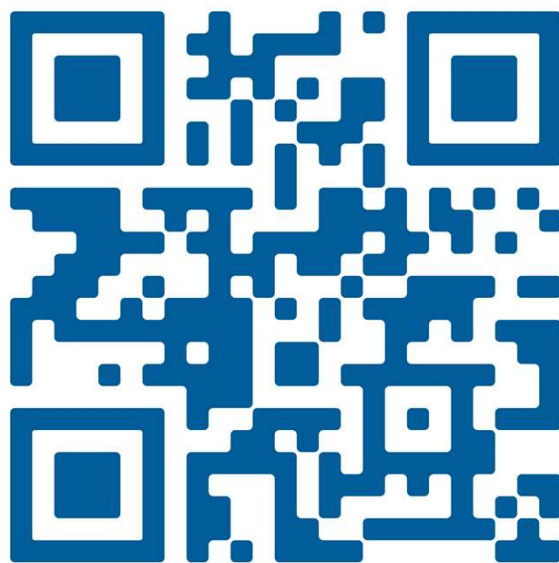
Case study 3: Elsa

Dermot Ryan, Hanna Sandelowsky

GSK provided an unrestricted educational grant to support the development of this case study but did not contribute to its content

# Desktop-helper No. 2 on difficult-to-manage asthma

- Learn more about the Desktop-helper:



## A practical guide to improve difficult-to-manage asthma in primary care

Difficult-to-manage asthma occurs either when the person or their clinician finds control and treatment challenging, despite the (apparent) best possible treatment. This leads to the person facing difficulties dealing with some of the following:

- Daytime asthma symptoms, more than twice/week
- Any night awakening due to asthma-related symptoms
- More than two exacerbations per year requiring rescue systemic corticosteroids<sup>1</sup>
- Frequent use of SABA (≥3 canisters per year or ≥3 times per week)
- Poor control despite prescription of high-dose ICS often in combination with LABA/LAMA or use of OCS<sup>1</sup>
- Frequent primary care out-of-hours contacts (one or more per month)

ICS Inhaled corticosteroid, SABA short-acting beta-agonist, LABA long-acting beta-agonist, LAMA long-acting muscarinic antagonist, OCS oral corticosteroid

### ASTHMA: A PROBLEM THAT CAN BE MANAGED

Studies estimate that in primary care about one out of every six people living with asthma have difficult-to-manage asthma, and of those, between a quarter and a half will have severe asthma.<sup>2,3</sup> Having difficult-to-manage asthma puts people at higher risk of exacerbations and even death, which are preventable with effective management. Similarly, they are at greater risk of steroid-related adverse effects (if treated with high-dose ICS or avoidable courses of OCS or low-dose OCS over a period of time), and their morbidity and health costs are disproportionately higher. People with well-controlled asthma have a better quality of life, reduced symptoms and exacerbations, reduced hospital visits and admissions and lower risk of premature death.<sup>4,7</sup> But most importantly, difficult-to-manage asthma can be managed using a structured approach.<sup>8</sup> People with asthma and clinicians should collaborate to improve asthma control, especially those with difficult-to-manage asthma, supporting the individual to take an active role in setting goals and targets, self-monitoring, and adopting a healthier lifestyle. This guide provides practical support to primary care and other community healthcare professionals to improve the care of people with difficult-to-manage asthma and to avoid unnecessary referrals of patients who could be better managed in primary care.

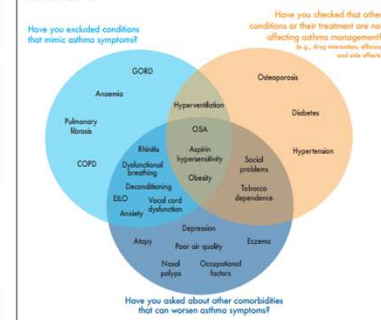
### HOW TO IDENTIFY A PERSON WITH DIFFICULT-TO-MANAGE ASTHMA?

Ensure that the diagnosis is correct  
Over one-third of people living with asthma have an incorrect diagnosis.<sup>9-13</sup> Confirm that the person really has asthma before stepping up treatment as a surprising number of people diagnosed and treated for asthma (from 12 to 30%)<sup>14</sup> either do not

have the disease or have it in association with other conditions causing persistent symptoms (see below).<sup>15,16</sup> Potential confounding factors for the diagnosis of asthma or its severity are dysfunctional breathing, anxiety, exercise-induced laryngeal obstruction (EILO), vocal cord dysfunction (VCD), obesity and low level of fitness (deconditioning) (Figure 1). All of which may also co-exist with asthma. Diagnosis can be achieved by reviewing clinical history; the diagnostic probability is significantly increased using a lung function

**More information on diagnosis**  
DH 15 - The 'jigsaw puzzle' approach to building a diagnostic picture of asthma in primary care over time  
DH 14 - Quick guide to spirometry  
Spirometry Simplified (pilot)

Figure 1 - Potential confounding factors for the diagnosis of asthma or its severity: reflection points



Footnote: these are some more common examples and not a comprehensive list. Social problems include economic problems (poverty, unemployment), poor housing, gender or ethnic discrimination, low literacy, etc.

