Kronik Astım Yönetimi
GINA 2025 Yenilikler

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Göğüs Hastalıkları Anabilim Dalı

- Tanı/tanımlarda değişiklikler var mı?
- Tedavide değişiklikler var mı?
- Ağır astımda yenilikler

Astımda Semptomlar

Tanısal Özellik	Astım Tanısını Kesinleştiren Kriterler
1. Öyküde değişken solunumsal semptomlar	
Hırıltı, nefes darlığı, göğüste skışma ve öksürük Tanımlamalar toplumun kültürel yapısı ve yaşa göre değişiklik gösterebilr	• Genellikle birden fazla solunumsal semptom vardır (yetişkinlerde astıma bağlı izole öksürük nadirdir) • Semptomların sıklığı ve şiddeti zaman içinde değişiklik gösterebilir. • Semptomlar gece veya sabah uyanınca kötüleşir. • Semptomlar sıklıkla egzersiz, gülme, allerjenler, soğuk tetiklenir. • Semptomlar sıklıkla viral enfeksiyonlarla birlikte ortaya da kötüleşir.

Biomarker	Clinical context or population	Clinical utility of biomarker
1. INITIAL DIAGNOSIS OF ASTHMA		
Blood eosinophil count (BEC)	Adults with typical symptoms of asthma, but normal or obstructive spirometry without a positive bronchodilator responsiveness test	In a patient with typical asthma symptoms, high BEC may support a diagnosis of Type 2 asthma, but consider non-asthma causes of elevated BEC (as above). Low BEC does not rule out asthma.[46,700,971-974] Diagnosis of asthma is further supported if there is a clinical response to asthma treatment (see Box 1-1 [p.24] and Box 1-2 [25]).
FeNO	Adults with typical symptoms of asthma, normal or obstructive spirometry without a positive bronchodilato responsiveness test	In a patient with typical asthma symptoms, a high FeNO may support a
2. PHENOTYPING OF ASTHMA		
2.1 *Mild-to-moderate asthma*		
BEC	Identification of asthma phenotypes in adults and adolescents	High BEC in a patient with an established diagnosis of asthma is consistent with eosinophilic asthma.[19,47,985]
FeNO	Identification of asthma phenotypes in adults and adolescents	High FeNO in a patient with an established diagnosis of asthma is consistent with Type 2 asthma.[19,47,985]
Serum total IgE Allergen-specific IgE	Identification of asthma phenotypes in adults, adolescents and children	One or more positive tests for a clinically-relevant allergen-specific IgE (or skin prick tests) in a patient with an established diagnosis of asthma is consistent with allergic asthma,[19,47,985] when consistent with a medical history of symptoms triggered by exposure to specific aeroallergen(s).

TİP 2 BİOMARKER LARIN ROLÜ

- Tipik astım semptomları gösteren bir hastada, spirometri veya PEF mevcut değilse veya test negatifse,

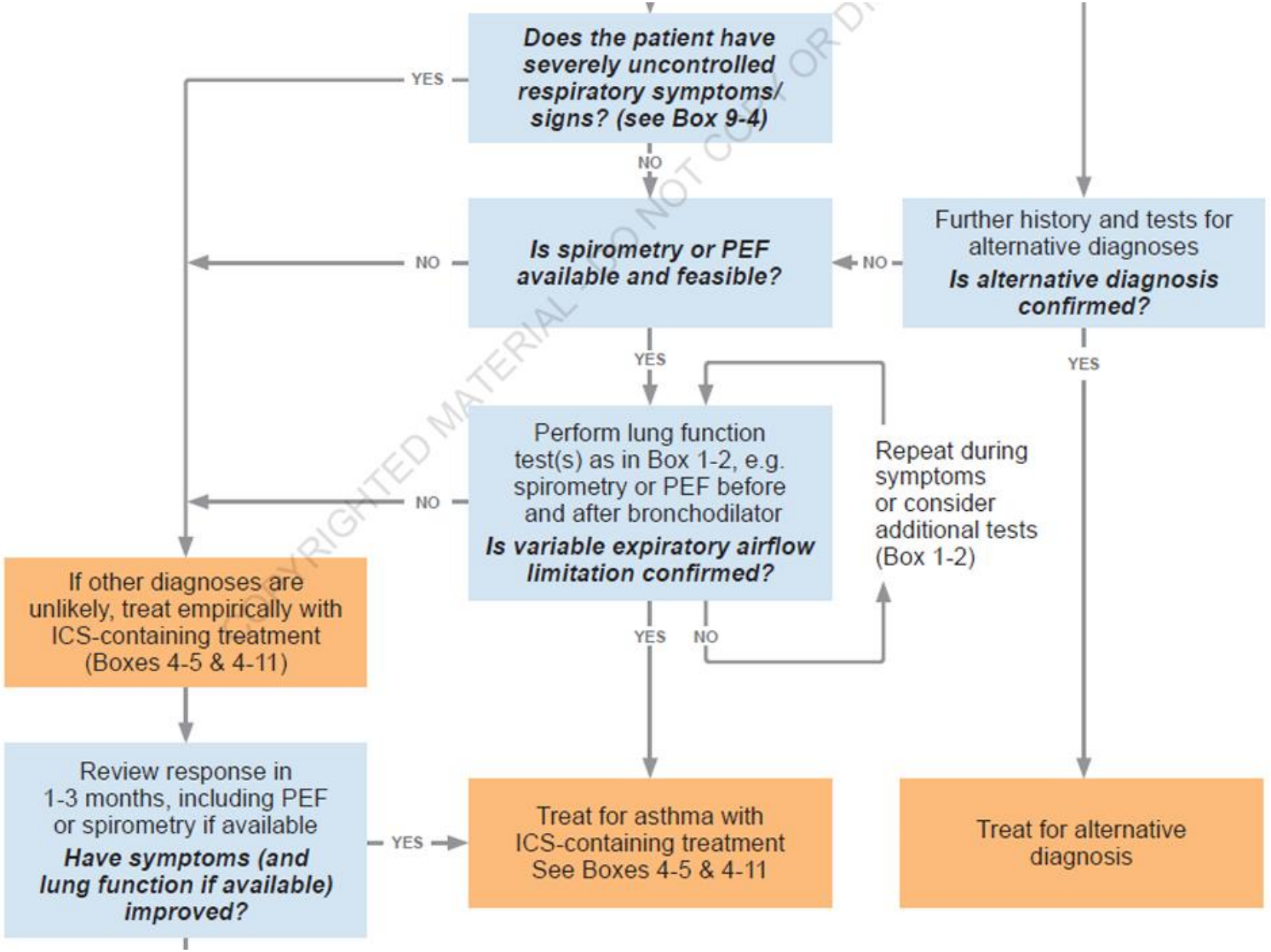
- Tip 2 astım tanısı aşağıdakilerle desteklenir: FeNO: >50 ppb (yetişkinler/ergenler); >35 ppb (çocuklar)
- Kan eozinofil sayısı: ulusal/bölgesel referans aralığının üzerinde

- Ancak, kan eozinofilleri ve FeNO, alerjik durumlar ve paraziter enfeksiyonlar dahil olmak üzere diğer astım dışı durumlar nedeniyle de yükselebilir.

