*Asthma:

Asthma: Asthma is a chronic disease characterized by recurrent attacks of shortness of breath and wheezing.

β-blockers → asthma → worse
→ COPD → beneficial

*severe asthma: bad, not controlled, bad day and night symptoms, exacerbations, need steroids > 50% of the year (true severe)

*uncontrolled asthma: poor control, exacerbations, not necessarly sever (may be uncompliant to medications, enviromental exposures)
(if controlled → ↓ severity)

- for acessing control of asthma symptoms we use ACT (asthma control test) and ACQ (asthma control questionare)

Pathophysiology

- Airway inflammation chronic
  *recurrent attacks of symptoms, but between attacks inflammation is there
- Intermittent airflow obstruction
  ↳ contributing factors → smooth muscles, mucus secretion, goblet cell hyperplasia, inflammation
  has direct therapy
- Bronchial hyperresponsiveness → exaggerated response to enviromental allergiens

* acute bronchoconstriction → airway edema
↓
airway remodilling ← chronic mucus plug formation

* How do patients with asthma with effect on airway remodilling (alot of fibroblasts in airway) present clinically?
→ persistant airway obstruction on PFT (not reversible with bronchodilator)

case of asthma
with $PaCO_2$ of 40 ↳ admit to ICU
35-40 admit to floor

*patient with asthma present to ER, ABG: $PaCO_2$ is normal
↳ has severe airway obstruction (because I assume if pt. with airway obstruction → hyperventillate → ↓ $PaCO_2$)

*asthma pt. $PaCO_2$: < 35

*Aspirin induced asthma:

- asthma, aspirin sensitivity, nasal polyps
- manage: aspirin desensitization c leukotrine antagonists (montilukast)

*GERD:

- antireflux therapy may improve asthma symptoms

*occupational:

High-risk jobs: farming, painting, janitorial work, and plastics manufacturing

dx:

- Peak-flow monitoring during work (optimally, at least 4 times a day) for at least 2 weeks and a similar period away from work is one recommended method to establish the diagnosis.

هذا المهم

*Sinusitis:

- tx improves asthma

*exercise induced:

- normal resting spirometry
- tx: warm up, β-agonists

- asthma exacerbation → worsening in sympt. leading to change in mangment
- cough may be the only symptom of asthma

*exacerbations

① mild:
- can talk in sentences and lie down
- O_2 sat. preserved (> 95%)

② moderate:
- use of accessory muscles
- pulsus paradoxus
- O_2 sat 91-92%

③ severe:
- talk in words
- O_2 sat < 91%

Impending Respiratory Failure

↳ at first tachycardia then bradycardia then arrest
↳ so its good sign

- Drowsy and confused
- Thoracoabdominal movement
- Wheezing may be absent
  ↳ more worse → ↓ wheeze; so listing to wheeze is good sign

Asthma Differential Diagnoses

- Vocal cord dysfunction or inducible laryngeal obstruction (ILO): paradoxical adduction of the vocal cords during inspiration, and may disappear with panting, speech, or laughing (young females)
  - Direct laryngoscopy during symptomatic periods or after exercise
  - The presence of flattening of the inspiratory limb of the flow-volume loop may also suggest vocal cord dysfunction, but this is only seen in 28% of patients at baseline

Asthma Workup

- Blood and sputum eosinophilia:
  - Greater than 4% (blood) supports the diagnosis of asthma
  - Its absence does not exclude asthma
  - Greater than 8% may be observed in patients with:
    - Atopic dermatitis.
    - Allergic bronchopulmonary aspergillosis.
    - EGPA
    - Eosinophilic pneumonia
  - Use mepolizumab (anti-IL-5 antibody) if counts 150 cells/µL or an eosinophil count of 300 cells/µL within the past 12 months
  - Adjust ICS with sputum eosinophilia