# Desktop-helper No. 2 on difficult-to-manage asthma

## • What should you check when conducting a structured review?

1. Control of asthma
2. Adherence and inhaler technique
3. Tobacco dependence
4. Patient education and self-monitoring (SMP)
5. Aggravating factors and triggers
6. Pharmacotherapy
7. Obesity
8. Psychological support
9. Consider referral for specialist assessment if not resolved



### A practical guide to improve difficult-to-manage asthma in primary care

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- Daytime asthma symptoms, more than twice/week
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#### ASTHMA: A PROBLEM THAT CAN BE MANAGED

Studies estimate that in primary care about one out of every six people living with asthma have difficult-to-manage asthma, and of those, between a quarter and a half will have severe asthma.<sup>3,4</sup> Having difficult-to-manage asthma puts people at higher risk of exacerbations and even death, which are preventable with effective management. Similarly, they are at greater risk of steroid-related adverse effects (if treated with high-dose ICS or avoidable courses of OCS or low-dose OCS over a period of time), and their morbidity and health costs are disproportionately higher. People with well-controlled asthma have a better quality of life, reduced symptoms and exacerbations, reduced hospital visits and admissions and lower risk of premature death.<sup>4,5</sup> But most importantly, difficult-to-manage asthma can be managed using a structured approach.<sup>6</sup>

People with asthma and clinicians should collaborate to improve asthma control, especially those with difficult-to-manage asthma, supporting the individual to take an active role in setting goals and targets, self-monitoring, and adopting a healthier lifestyle. This guide provides practical support to primary care and other community healthcare professionals to improve the care of people with difficult-to-manage asthma and to avoid unnecessary referrals of patients who could be better managed in primary care.

#### HOW TO IDENTIFY A PERSON WITH DIFFICULT-TO-MANAGE ASTHMA?

Ensure that the diagnosis is correct

Over one-third of people living with asthma have an incorrect diagnosis.<sup>7,8</sup> Confirm that the person really has asthma before stepping up treatment as a surprising number of people diagnosed and treated for asthma (from 12 to 50%)<sup>9</sup> either do not

have the disease or have it in association with other conditions causing persistent symptoms (see below).<sup>10,11</sup>

Potential confounding factors for the diagnosis of asthma or its severity are dysfunctional breathing, anxiety, exercise-induced laryngeal obstruction (EILO), vocal cord dysfunction (VCD), obesity and low level of fitness (deconditioning) (Figure 1). All of which may also co-exist with asthma. Diagnosis can be achieved by reviewing clinical history; the diagnostic probability is significantly increased using a lung function

#### More information on diagnosis

DH 10 - The 'jigsaw puzzle' approach to building a diagnostic picture of asthma in primary care over time

DH 14 - Quick guide to spirometry

Spirometry Simplified (pilot)

Figure 1 - Potential confounding factors for the diagnosis of asthma or its severity: reflection points



## Learning objectives

**At the end of this case study exercise, the HCP should be able to:**

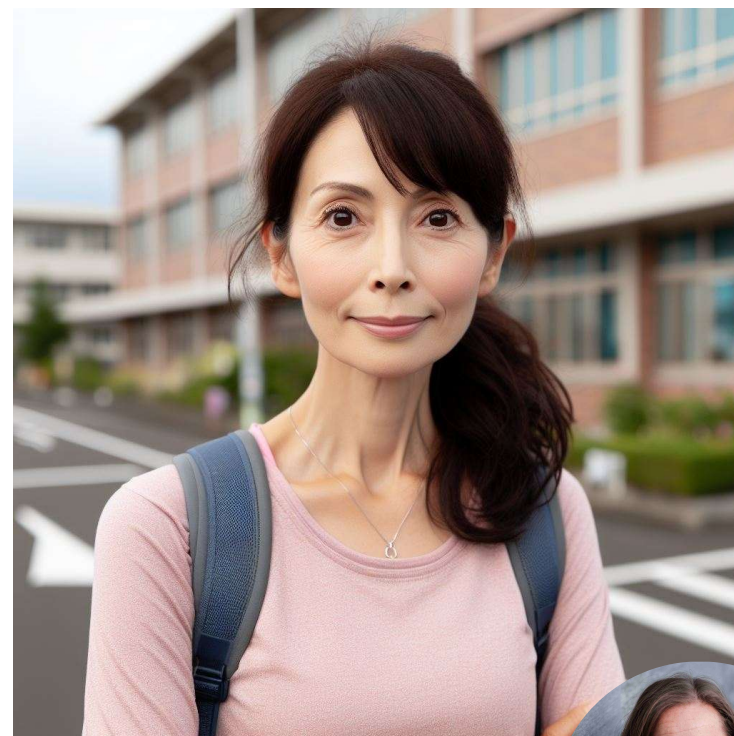
- List and recognise differential diagnoses of asthma.
- Analyse and evaluate the impact of patient's clinical history and appraise patient's own beliefs and preconceptions in the process of diagnostics of asthma and/or breathlessness.
- Plan and execute periodical reviews of patient with symptoms of breathlessness and an unclear diagnosis.