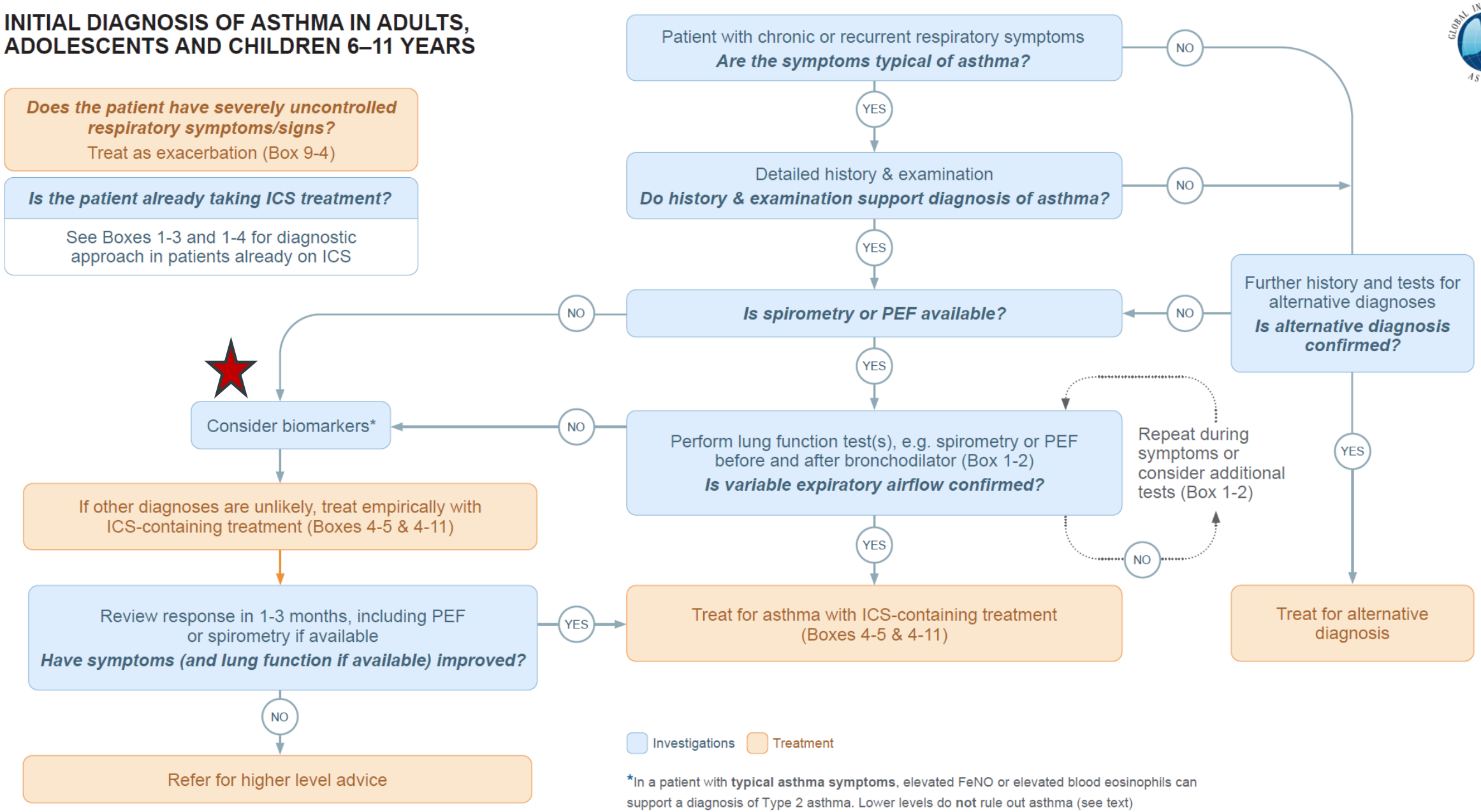
- Düşük kan eozinofilleri ve düşük FeNO astımı ekarte etmez

KLİNİKTE NE İŞİMİZE YARAR

- Astım tanısı
- Astım fenotiplemesi
- Prognoz: alevlenme riski
- Tedavi seçimi veya yanıtı öngörme (hafif, orta, şiddetli astım)


Does the patient have severely uncontrolled respiratory symptoms/ signs? (see Box 9-4)
YES
NO
Is spirometry or PEF available and feasible?
NO
Further history and tests for alternative diagnoses
Is alternative diagnosis confirmed?
NO
YES
YES
Perform lung function test(s) as in Box 1-2, e.g. spirometry or PEF before and after bronchodilator
Is variable expiratory airflow limitation confirmed?
NO
Repeat during symptoms or consider additional tests (Box 1-2)
YES
NO
If other diagnoses are unlikely, treat empirically with ICS-containing treatment (Boxes 4-5 & 4-11)
Review response in 1-3 months, including PEF or spirometry if available
Have symptoms (and lung function if available) improved?
YES
Treat for asthma with ICS-containing treatment See Boxes 4-5 & 4-11
Treat for alternative diagnosis

INITIAL DIAGNOSIS OF ASTHMA IN ADULTS, ADOLESCENTS AND CHILDREN 6–11 YEARS



FeNO: fractional exhaled nitric oxide; ICS: inhaled corticosteroids; PEF: peak expiratory flow

2. CONFIRMED VARIABLE EXPIRATORY AIRFLOW	
Feature	*Considerations, definitions, criteria*
Excessive variability in expiratory lung function (one or more of the following):	The greater the variations, or the more occasions excess variation is seen, the more confident the diagnosis of asthma. If initially negative, tests can be repeated during symptoms or in the early morning. If spirometry is not possible, PEF† may be used, but it is less reliable.
Positive bronchodilator (BD) responsiveness (reversibility) test with spirometry (or PEF†)	*Adults*: increase from baseline in FEV_1 or FVC of ≥12% and ≥200 mL, with greater confidence if the increase is ≥15% and ≥400 mL; or increase in PEF† ≥20% if spirometry is not available. *Children*: increase from baseline in FEV_1 of ≥12% predicted (or in PEF† of ≥15%). Measure change 10–15 minutes after 200–400 mcg salbutamol (albuterol) or equivalent, compared with pre-BD readings. Positive test more likely if BD withheld before test: SABA ≥4 hours, long-acting bronchodilators 24–48 hours (see below).
Excessive variability in twice-daily PEF over 2 weeks*	*Adults*: average daily diurnal PEF variability >10%* *Children*: average daily diurnal PEF variability >13%*
Increase in lung function after 4 weeks of treatment	*Adults*: increase from baseline in FEV_1 by ≥12% and ≥200 mL (or PEF† by ≥20%) after 4 weeks of daily ICS-containing treatment *Children*: increase from baseline in FEV_1 of ≥12% predicted (or in PEF† of ≥15%).

