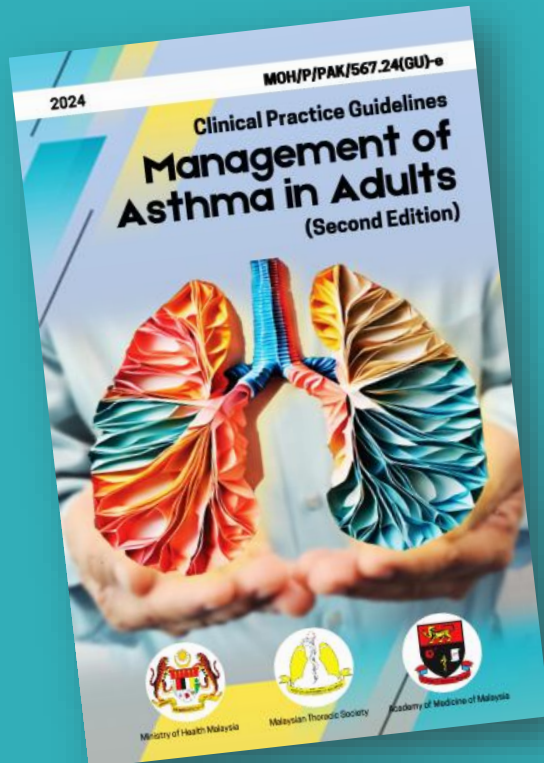


# TRAINING OF CORE TRAINERS ON CPG MANAGEMENT OF ASTHMA IN ADULTS (SECOND EDITION)

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## CASE DISCUSSION 2

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# CASE 1



- Mr. Azlan, a 34-year-old **smoker**, presents for a routine follow-up.
- He was diagnosed with asthma two years ago and has been using a pMDI salbutamol as-needed basis.
- Currently, he uses his short-acting beta-agonist (SABA) **3–4 times per week**. He requires his inhaler **before playing futsal** or **after climbing stairs**, and has sometimes **avoided social outings** to prevent symptom flare-ups.
- Over the past 3 months, he has occasionally experienced **nocturnal symptoms**, waking up at night with chest tightness.
- He reports **no hospitalisations or severe asthma attacks** in the past year.



# Case continues..

- On further questioning, he confirms:
  - Daily daytime symptoms
  - Activity limitation on certain days
  - Night-time awakenings 1–2 times a month
  - No recent exacerbations, but he expresses some concern about his asthma control
  - He has never been prescribed a controller medication.

# Question 1



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How would you assess Mr. Azlan?



# Case continues..

- On GINA assessment of asthma control:

In the <b>past FOUR weeks</b> , has the patient had:	Yes	No	Well Controlled	Partly Controlled	Uncontrolled
Daytime asthma symptoms more than twice / week?	✓		None of these	1-2 of these	3-4 of these
Any night waking due to asthma	✓				
SABA reliever for symptoms more than twice / week?	✓				
Any activity limitation due to asthma	✓				

## ASTHMA CONTROL TEST™

Its

Asthma Control Test provides a numerical score to determine the control of asthma symptoms.

- ACT score = **15**
- **Very poorly controlled**

ACT Score	Asthma Control
20 - 25	Well-controlled
16 - 19	Not well controlled
5 - 15	Very poorly controlled

1.	In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school or at home?					Score
	All of the time (1)	Most of the time (2)	Some of the time (3) ✓	A little of the time (4)	None of the time (5)	
2.	During the past 4 weeks, how often have you had shortness of breath?					Score
	More than once a day (1)	Once a day (2)	3 to 6 times a week (3) ✓	Once or twice a week (4)	Not at all (5)	
3.	During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?					Score
	4 or more nights a week (1)	2 to 3 nights a week (2)	Once a week (3)	Once or twice (4) ✓	Not at all (5)	
4.	During the past 4 weeks, how often had you used your rescue inhaler or nebuliser?					Score
	3 or more times per day (1)	1 to 2 times per day (2)	2 or 3 times per week (3) ✓	Once a week or less (4)	Not at all (5)	
5.	How would you rate your asthma control in the last 4 weeks?					Score
	Not controlled at all (1)	Poorly controlled (2) ✓	Somewhat controlled (3)	Well controlled (4)	Completely controlled (5)	

Total score: 15

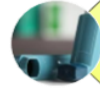


# Case continues..

- Risk of future exacerbation



Previous hx of severe AEBA requiring CS or hospitalisation within past year



Overuse of SABA ( $\geq 3$  cannisters per year)



Inadequate ICS use or not on ICS



Poor adherence to maintenance therapy



Incorrect inhaler technique



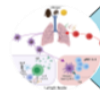
Current smoker, e-cigarette or vape user