## Case study 3

**Elsa** is concerned that her asthma is deteriorating since she has experienced some events of breathlessness and dizziness during a running race.

- What factors might be hindering the control and treatment of this patient?
- Is this a case of difficult-to-manage asthma?



## Consultation 1

### The patient: Elsa

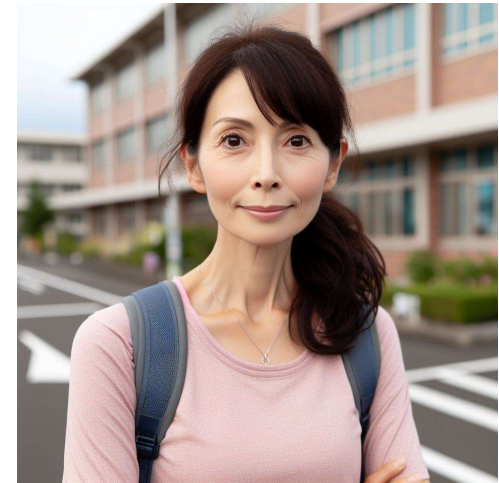
- 42 year old mother of two girls (aged 6 and 8). She is married.
- She is a school teacher (languages).
- She is a never smoker and drinks one or two glasses of wine at the weekends.
- She is very health conscious, is a member of a running club and runs at least 10 km three times weekly and races in the weekends.



## Consultation 1

## Medical history

- She reports no allergies and does not have any pets at home. Her parents are well and in their late 70's. None of her close family members have asthma or allergies.
- She has been well throughout her life (until now). Apart from childbirth has never had any hospital admissions.
- Asthma was diagnosed recently in another GP practice because she experienced breathlessness towards the end of a running race, and sometimes slight dizziness after the race. According to the patient, no lung function tests have been made.
- Her only regular medication is her asthma medication, ICS twice daily, and she has been advised to take two puffs of SABA prior to exercise.
- She uses barrier methods of contraception.



## Consultation 1

# Current presentation

The patient has recently moved to your practice and it is her first consultation so that she can receive her asthma medications.

### 1. **Control of asthma**

She is concerned that her asthma is deteriorating as she is getting increasingly breathless on exertion and is having to run at a slower pace. Of note, her symptoms are not variable. She has no nocturnal symptoms and in particular has no history of cough (apart from a bad URTI last winter) or wheezing, even when running in the cold.

### 2. **Tobacco**

She is a non-smoker.

### 3. **Patient education and self-monitoring**

Her inhaler technique is impeccable. She has been told to increase her medication if her symptoms are not controlled, so she takes extra SABA (salbutamol) when she experiences the symptoms while running. However, despite up to 2-3 extra doses she is not sure about whether salbutamol really helps.





## Consultation 1

# Current presentation, continued

### 4. **Aggravating factors and triggers**

She has not noted anything. In particular she has no rhinitis. She is of a slim and athletic build.

### 5. **Pharmacotherapy**

Inhaled budesonide 0,2 mg, twice a day; Inhaled salbutamol as needed. Both via MDI and a spacer.

### 4. **Adherence and inhaler technique**

Perfect.

### 5. **Obesity**

Lower end of normal range of BMI.

### 6. **Psychological support**

She is feeling a loss of self confidence as her physical performance is deteriorating, especially noticeable when she is out with her running club and when she participates in a running race.

### 7. **Referral for specialist assessment**

Not at this point.



## Consultation 1

# Clinical examination/investigations

### *Findings:*

- Heart and lung sounds are normal. Pulse rate 90.
- She does look a bit pale.
- Spirometry results were normal. Her peak flow was 450. (167cm: exp 440)

### *Question:*

How would you evaluate these findings?