Bronchodilator (BD) responsiveness

- **Untreated asthma:** patients obtain quick symptomatic relief with rapid-onset BD
  - Reflected in an increase in FEV_1 and PEF (and sometimes FVC) within 10-15 minutes
- **Random BD testing** has very limited utility, especially if long after disease onset *(Beasley et al, AJRCCM 2024)*
  - Asthma is variable: symptoms (and bronchoconstriction) not present all the time
  - ICS-containing treatment → increased pre-bronchodilator FEV_1 → decreased BD responsiveness
  - Longer asthma duration → some patients develop persistent airflow limitation → decreased BD responsiveness
  - Some patients with a diagnosis of COPD (with/without asthma) have significant BD responsiveness
- **Current ERS/ATS criterion for BD responsiveness in clinical practice** is an increase in FEV_1 or FVC from baseline by ≥12% and ≥200 mL of the **baseline** value
  - Used as one of gold standards in 2022 ERS Guidelines on Diagnosis of Asthma *(Louis et al, ERJ 2022)*
- **ERS/ATS Technical Standards Committee** proposed changing this criterion to an increase in FEV_1 or FVC from baseline by >10% of the **predicted** value *(Stanojevic et al, ERJ 2021)*
  - Based on data for mortality; not compared with other diagnostic tests for asthma
  - The Technical Committee did not advocate adoption of this change for clinical practice
- GINA will review this again when more data are available; no change recommended in the meantime

Yüksek Eozinofil:

Erkeklerde
Sabahları öğleden sonraya göre
Sigara içenlerde
Parazit enfeksiyonlarında
Alerjik hastalıklarda, örneğin atopik dermatit,
alerjik rinit veya alerjene maruz kaldıktan sonra
Diğer astım dışı durumlarda,
örneğin eozinofilik bronşit, EGPA

Kan eozinofilleri düşüktür:

Bazı astım fenotiplerinde
Oral kortikosteroid kullanan hastalarda
(ayrıca inhale / nazal kortikosteroidlerle birlikte)

Yüksek FeNO

Erkeklerde daha yüksek
Öğleden sonra
Alerjik hastalıklarda,
örneğin atopik dermatit, alerjik rinit
Alerjene maruz kaldıktan 24 saat sonra
(duyarlılık varsa)

FeNO düşüktür:

Sigara içenlerde
Bronkokonstriksiyon sırasında
Düşük akciğer fonksiyonu olanlarda
İnhale kortikosteroid alan hastalarda
(ayrıca oral / nazal kortikosteroidlerle birlikte)

GINA 2025 - PERSONALIZED ASTHMA MANAGEMENT

REVIEW

- Symptoms
- Exacerbations
- Side-effects
- Comorbidities
- Lung function
- Consider biomarkers
- Patient (and parent/caregiver) satisfaction

ASSESS

- Confirmation of diagnosis if necessary
- Symptom control & modifiable risk factors
- Comorbidities
- Inhaler technique & adherence
- Patient (and parent/caregiver) preferences and goals

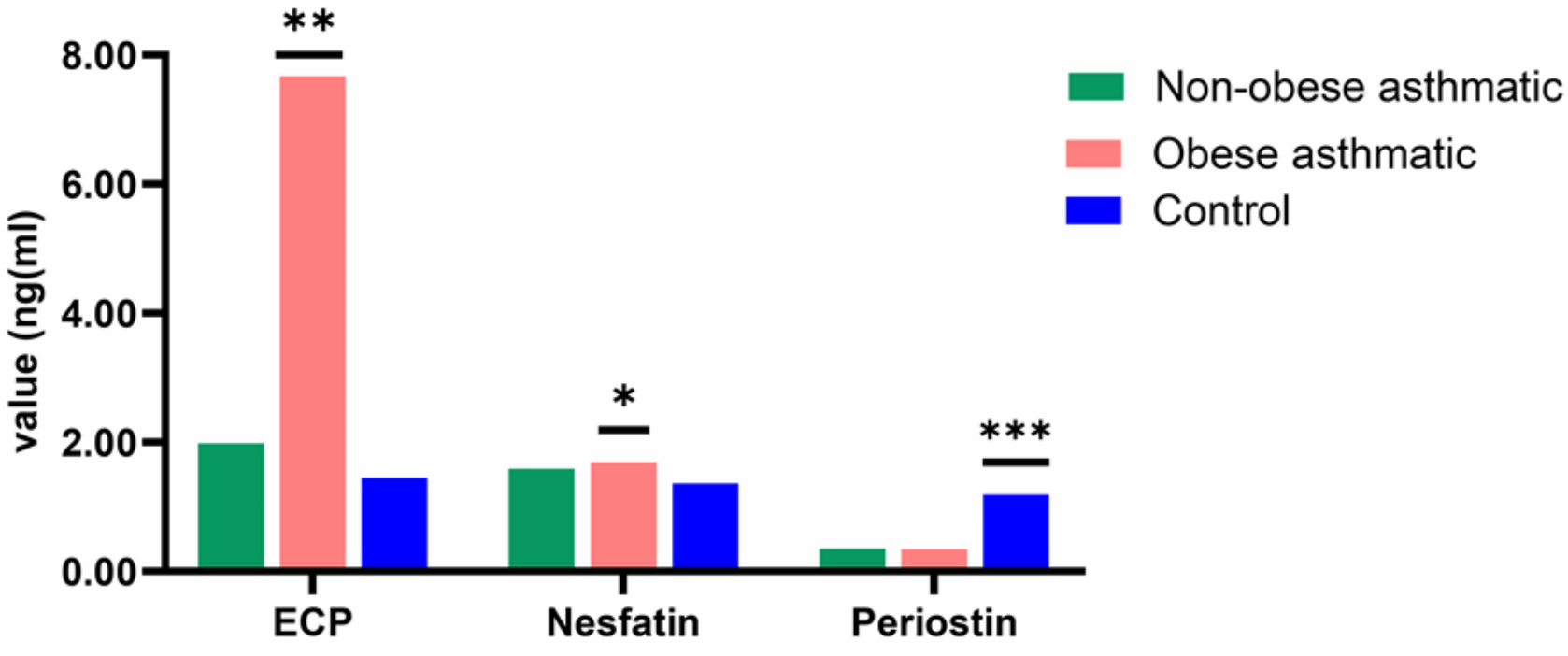
ADJUST

- Treatment of modifiable risk factors and comorbidities
- Non-pharmacological strategies
- Asthma medications including ICS
- Education & skills training, action plan

