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# Case-Based Interactive ARS on Difficult to Control Asthma

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# Disclosure

- **Lecture honorarium: Astra Zeneca, Boehringer Ingelheim**
- **Advisory Board Member: Astra Zeneca, Boehringer Ingelheim, GSK**

# Case 1

- A 15-year-old female referred from GP for uncontrolled asthma
- She was diagnosed asthma for 2 years
- She had several emergency visits despite being treated with salmeterol/fluticasone evohaler (25/125) 2 puff bid, theophylline (200) bid and salbutamol 2 puff prn

# Physical Examination

- HEENT: swelling of turbinate, mucopurulent nasal discharge
- Chest: rhonchi both lung

# Diagnosis

- Difficult asthma

# Difficult asthma (severe/refractory asthma)

- Failure to achieve control when the maximal recommended dose of inhaled therapy are prescribed

Barnes PJ, Woolcock AJ. Difficult asthma. Eur Respir J 1998;12:1209-18.

# Which is the least likely cause of difficult asthma?

- A. Wrong diagnosis
- B. Poor compliance
- C. Unidentified aggravating factors
- D. Psychosocial factors
- E. Severe asthma

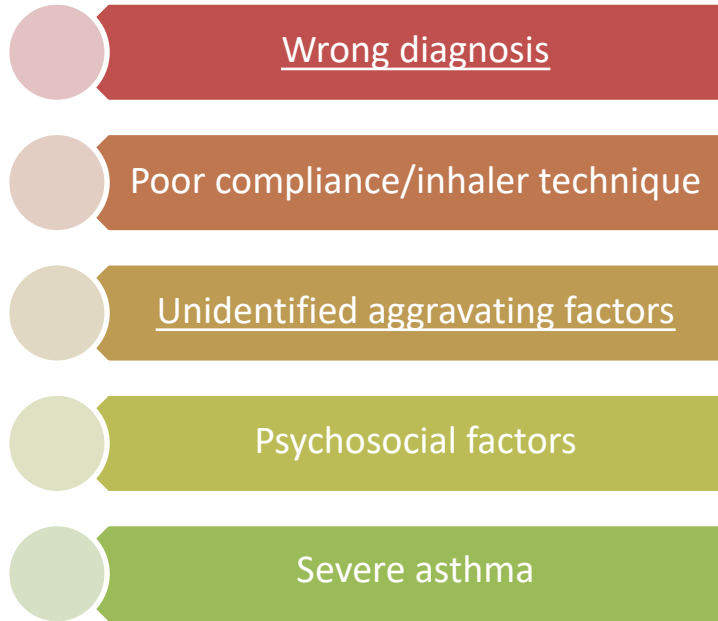


Which is the least likely cause of difficult asthma?

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COPD  
CHF  
Upper airway obstruction  
Localized airway obstruction  
Vocal cord dysfunction

# Difficult asthma



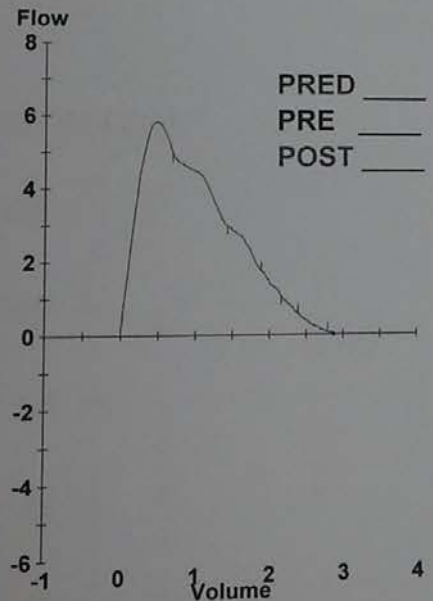
- ▶ Unidentified allergen
- ▶ Occupational exposure
- ▶ Upper airway disease
- ▶ Gastro-esophageal reflux
- ▶ Systemic disease
- ▶ Drugs

Barnes PJ, Woolcock AJ. Difficult asthma. Eur Respir J 1998;12:1209-18.