## Consultation 1

# Clinical examination/investigations

Chest exam was unremarkable except for the pulse rate that is a little high for someone who is so fit.

Her Peak flow reading is normal for age, height and sex.

### **Question:**

What are your next management steps?



## Consultation 1

# Management

### *Next steps:*

- We decide together to check a few things and she agrees to doing serial, twice daily peak flow readings and also readings 10-15 minutes after she has been running.
- A full blood count will be performed to check her eosinophil and haemoglobin levels.
- We agree to review with the results in two weeks' time.



## Consultation 2, two weeks later

# Clinical examination/investigations

### *Findings:*

- Her peak flow readings vary between 430 (morning) and 470 (evenings). Running has no impact (expected diurnal variability)
- Her eosinophils are 100 and Hb is 7.0 g/dL with a hypochromic microcytic picture.(women normal range 12.1–15.1 g/dL)

### *Question:*

What additional questions would you like to ask this patient?



## Consultation 2, two weeks later

# Clinical examination/investigations

The findings lead to a wider range of questions and further clinical investigations.

- She eats a balanced diet including meat 2-3 x per week.
- She has heavy periods lasting 7-10 days, using 8-10 super tampons daily with occasional clots.
- Abdominal examination reveals a suprapubic swelling which is the size of a 13 week pregnancy and is a bit irregular.

### **Question:**

Is the diagnosis correct?



# Desktop-helper No. Desktop Helper 15 - The 'jigsaw puzzle' approach to building a diagnostic picture of asthma

Figure 1: Asthma cardinal symptoms - wheeze, cough, chest tightness, breathlessness

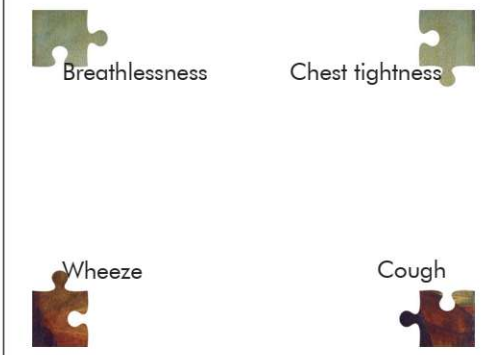
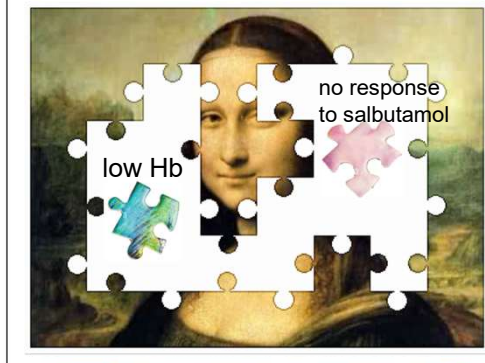


Figure 2: Pieces that do not fit the diagnosis of asthma



## The 'jigsaw puzzle' approach to building a diagnostic picture of asthma in primary care over time

There is no single objective diagnostic test for asthma. Instead, we suggest an approach of collecting and assembling pieces of clinical information to create a diagnostic picture, like making a jigsaw puzzle. These pieces should include demonstration of symptom and airway variability and/or bronchodilator responsiveness over time, to support a clinical diagnosis. This process becomes easier with experience, as patterns become more recognisable. For those clinicians less confident with diagnosing asthma, this desktop helper demonstrates how to build the picture with the patient over time, ideally involving several scheduled appointments.

### INTRODUCTION

Asthma is a clinical syndrome consisting of symptoms of wheeze/hoarse breathing, chest tightness and breathlessness, sometimes with cough, which vary in intensity and over time (Fig 1). Asthma is one of the most common chronic diseases seen in primary care and the most common chronic disease in children. The reported prevalence of asthma varies between countries, ranging from 1% to as high as 18% of the population.<sup>1</sup> Achieving the correct diagnosis is essential to ensure patients receive the right care including pharmacological treatment with inhaled medications and non-pharmacological interventions (Asthma Right Care). The combination of the lack of a single diagnostic test and the heterogeneous and variable nature of symptoms over time poses a diagnostic challenge. A particular challenge is that lung function tests, such as peak flow or FEV<sub>1</sub>/FVC and bronchodilator responsiveness (reversibility) testing, are frequently normal when a patient is asymptomatic and thus best performed when the patient is symptomatic. An additional challenge is that some of the clinical signs and symptoms experienced by people being investigated for possible asthma may overlap with other respiratory diseases and disorders, or may not fit the diagnosis of asthma (Fig 2). However, unlike these, asthma symptoms vary over time, often daily or by location. For these reasons, assembling a diagnostic picture of asthma requires collection of supporting evidence to build a picture over time, like a jigsaw puzzle. Pieces are assembled from symptoms, history, examination and investigations, with the key pieces being tests that identify airway variability and bronchodilator responsiveness of expiratory airflow limitation (airway dysfunction) (Fig 3).<sup>1,2,4,5</sup> Alternative diagnoses should be considered if the key piece or pieces do not fit. Diagnosis