ICS: inhaled corticosteroids

The role of periostin, eosinophil cationic protein (ECP), nesfatin-1, and NUCB2 in asthma and obesity

Nurhan Sarioglu, MD[a], Ayla Solmaz Avcikurt, MD[b], Adnan Adil Hismiogullari, PhD[c] and Fuat Erel, MD[d]



ECP and periostin have been identified as a predictor of asthma independent of obesity.

J Asthma 2025; 62(5):787-793.

GINA ASTIM TEDAVİ HEDEFLERİ

- Uzun dönem **astım semptom kontrolü**: az/hiç semptom yok, uyku bozukluğu yok, fiziksel aktivitede kısıtlanma yok

- **Uzun dönem riskin azaltılması:** alevlenme yok,
  iyileşmiş/stabil akciğer fonksiyonu,
  OKS yok
  ilaç yan etkisi yok

REMİSYON

- Güncel raporlar çoğunlukla biyolojik tedavi gören ağır astımlı hastalara yöneliktir
- İKS içeren tedaviyle hafif- orta astımda da remisyon görülmektedir ve bazen kendiliğinden düzelmektedir.
- Devam eden solunum semptomları olan hastalarda :
  Multimorbidite, anksiyete ve/veya depresyon, orta veya şiddetli kalıcı hava akımı kısıtlanması vs araştırılmalı

ATAK İÇİN RİSK FAKTÖRLERİ

- Astım semptom kontrolünün bozulmuş olması
- **Yüksek doz SABA** (ayda ≥1 kutu --mortaliteyi ↑)
- **Yetersiz IKS** (reçete edilmemiş, uyumsuz, yanlış inhaler teknik)
- **Komorbiditeler** (Obezite, Kr.Rinosinüzit, GÖR, Gebelik)
- **Sigara içme, allerjen maruziyeti**
- Psikososyal /sosyoekonomik problemler
- **Düşük akciğer fonksiyonu**
- **Tip 2 inflamasyon belirteçleri:**

  (kan eozinofilisi, FeNO ↑)
- Ciddi atak öyküsü

ORACLE 2 Meta-analiz verileri

Inflammatory and clinical risk factors for asthma attacks (ORACLE2): a patient-level meta-analysis of control groups of 22 randomised trials

Oxford Asthma Attack Risk Scale 2 (ORACLE2),

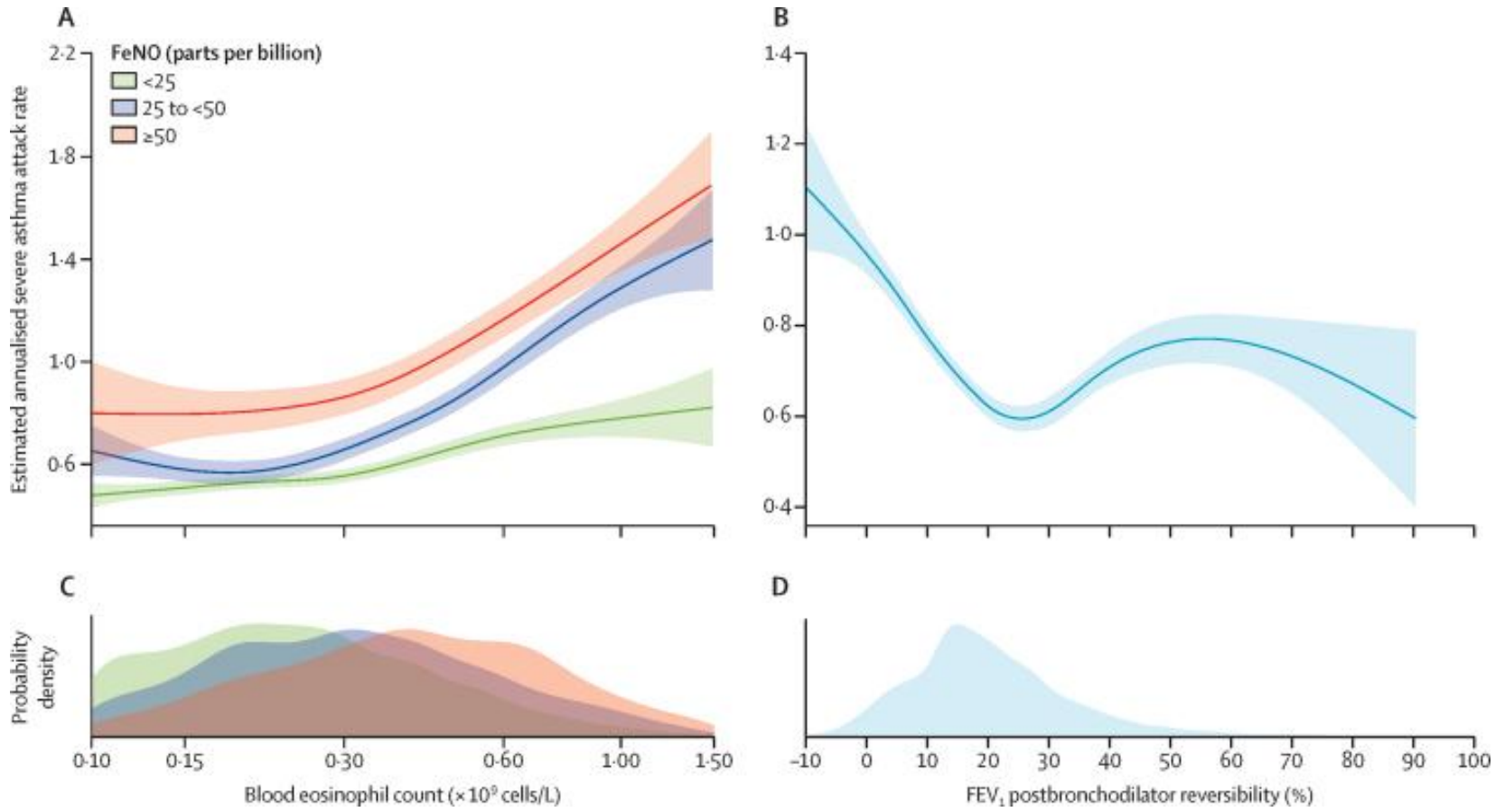
1993 ile 2021 arası 22 RKÇ dahil edilmiş