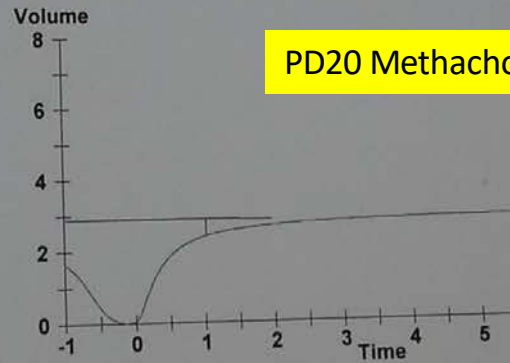
# Spirometry

		PRED	PRE-RX		POST-RX	
(BTPS)			BEST	%PRED	BEST	%PRED
FVL Time			11:15			
FVC	Liters	3.53	2.90	82		
FEV1	Liters	3.37	2.50	74		
FEV1/FVC	%	86	86			
FEF25-75%	L/min	225	153	68		
FEF25%	L/min		299			
FEF50%	L/min	247	180	73		
FEF75%	L/min	138	64	46		
PEF	L/min	392	396	101		
FIVC	Liters	3.53	0.03	1		
FEV1	Liters	3.37	2.50	74		
IC	Liters	2.76				
FEF/FIF50						
Vol Extrap	Liters		0.10			
FVL ECode			000000			
MVV	L/min	111				
f	BPM					

*Dx B*



PRED \_\_\_\_\_  
 PRE \_\_\_\_\_  
 POST \_\_\_\_\_

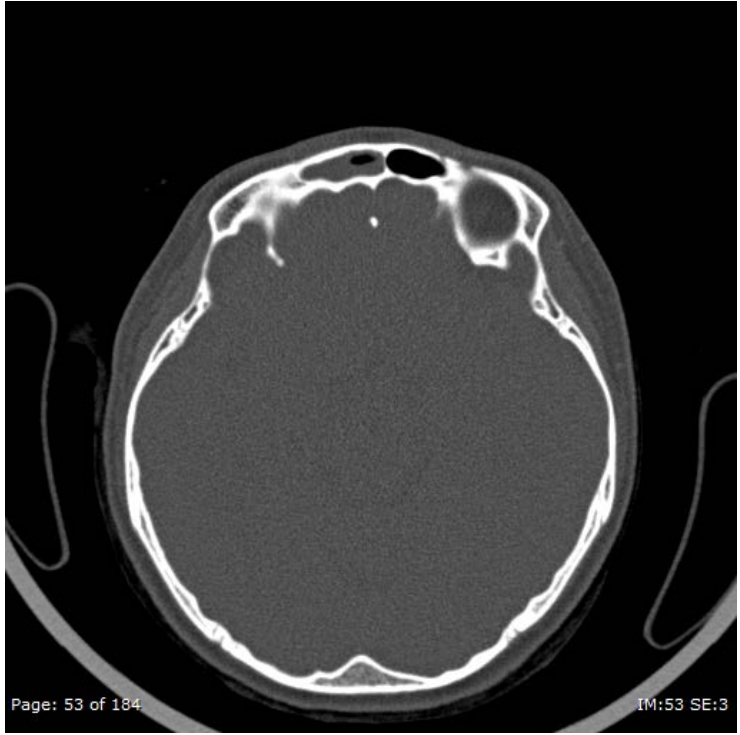
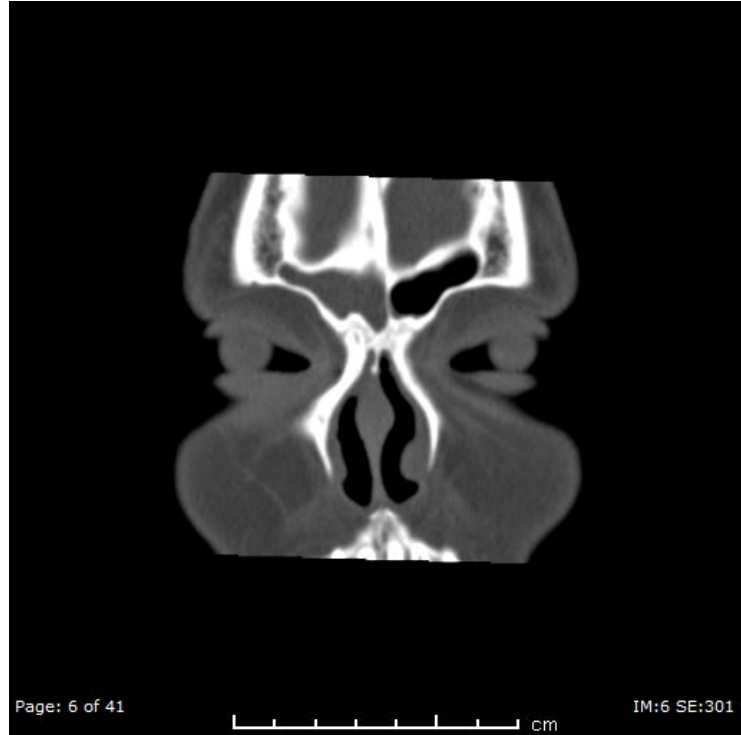