of asthma requires understanding of (1) the presentation, including the patient's reason(s) for a visit to primary care; (2) symptoms, including an evaluation of historical respiratory symptoms, identified triggers and other treatable risk factors; and physical examination, including at least nose, throat, skin, lung, heart, respiratory rate, pulse rate and rhythm and pulse oximetry (where available); (3) history, including personal, occupational and family history and (4) objective test results. The jigsaw puzzle approach combines these elements over time and prioritises those elements that support a diagnosis of asthma and identifies pieces that do not fit, requiring the clinician to think again. No puzzle will be 100% complete, but the picture should be clear enough to allow a diagnosis (Fig 4).

### BUILDING A PICTURE OVER TIME TO ACHIEVE DIAGNOSIS OF A VARIABLE DISEASE

#### Must do

Build the picture by asking the patient their reason(s) for coming now for a visit to primary care, and evaluating current and historical respiratory symptoms. If the patient is not symptomatic, consider serial peak flow (PEF) monitoring over time (e.g. 2 weeks). If the patient is symptomatic, administering 2-4 puffs of SABAs (preferably through a spacer), preceded (and followed) by peak flow readings (if possible), should induce both a rapid improvement in symptoms and an improvement

Figure 3: Available tests of airways dysfunction confirm our reasoning

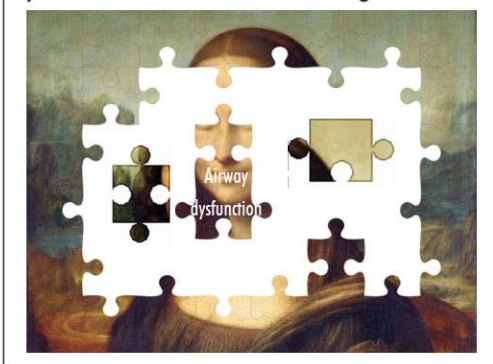
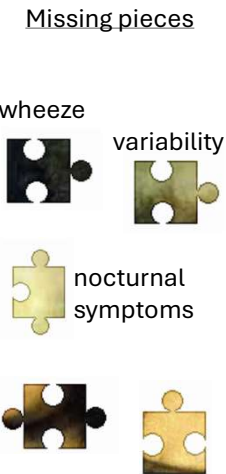
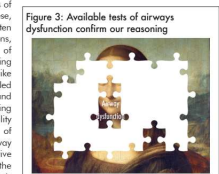
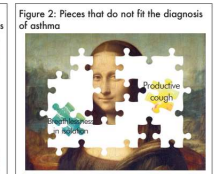
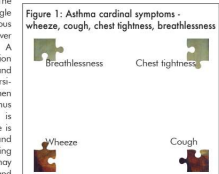
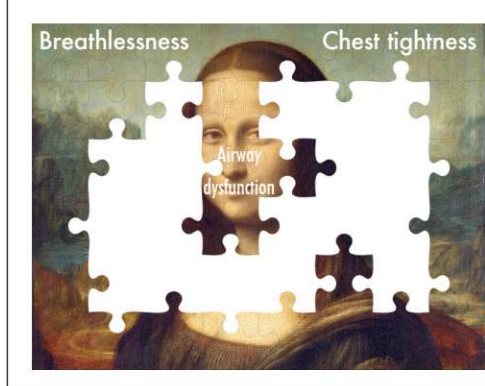
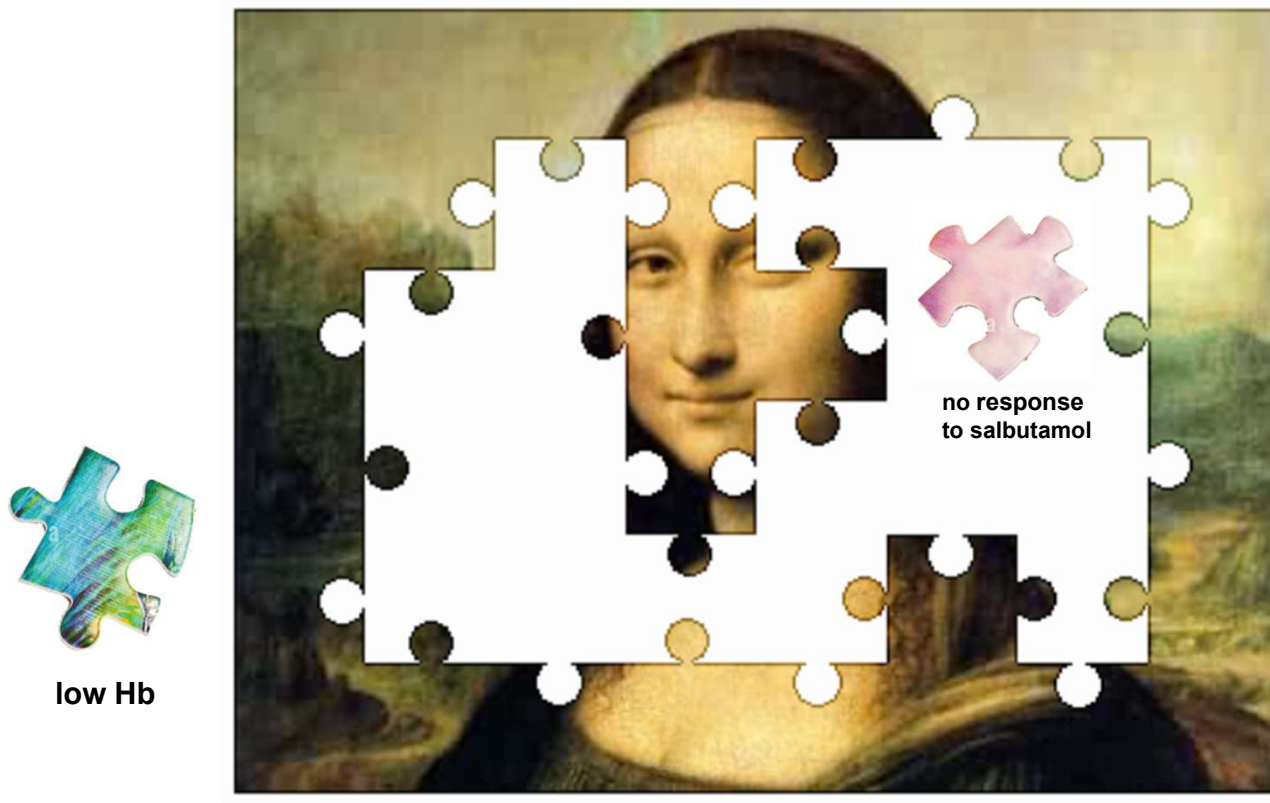