5972 hasta yıllık atak oranları (orta-şiddetli atak)

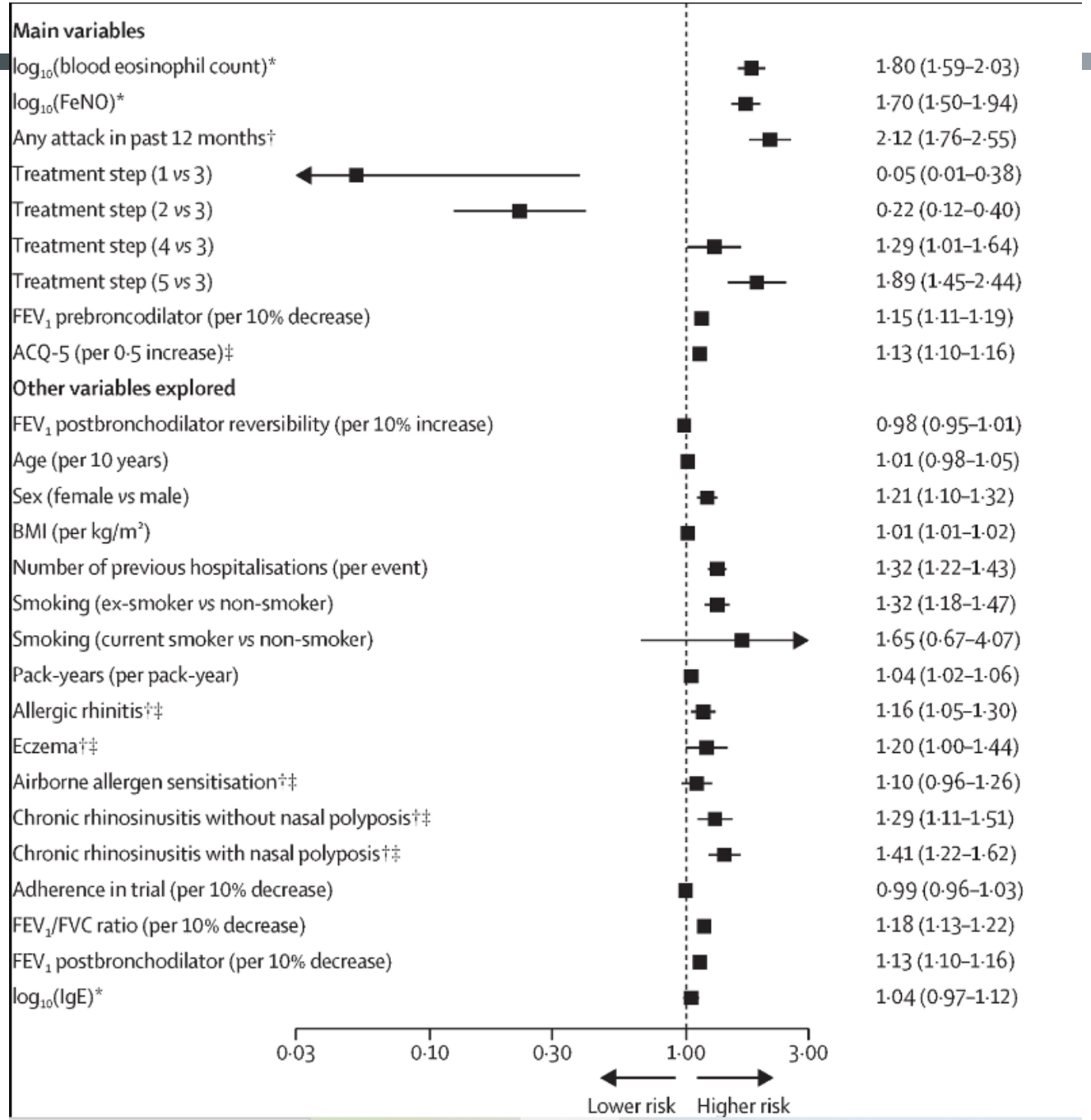
- Yüksek kan eozinofl ve FeNO düzeyi
- Atak öyküsü
- Hastalık şiddeti (ağı astım—orta astıma göre)
- FEV1 de %10 azalma
- ACQ skorunda bozulma
- Bronkodilatör reversibilite--- ciddi atak riskinin daha düşük olmasıyla ilişkilendirilmiştir (%10 artış başına, RR 0,93 [0,90-0,96])

Lancet Respir Med. 2025 Jun;13(6):505–516.

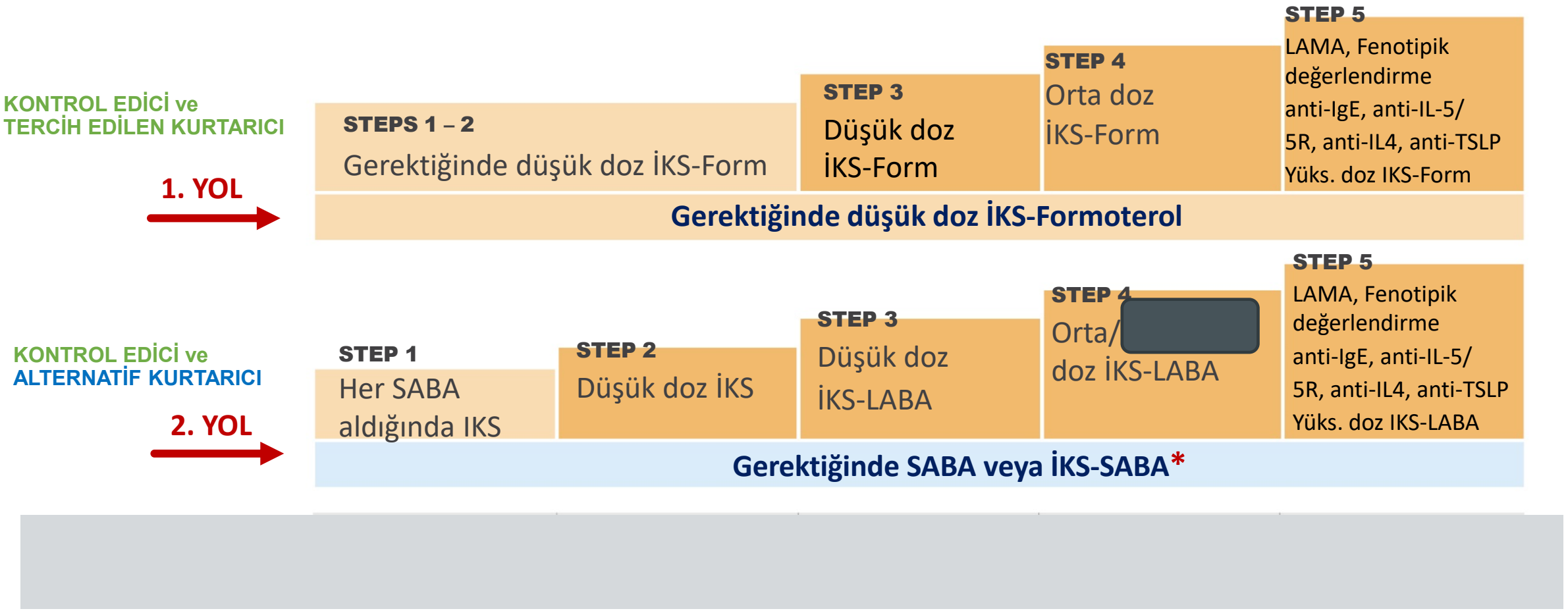
Inflammatory and clinical risk factors for asthma attacks (ORACLE2): a patient-level meta-analysis of control groups of 22 randomised trials