PD20 Methacholine > 13 umol

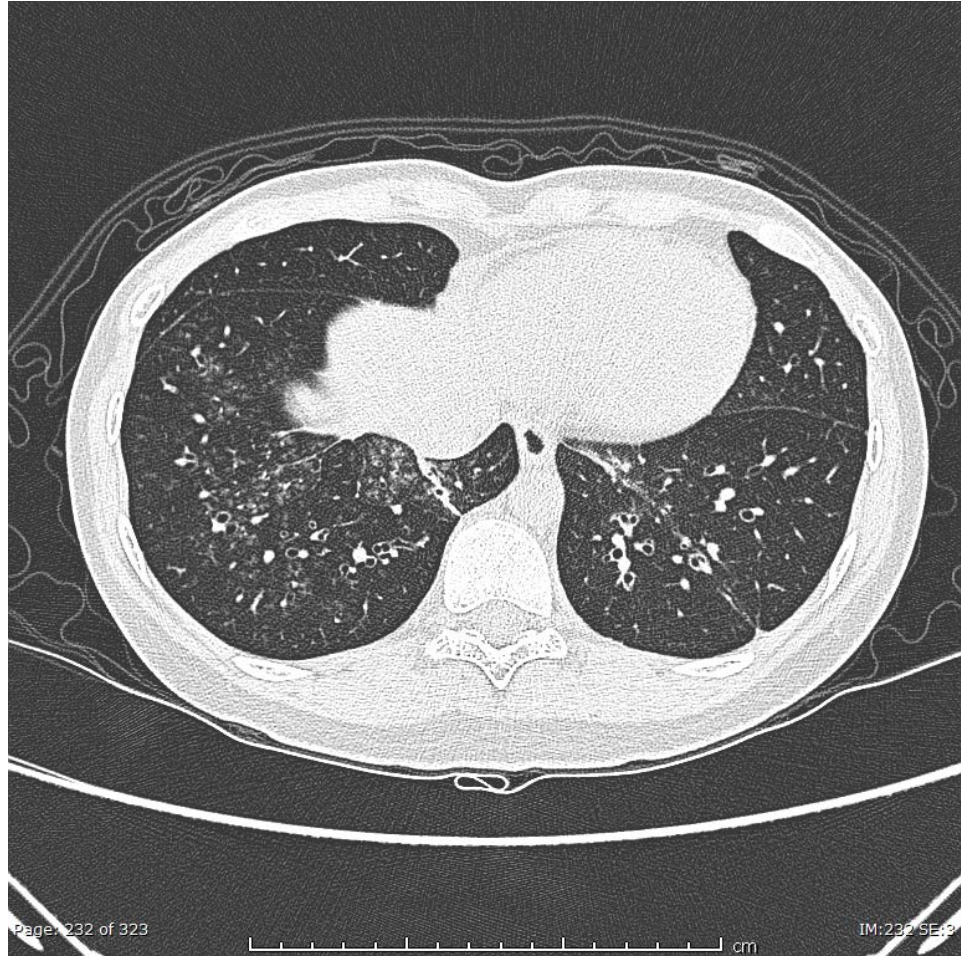


15F – left inferior turbinate hypertrophy with  
nasal septum deviation to the right

# 15F – Right frontal sinusitis







15F – Random distribution of centrilobular nodular infiltration at RLL

# Sinobronchial syndrome

- NSS nasal irrigation
- Pseudo ephedrine 1x3
- AMK 1X2
- Erythromycin (250) 1x4
- Avamys 2puff OD.
- Salmeterol/fluticasone (50/250) 1x2

Abo M, et al. Journal of thoracic disease 2018;10:E727-E9.