Figure 4: A clear picture



GSK provided an unrestricted educational grant to support the development of this case study but did not contribute to its content

## Desktop-helper No. Desktop Helper 15 - The 'jigsaw puzzle' approach to building a diagnostic picture of asthma



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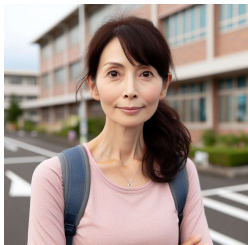


# Assembling the pieces

## Presentation



- 42 year old woman
- complains of shortness of breath especially on exercise
- also feels tired all the time
- Insists she has asthma



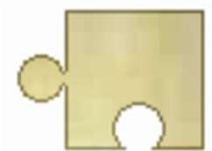
- She is a mother with two children age 6 and 8
- uses barrier contraception
- apart from having babies has had no any hospital admissions
- language teacher



## History

## Symptoms

- She is a never smoker
- apart from having babies has had no any hospital admissions
- her hobby is running, but she finds this progressively more difficult



- She is calm and relaxed
- breathing normally with a respiratory rate of 14
- Her peak flow reading is 450 l/min
- Resting pulse rate is 90 bpm regular
- Her chest exam is normal
- she looks quite pale



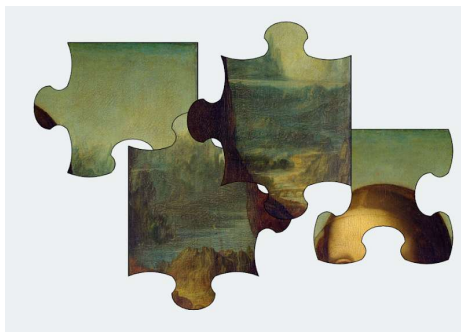
## Exam and objective tests



## Assembling the pieces

### pieces which fit the diagnosis

- shortness of breath
- exercise symptoms
- fatigue



### pieces which do not fit

- no previous illness or antecedent factors
- no wheezing, cough, nocturnal symptoms, chest tightness, normal peak flow
- no symptom variability
- no symptom response to salbutamol
- normal diurnal variability of PEF
- tachycardia at rest
- pallor