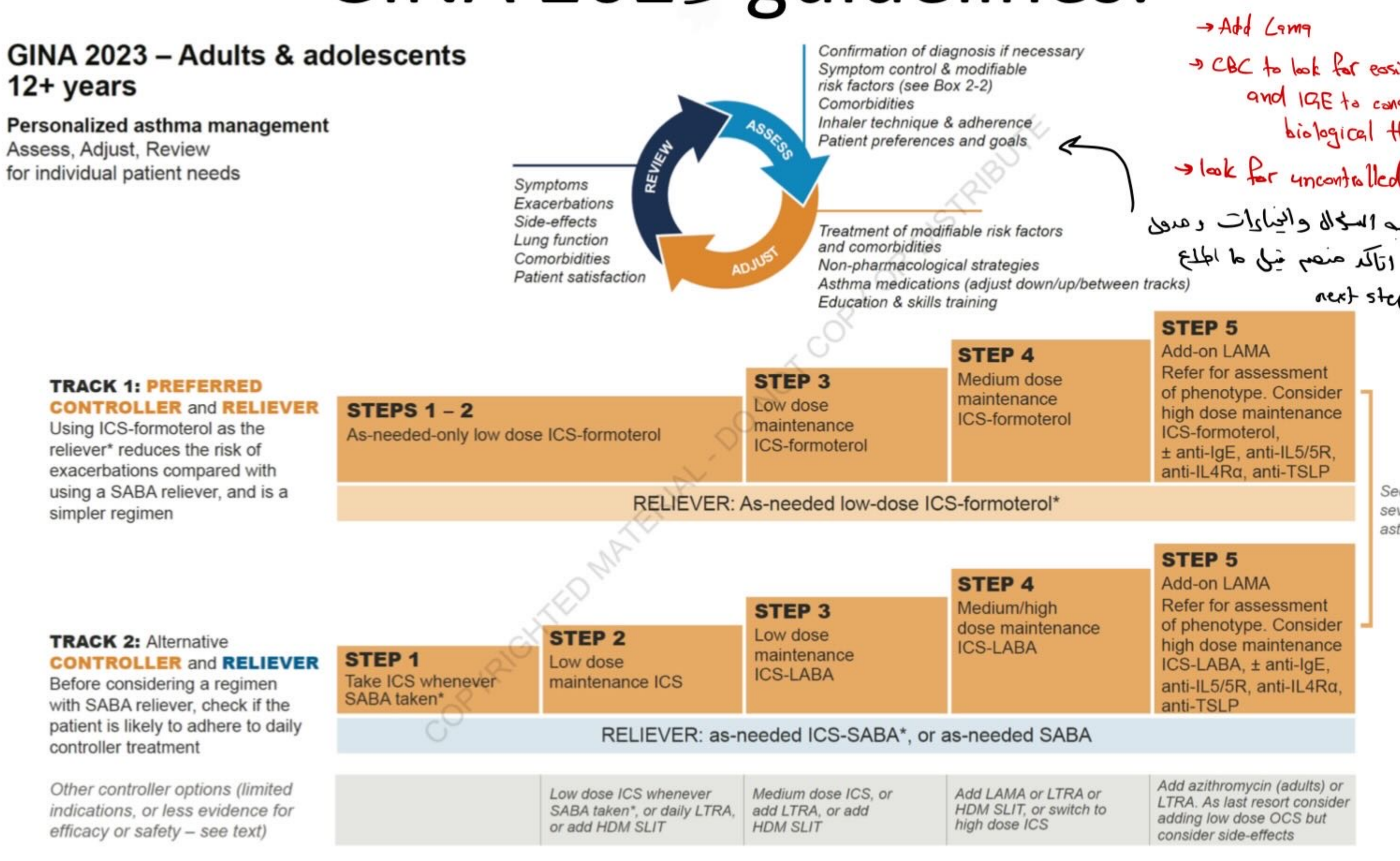
- Serum Immunoglobulin E:
  - Total serum immunoglobulin E levels greater than 100 IU are frequently observed in patients experiencing allergic reactions
  - Observed also in: (allergic bronchopulmonary aspergillosis, EGPA)
  - Normal levels do not exclude the diagnosis of asthma
  - Elevated levels are required for chronic asthma patients to be treated with omalizumab (Xolair)
    ↑ IGE + confirmed asthma

PFT:

Reversibility: increase of 12% and 200 mL after the administration of a short-acting bronchodilator → either in FEV_1 or in FVC

* methacoline challenge test → 20% decrease FEV_1
* mannitol " " " → 15% " " "
* Peak flow monitoring → 20% variability between morning and night

GINA 2023 guidelines:



*مثلا ممكن يجي مريض باعراض asthma
و مكتوب انه باخذ medium dose
و سائلي شو ال best next step ؟
→ Add Lama
→ CBC to look for eosinophilia and IGE to consider biological therapy
→ look for uncontrolled reflux
بتوجه السؤال والخيارات ومدى
لازم اتأكد منهم قبل ما اطلع
عال next step

Acute Exacerbation

- Short acting bronchodilators . salbutamol
- Steroids hydrocortisone IV
- Heliox: 80:20 hilium + O_2
- Intubation

33- What is the best test used for the evaluation of the severity of an asthma attack?

a. FEV1
b. FVC
c. PEF (peak exp flow)
d. PIF
e. DLCO

Answer: C