# Case 2

- A 65 year old man was diagnosed asthma for one year.
- He was treated with salmeterol/fluticasone acuhaler (50/250) bid, salbutamol 2 puff prn and for 3 months but he still have asthma symptoms.
- He never smoke
- CXR= normal
  
- PE: HEENT normal, Chest Clear

# Spirometry

	predicted	PRE-RX	%pred	POST-RX	%pred	%CHG
FVC (L)	4.12	3.25	79	3.50	85	8
FEV1(L)	3.13	2.15	60	2.60	83	20
FEV1/FVC		68		74		

# Diagnosis

- Difficult asthma

# What should we do next?

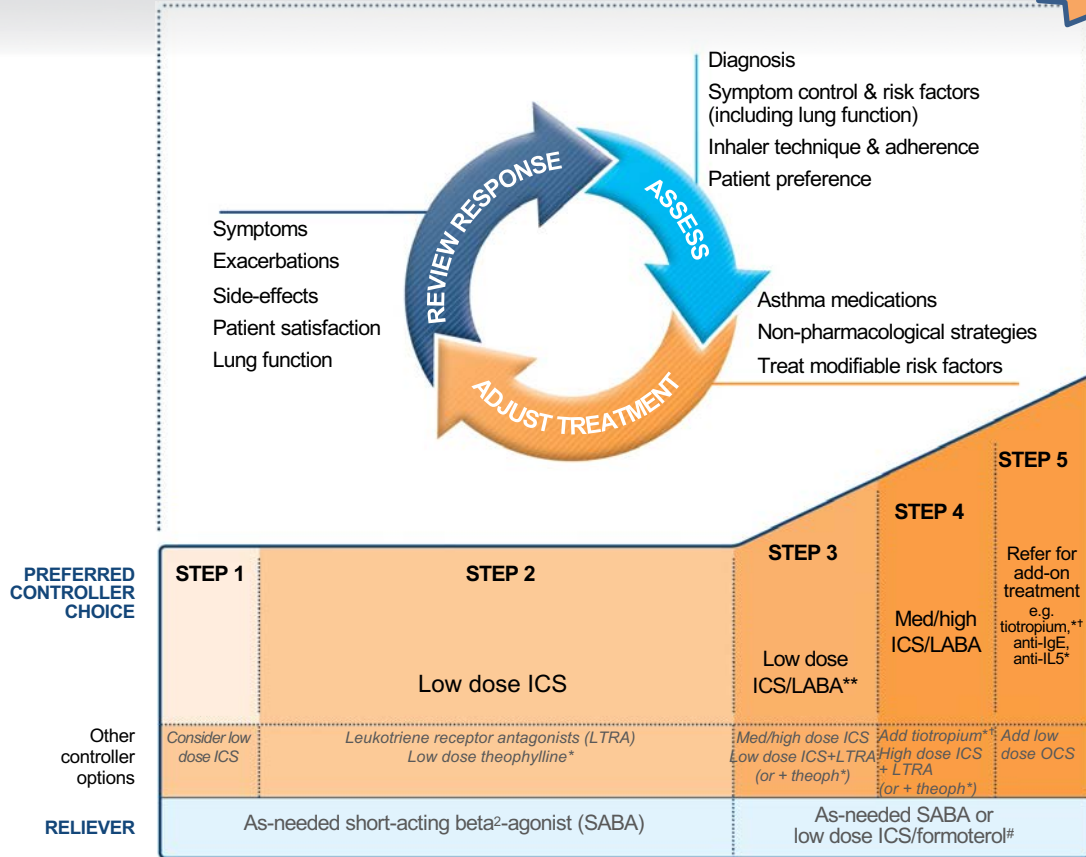
- A. Change salmeterol/fluticasone 50/250 to salmeterol/fluticasone 50/500 bid
- B. Add montelukast
- C. Add tiotropium respimat
- D. Check inhaler technique

# What should we do next?

- A. Change salmeterol/fluticasone 50/250 to salmeterol/fluticasone 50/500 bid
- B. Add montelukast
- C. Add tiotropium respimat
- D. Check inhaler technique

# Stepwise management - pharmacotherapy

UPDATED  
2017



\*Not for children <12 years

\*\*For children 6-11 years, the preferred Step 3 treatment is medium dose ICS

#For patients prescribed BDP/formoterol or BUD/formoterol maintenance and reliever therapy

† Tiotropium by mist inhaler is an add-on treatment for patients ≥12 years with a history of exacerbations

# Provide hands-on inhaler skills training



## Choose

- Choose an appropriate device before prescribing. Consider medication options, arthritis, patient skills and cost. For ICS by pMDI, prescribe a spacer
- Avoid multiple different inhaler types if possible

## Check

- Check technique at every opportunity – “*Can you show me how you use your inhaler at present?*”
- Identify errors with a device-specific checklist

## Correct

- Give a physical demonstration to show how to use the inhaler correctly
- Check again (up to 2-3 times)
- Re-check inhaler technique frequently, as errors often recur within 4-6 weeks

## Confirm

- Can you demonstrate correct technique for the inhalers you prescribe?
- Brief inhaler technique training improves asthma control





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