## We need to search for a different image/picture/puzzle

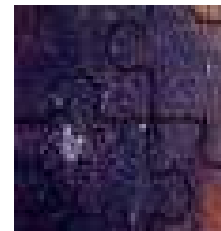
- why is she so pale?.....
  - one suspects anaemia
  - in her age group heavy periods are a frequent cause of anaemia
  - .....so appropriate questions are asked
- 
- She has irregular and heavy periods
  - On further **examination** she has a non-tender lower abdominal tumour
  - Ultrasound reveals this to be a fibroid
  - Her laboratory **investigations** reveal an Hb of 7.0 gr/dL , hypochromic, microcytic, with a low serum iron
  - Accordingly she is referred to a gynaecologist who performs a hysterectomy, and iron tablets are commenced with great improvement of her asthma.



# Don't be misled

## Similarities

Backgrounds of two pictures  
(breathless, fatigue)



## Shared features

Foreheads  
(exercise symptoms, fatigue,)



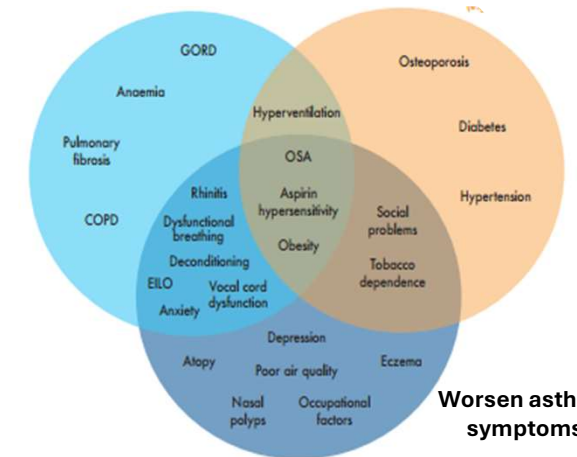
## Similar but different

The faces  
(normal lung function, eosinophils, breathing patterns)



reflection points

## Mimic Asthma symptoms



## Consultation 2, two weeks later

### Diagnosis

You conclude that her breathlessness is mostly due to anemia caused by menorrhagia, not so much her asthma.

***Question:***

What are your next management steps?



## Consultation 2, two weeks later

# Management

### *Next steps:*

- You decide to reduce her inhaled medication gradually while monitoring her peak flow readings
- You commence her on iron tablets and refer her to a gynecologist.
- You ask the patient to come back for a review after 3-4 months.



## Consultation 3, three months later

### Elsa has returned to live in Sweden She brings a printout of her UK patient record

- Hb is now 12.5g/dl with a normocytic picture.
- The patient feels generally more energetic and reports no more dizziness.
- However, she still feels breathlessness while running, particularly when she runs races. She then may take extra salbutamol, but is still unsure if it really helps.

#### **Question:**

What is your conclusion so far and what will be your next steps?



## Consultation 3, three months later

# Clinical examination/investigations

A new review, keeping mind the previous steps:

- Ensure that the diagnosis is correct
- Find and manage comorbidities
- Conduct a structured review focusing on these elements
  1. Control of asthma
  2. Tobacco dependence
  3. Patient education and self-monitoring
  4. Aggravating factors and triggers
  5. Pharmacotherapy
  6. Adherence and inhaler technique.
  7. Obesity
  8. Psychological support
  9. Referral for specialist assessment





## Consultation 3, three months later

# Management

### *Next steps:*

- You suspect EILO\* or dysfunctional breathing, and start out by referring the patient to an ENT unit that performs EILO investigations
- You also question the accuracy of asthma diagnosis. You decide to step down the medication, in fact you tell the patient to stop taking her inhalers altogether, while monitoring her peak flow readings.
- You plan for a follow-up when the ENT consultation is done, to review a possible asthma worsening.

\* exercise induced laryngeal obstruction

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## Consultation 4, one month later

### Clinical examination/investigations

- ENT investigation was normal.
- The patient does not report any worsening of breathlessness or what she considers as “asthma symptoms” despite not taking any ICS or SABA.
- Her peak flow readings are the same as before. You perform a spirometry again and it is almost identical to the previous one (almost 5 months earlier, when the patient had an ongoing asthma medication)

#### **Question:**

What is your conclusion so far and what will be your next steps?