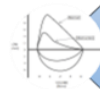
Comorbidities : obesity, GERD, CRS, confirmed food allergy



Pregnancy



T2 markers : high FeNO, blood eosinophils



Lung function : low FEV1 esp  $< 60\%$  predicted, high BD responsiveness

# Case continues..



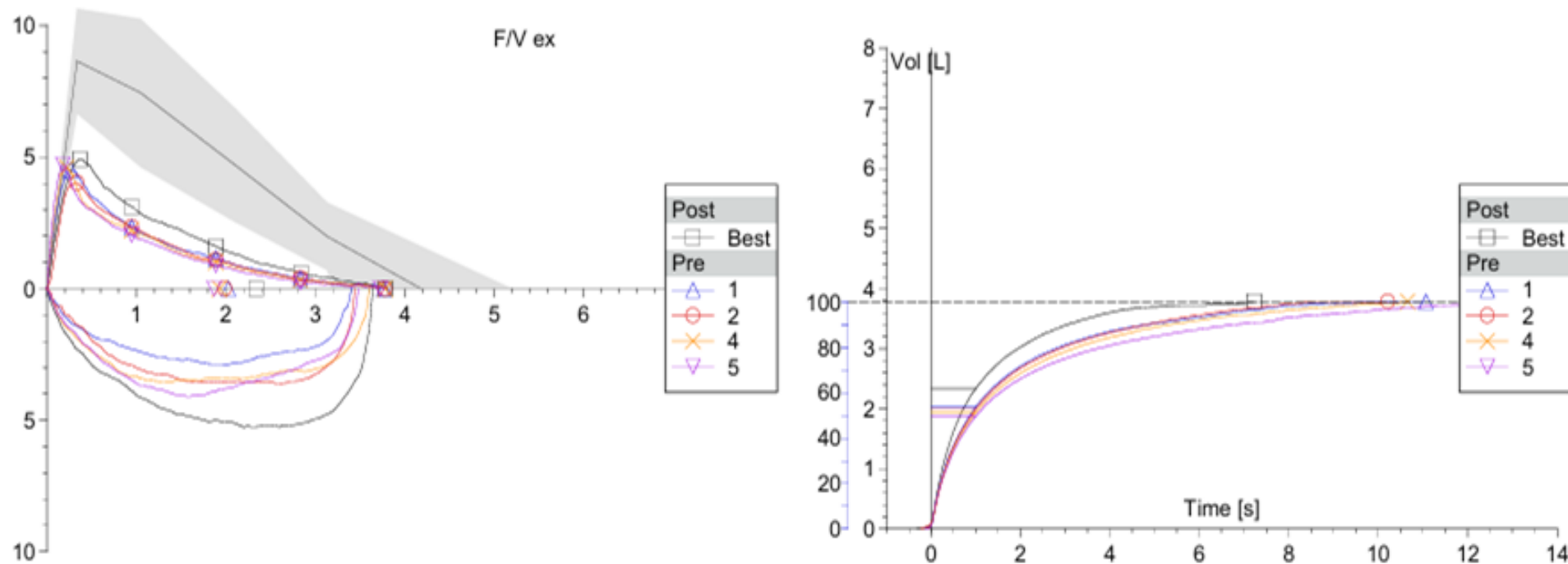
- The **pharmacist's assessment** confirmed that he has **correct inhaler technique**.
- He was also referred for **spirometry** to further assess his lung function



# Spirometry results



## Spirometry Flow-Volume Pre-Post



# Spirometry results



	Pre-bronchodilator			Post-bronchodilator		
	Best	Predicted	Predicted Percentage (%)	Best	Predicted Percentage (%)	Change
FVC	3.76	4.18	90.0	3.78	90.4	20 ml (0.4%)
FEV1	2.02	3.50	57.8	2.34	66.9	320 ml (15.8%)
FEV1/FVC	53.72			61.90		