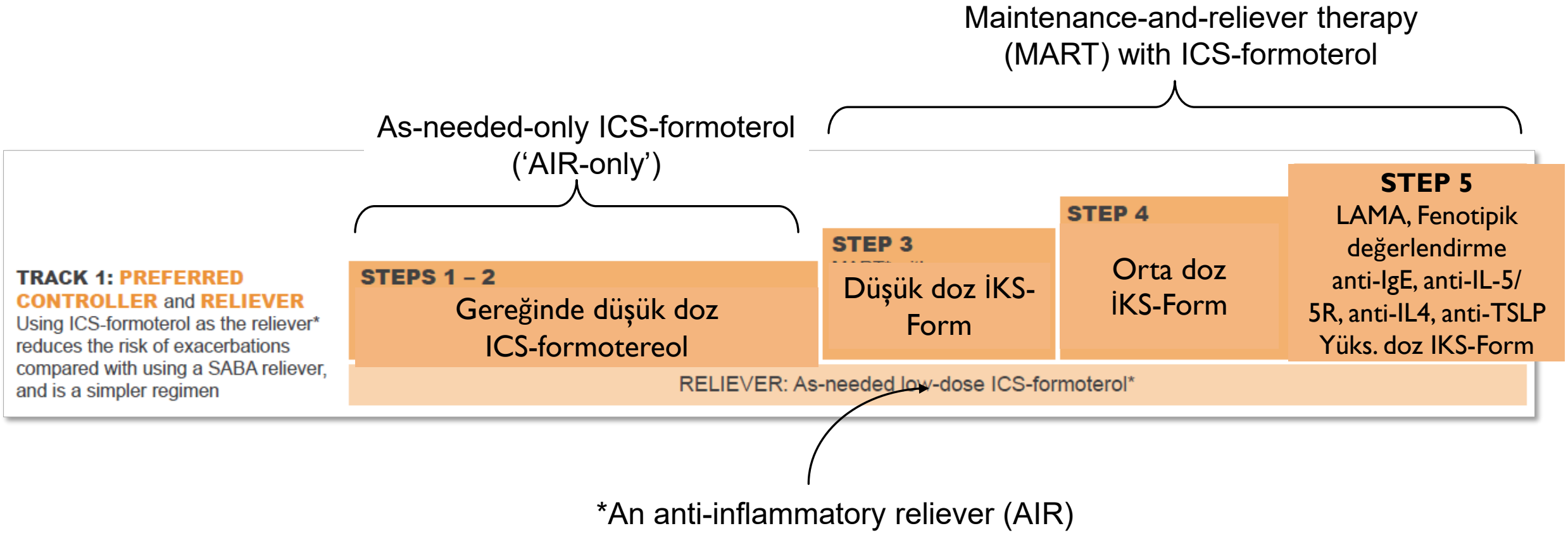
- Lancet Respir Med. 2025 Jun;13(6):505–516.


Main variables
log10(blood eosinophil count)*
log10(FeNO)*
Any attack in past 12 months†
Treatment step (1 vs 3)
Treatment step (2 vs 3)
Treatment step (4 vs 3)
Treatment step (5 vs 3)
FEV1 prebroncodilator (per 10% decrease)
ACQ-5 (per 0·5 increase)‡
Other variables explored
FEV1 postbronchodilator reversibility (per 10% increase)
Age (per 10 years)
Sex (female vs male)
BMI (per kg/m²)
Number of previous hospitalisations (per event)
Smoking (ex-smoker vs non-smoker)
Smoking (current smoker vs non-smoker)
Pack-years (per pack-year)
Allergic rhinitis†‡
Eczema†‡
Airborne allergen sensitisation†‡
Chronic rhinosinusitis without nasal polyposis†‡
Chronic rhinosinusitis with nasal polyposis†‡
Adherence in trial (per 10% decrease)
FEV1/FVC ratio (per 10% decrease)
FEV1 postbronchodilator (per 10% decrease)
log10(IgE)*
1·80 (1·59–2·03)
1·70 (1·50–1·94)
2·12 (1·76–2·55)
0·05 (0·01–0·38)
0·22 (0·12–0·40)
1·29 (1·01–1·64)
1·89 (1·45–2·44)
1·15 (1·11–1·19)
1·13 (1·10–1·16)
0·98 (0·95–1·01)
1·01 (0·98–1·05)
1·21 (1·10–1·32)
1·01 (1·01–1·02)
1·32 (1·22–1·43)
1·32 (1·18–1·47)
1·65 (0·67–4·07)
1·04 (1·02–1·06)
1·16 (1·05–1·30)
1·20 (1·00–1·44)
1·10 (0·96–1·26)
1·29 (1·11–1·51)
1·41 (1·22–1·62)
0·99 (0·96–1·03)
1·18 (1·13–1·22)
1·13 (1·10–1·16)
1·04 (0·97–1·12)
0·03
0·10
0·30
1·00
3·00
Lower risk
Higher risk

GINA 2024-25



Terminology: AIR, AIR-only and MART



AIR: anti-inflammatory reliever; ICS: inhaled corticosteroid; Ig: immunoglobulin; IL: interleukin; LAMA: long-acting muscarinic antagonist; MART: maintenance-and-reliever therapy with ICS-formoterol; SABA: short-acting beta$_2$-agonist; TSLP: thymic stromal lymphopoietin