## Consultation 3, three months later

## Diagnosis

- You conclude that the patient suffers from dysfunctional breathing (DB)
  - DB is respiratory condition characterized by breathing patterns, typically shallow rapid breathing and speaking in short sentences, that occur either in the absence of concurrent diseases or secondary to cardiopulmonary diseases.
  - Although the primary symptom is often dyspnea or perceived difficulty in breathing, DB is also associated with non-respiratory symptoms such as dizziness, paraesthesia and palpitations.
  - DB has been identified across all ages, with a prevalence of appr. 9.5% in adults and more common in females.
  - Among individuals with asthma, DB is found concomitantly in a third of women and a fifth of men.
  - DB is often underdiagnosed or misdiagnosed, given the similarity of its associated symptoms (dyspnea, tachycardia, and dizziness) to those of other common cardiopulmonary diseases such as COPD and asthma.

Vidotto LS, Carvalho CRF, Harvey A, Jones M. J Bras Pneumol. 2019 Feb 11;45(1):e20170347.

- You conclude also, that the patient does not have asthma.

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## Consultation 3, three months later

### Management

- You explain clearly to the patient that she does not have asthma and inform her about DB.
- You agree on a referral to a respiratory physiotherapist or speech therapist who is specifically interested in respiratory diseases, to help patient manage the condition.



# Summary

- Ensure that a pre-existing diagnosis of asthma is correct. Always ask yourself: ‘Does the patient really have asthma?’
  - Correct asthma diagnosis is based on a thorough review of clinical history, and the diagnostic probability of asthma is significantly increased using a lung function test.
  - As the airway obstruction in asthma is variable, normal spirometry does not rule out asthma. Commonly spirometry is performed when the patient is controlled or asymptomatic leading to a false negative result.
- Don’t be misled. An open-minded, broad approach to assessment of breathlessness in a patient with pre-existing asthma diagnosis is crucially important
- Use a structured interview and appropriate diagnostic tests to investigate whether patient’s symptoms are caused by asthma, comorbidities causing similar symptoms, or other conditions worsening asthma or mimicking asthma symptoms.
- Review a patient with breathlessness periodically and continue with reviewing until the reasons for their symptoms have been found, treated, and improved.



# Desktop-helper No. 2 on difficult-to-manage asthma

- Learn more about the Desktop-helper:



work locally  
collaborate globally

**DESKTOP HELPER**

No. 2 April 2024

A practical guide to improve difficult-to-manage asthma in primary care

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- Daytime asthma symptoms, more than twice/week
- Any night awakening due to asthma-related symptoms
- More than two exacerbations per year requiring rescue systemic corticosteroids<sup>1</sup>
- Frequent use of SABA (≥3 inhalers per year or ≥2.5 times per week)
- Poor control despite prescription of high-dose ICS often in combination with LABA/LAMA or use of OCS<sup>1</sup>
- Frequent primary care out-of-hours contacts (one or more per month)

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Guides estimate that in primary care about one out of every six people living with asthma have difficult-to-manage asthma, and of those, between a quarter and a half will have severe asthma.<sup>2,3</sup> Having difficult-to-manage asthma puts people at higher risk of exacerbations and even death, which are preventable with effective management. Similarly, they are at greater risk of steroid-related adverse effects. If treated with high-dose ICS or avoidable courses of OCS or low-dose OCS over a period of time, and their morbidity and health costs are disproportionately higher. People with well-controlled asthma have a better quality of life, reduced symptoms and exacerbations, reduced hospital visits and admissions and lower risk of premature death.<sup>4,5</sup> But most importantly, difficult-to-manage asthma can be managed using a structured approach.<sup>6</sup>

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**HOW TO IDENTIFY A PERSON WITH DIFFICULT-TO-MANAGE ASTHMA?**

Ensure that the diagnosis is correct

Over one-third of people living with asthma have an incorrect diagnosis.<sup>7,8</sup> Confirm that the person really has asthma before stepping up treatment as a surprising number of people diagnosed and treated for asthma (from 12 to 35%)<sup>9</sup> either do not

have the disease or have it in association with other conditions causing persistent symptoms (see below).<sup>10,11</sup>

Potential confounding factors for the diagnosis of asthma or its severity are dysfunctional breathing, smog, exercise-induced laryngeal obstruction (EILO), vocal cord dysfunction (VCD), obesity, and low level of fitness (deconditioning) (Figure 1). All of which may also co-exist with asthma. Diagnosis can be achieved by reviewing clinical history; the diagnostic probability is significantly increased using a lung function

**More information on diagnosis**

DH 13 - The 'jigsaw puzzle' approach to building a diagnostic picture of asthma in primary care over time

DH 14 - Quick guide to spirometry

[Spirometry Simplified \(pdf\)](#)

**Figure 1 - Potential confounding factors for the diagnosis of asthma or its severity: reflection points**

NOTE: these are some more common examples and not a comprehensive list. Solid problems include respiratory problems (chronic, emphysema), poor housing, gender or ethnic discrimination, low literacy, etc.



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