**Question 2:** Interpret his spirometry findings



# Case continues..

- The patient was **advised to stop smoking** as part of his asthma management

**Question 3:** What pharmacological treatment should be initiated for this patient?

# Case continues..

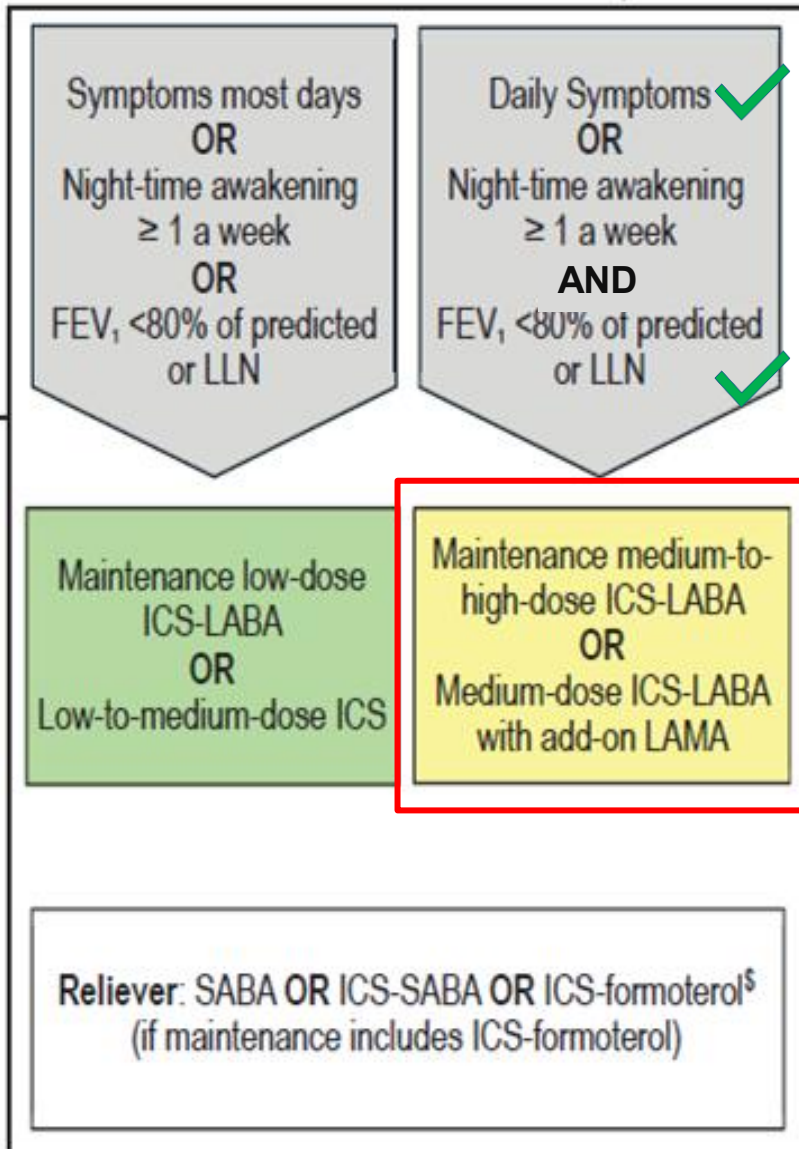


Table 7: Categorisation of ICS Doses (Alone or in Combination with LABA) into Low, Medium and High Levels

Inhaled corticosteroids (alone or in combination with LABA)	Total daily ICS dose (µg)		
	Low	Medium	High
Beclometasone dipropionate (pMDI, standard particle, HFA)	200 - 500	>500 - 1000	>1000
Beclometasone dipropionate (DPI or pMDI, extrafine particle, HFA)	100 - 200	>200 - 400	>400
Budesonide (DPI, or pMDI, standard particle, HFA)	200 - 400	>400 - 800	>800
Ciclesonide (pMDI, extrafine particle, HFA)	80 - 160	>160 - 320	>320
Fluticasone furoate (DPI)	100		200
Fluticasone propionate (DPI)	100 - 250	>250 - 500	>500
Fluticasone propionate (pMDI, standard particle, HFA)	100 - 250	>250 - 500	>500
Mometasone furoate (DPI)	Depends on DPI device - refer to product information		
Mometasone furoate (pMDI, standard particle, HFA)	200 - 400		>400

Source: Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2024. Updated May 2024 (Available at: [www.ginasthma.org](http://www.ginasthma.org))

Patient was started on

- pMDI Salmeterol/Fluticasone 25/125 µg 2 puffs BD
- pMDI Salbutamol 2 puffs PRN

He was given TCA in 3/12



## 3 months later..

- His symptoms improved
- There is no exacerbation

**Question 4:** How do we assess him now?

# Case continues..



- On GINA assessment of asthma control:

In the <b>past FOUR weeks</b> , has the patient had:	Yes	No	Well Controlled	Partly Controlled	Uncontrolled
Daytime asthma symptoms more than twice / week?		✓	None of these	1-2 of these	3-4 of these
Any night waking due to asthma		✓			
SABA reliever for symptoms more than twice / week?		✓			
Any activity limitation due to asthma		✓			

# Conclusion

- ACT score = **22**
- Well-controlled asthma

ACT Score	Asthma Control
20 - 25	Well-controlled
16 - 19	Not well controlled
5 - 15	Very poorly controlled

## ASTHMA CONTROL TEST™

Asthma Control Test provides a numerical score to determine the control of asthma symptoms.