TRACK 1

AIR Only

STEPS 1 – 2

Gerektiğinde bir inhalasyon
IKS-form

STEP 3 2x1

Sabah akşam 1 inhalasyon
IKS-form ve gereğinde
MART

STEP 4 2x2

Sabah akşam 2 inhalasyon
IKS-fom ve gereğinde
MART

STEP 5

uzmana sevk,
Fenotipik
değerlerndirme
Ağır astımda add
on tedaviler

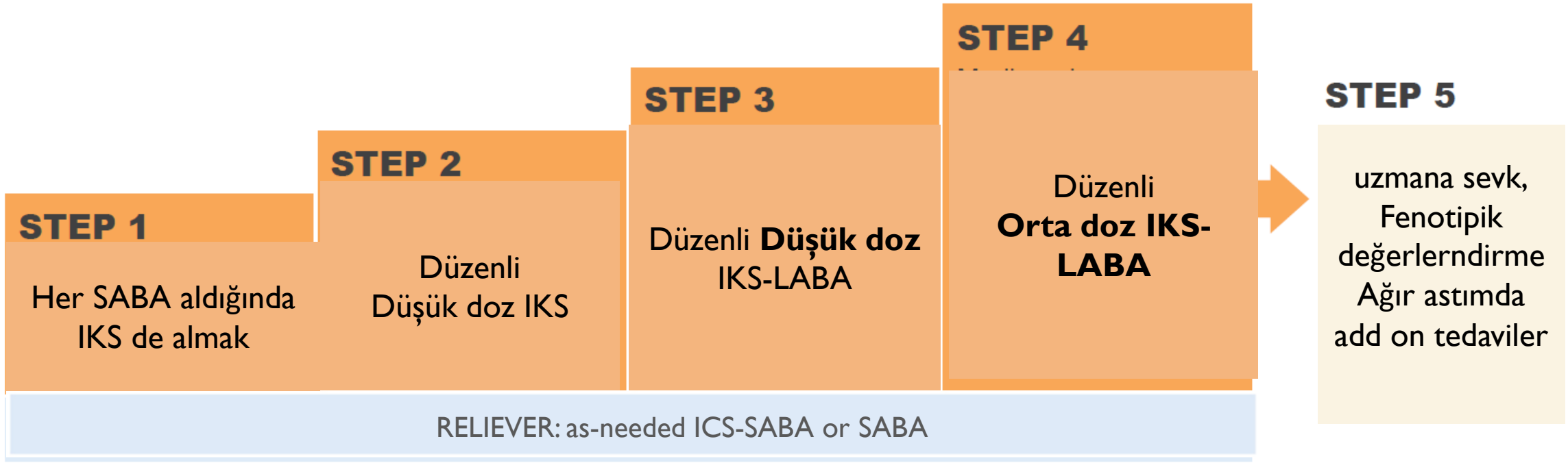
These examples are for budesonide-formoterol 160/4.5 mcg or BDP-formoterol 100/6 mcg, DPI or pMDI. See Box 4-8 for other formulations.

TRACK 1, Steps 1–4: the **PREFERRED** treatment for adults and adolescents.

Using ICS-formoterol as an anti-inflammatory reliever (AIR), with or without maintenance ICS-formoterol,

AIR: anti-inflammatory reliever; BDP: beclometasone dipropionate; DPI: dry powder inhaler; form: formoterol; ICS: inhaled corticosteroid; MART: maintenance-and-reliever therapy with ICS-formoterol; pMDI: pressurized metered dose inhaler; SABA: short-acting beta$_2$-agonist

TRACK 2

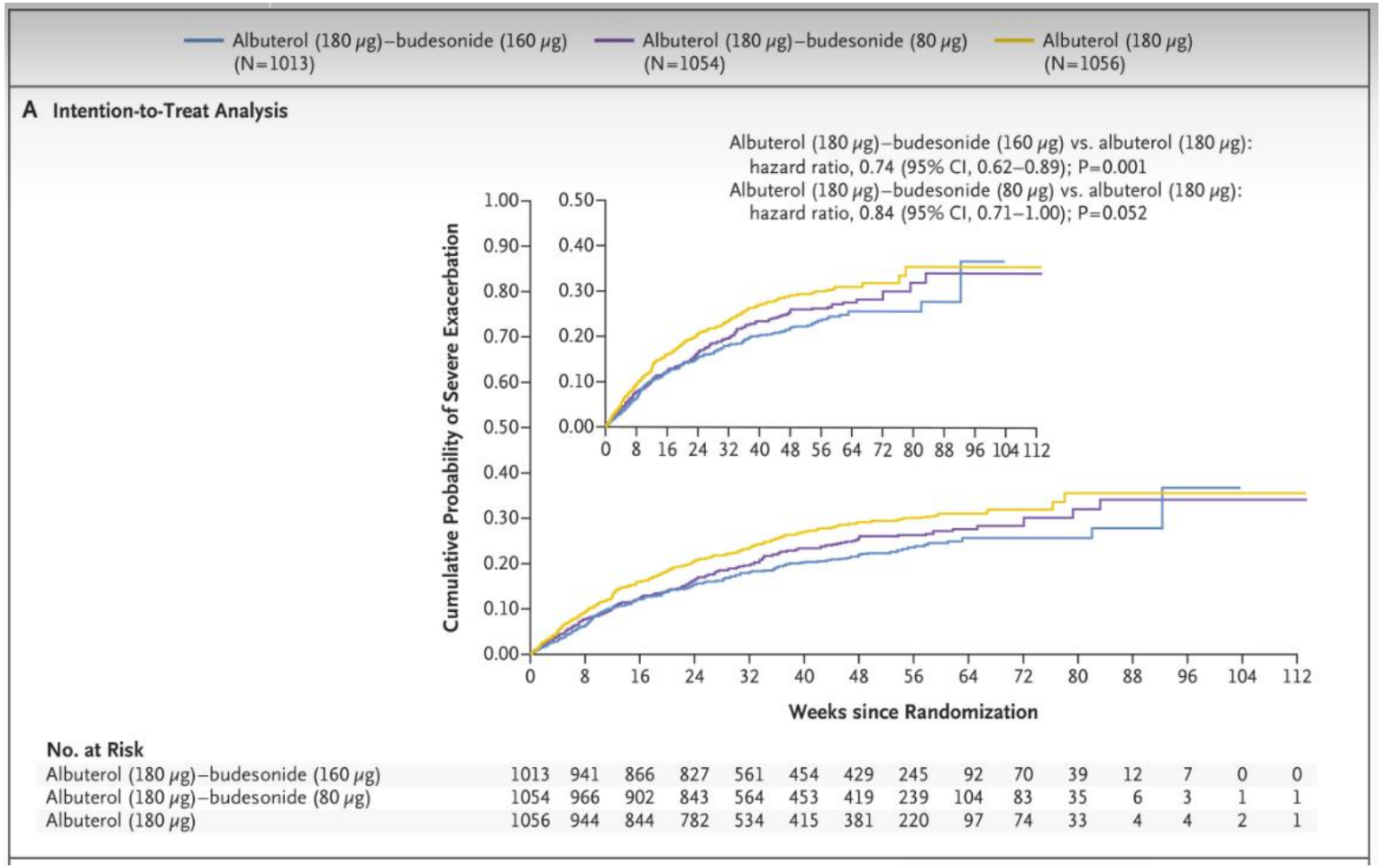


TRACK 2, Steps 1–4: Alternative CONTROLLER and RELIEVER for adults and adolescents.