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	All of the time (1)	Most of the time (2)	Some of the time (3)	A little of the time (4)	None of the time (5) ✓	
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	3 or more times per day (1)	1 to 2 times per day (2)	2 or 3 times per week (3)	Once a week or less (4) ✓	Not at all (5)	
5.	How would you rate your asthma control in the last 4 weeks?					Score
	Not controlled at all (1)	Poorly controlled (2)	Somewhat controlled (3)	Well controlled (4) ✓	Completely controlled (5)	

Total score: 22



# CASE 2



- Cik Bella, a 30-year-old Sabahan lady
- Working as a school clerk
- Travelled to the Klang Valley with friends for a holiday
- She complained of shortness of breath while playing at the Sports Arena
- Notably, she had lunch at a *Kedai Ikan Bakar* earlier in the day
- Her friend brought her to your Klinik Kesihatan at 4:30 pm





# Initial assessment

Patient is sitting forward, speaking in words.

Audible wheeze noted.

Afebrile.

**BP:** 121/80 mmHg (MAP 65 mmHg)

**PR:** 122 beats per minute

**RR:** 35 breaths per minute

**SpO<sub>2</sub>:** 91% on room air

**Respiratory examination:**

Reduced breath sounds bilaterally

Generalised rhonchi

**Other systems:** Unremarkable

# Question 1



What is the most likely diagnosis?

A	Pneumothorax
B	Pneumonia
C	Acute exacerbation of asthma
D	Acute pulmonary embolism

# Question 2



How would you grade the severity of asthma exacerbation?

A	Mild
B	Moderate
C	Severe

# Question 3



What are your immediate management?

A	Intubate patient
B	IV hydrocortisone
C	IV magnesium sulphate
D	IV salbutamol
E	Nebulised ipratropium bromide
F	Nebulised salbutamol
G	Oxygen
H	Refer to hospital

# Question 4



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Is hospital referral required for this patient?



# Patient's progress

## **Emergency Department Assessment:**

Currently on the **5th round of 2.5mg nebulised salbutamol given every 20 minutes.**

**General appearance:** Sitting up, appears tired and drowsy  
Use of **accessory muscles**

## **Vital signs:**

**Temperature:** 36.6°C

**BP:** 90/48 mmHg (MAP 60 mmHg)

**PR:** 138 beats per minute

**RR:** 40 breaths per minute

**SpO<sub>2</sub>:** 90% on high-flow mask (HFM) with 15 L/min oxygen

**Respiratory examination:** Reduced air entry bilaterally

# Question 5



Patient is breathless,

**Who would you ask if the patient cannot provide their history?**

**What further history would you elicit?**

# Collateral history from family members



- Patient is not known to have asthma
- However, she has had multiple GP visits for nebulisation, especially following URTI or exposure to dust or smoke
- She was adopted at the age of 5 years old and has no known biological siblings



# Question 6



How would you **grade the severity** of exacerbation now?

A	Moderate
B	Severe
C	Life-threatening



# Patient's progress

## **Emergency Department Assessment:**

Currently on the **5th round of 2.5mg nebulised salbutamol given every 20 minutes.**

**General appearance:** Sitting up, appears tired and drowsy  
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**Respiratory examination:** Reduced air entry bilaterally

# Question 7



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What are the features of life-threatening asthma?

# Question 8



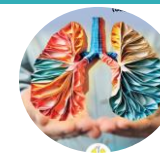
What are your **next management** plans now?

A	Continue nebulised salbutamol
B	Endotracheal intubation
C	IV aminophylline
D	IV hydrocortisone
E	IV magnesium sulphate
F	IV salbutamol
G	Non-invasive ventilation
H	High Flow Nasal Cannula



# Further management

- **Continuous monitoring:** SpO<sub>2</sub> and vital signs
- **Arterial Blood Gas (ABG):** Obtain and monitor trends
- **Chest X-ray (CXR):** To rule out pneumothorax or consolidation
- **Referral:** Urgent referral to critical care for further management



# Referral for critical care

- Patients who are having life-threatening asthma exacerbations with signs of respiratory distress, worsening hypoxaemia, hypercapnia, altered mental status, or failure to respond to maximal medical therapy should be considered for early intubation and referral to critical care.

## Recommendation 14

- All patients with severe, life-threatening asthma should be admitted.
- Early referral to critical care team should be considered for patients with asthma exacerbation who respond poorly to optimal treatment.
- Patients with asthma may be discharged with asthma action plan if they:
  - have resolution of symptoms after treatment and
  - are able to follow their prescribed treatment at home
- Following asthma exacerbation, all patients should be given a follow-up plan upon discharge.

# Thank You!!



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**Management of Asthma in Adults**  
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