ICS: inhaled corticosteroid; LABA: long-acting beta$_2$-agonist; SABA: short-acting beta$_2$-agonist

Albuterol–Budesonide Fixed-Dose Combination Rescue Inhaler for Asthma

Alberto Papi, M.D., Bradley E. Chipps, M.D., Richard Beasley, D.Sc., Reynold A. Panettieri, Jr., M.D.,



MANDALA trial

3132 hasta 3 kola randomize
Yüksek doz kombinasyon alan grupta
tek başına albuterole göre
ciddi astım atak riski %26 daha düşük

düşük doz kombinasyon grubunda
albuterol ile benzer

N Engl J Med 2022;386(22):2071

YOLAK 1 VE 2 İÇİN DİĞER SEÇENEKLER

- Spesifik alerjen mmünoterapi (Ev akar alerjisi, FEV1> %70)
- LTRA (IKS den daha az etkili)
- LAMA-Step 4

LAMA EKLENMESİ

Tek başına LAMA eklenmesi ya da üçlü kombinasyon

- **Flutikazon furoat-vilanterol-umeklidinyum**
- Beklomatozon-formoterol-glikopironyum
- Mometazon-indekaterol-glikopironyum

Orta ve yüksek doz IKS-LABA ile kontrol altına alınmayan hastalarda uygun

- Akciğer fonksiyonlarında ılımlı iyileşme,
- Bazı çalışmalarda ciddi alevlenmelerde %17 azalma

Box 4-2. Low, medium and high daily metered doses of inhaled corticosteroids (alone or with LABA)

This is not a table of equivalence, but suggested total daily doses for "low", "medium" and "high" dose ICS options for adults/adolescents (Box 4-6, p.77) and children 6–11 years (Box 4-12, p.96), based on product information.

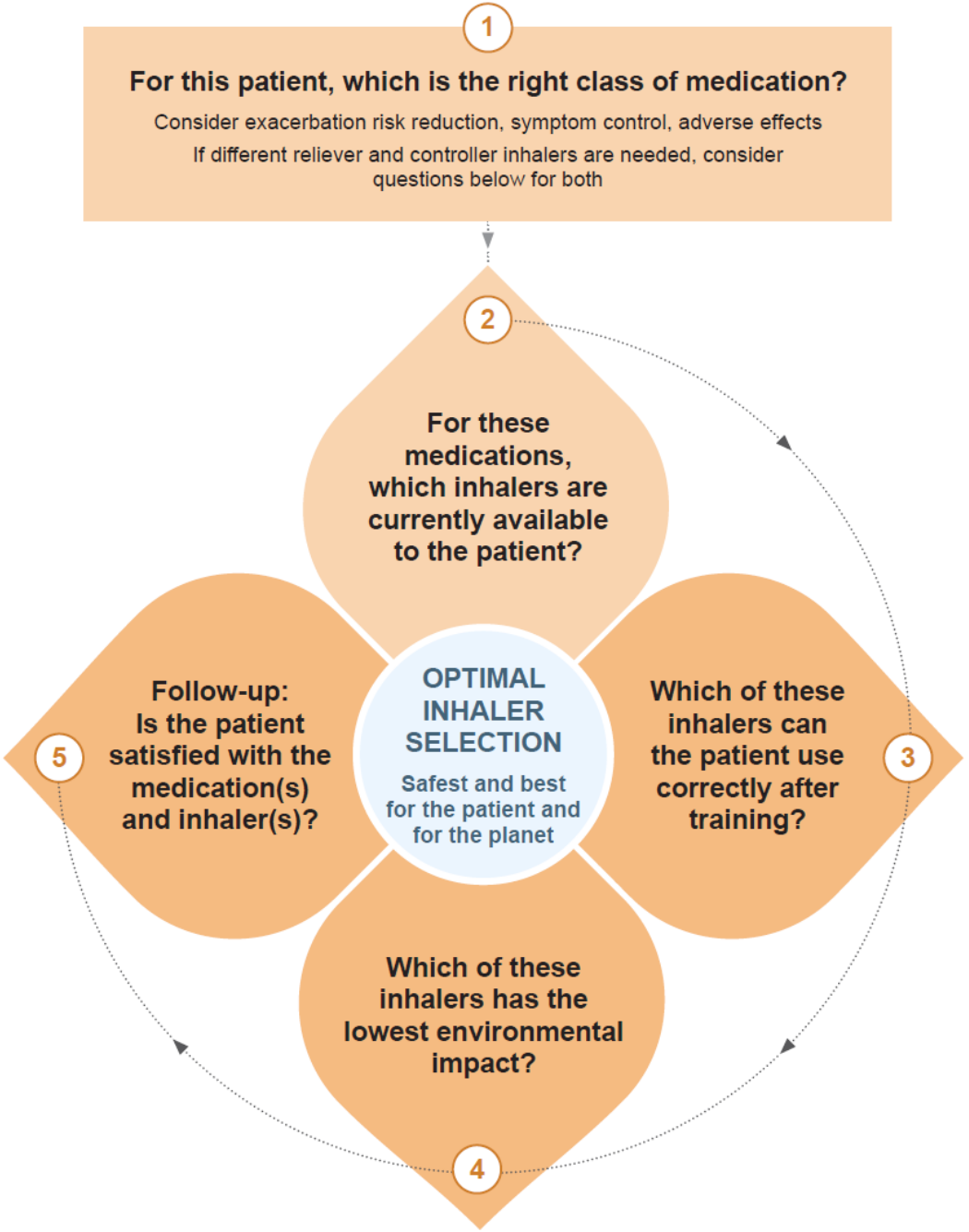
The table does NOT imply potency equivalence. For example, if you switch treatment from a "medium" dose of one ICS to a "medium" dose of another ICS, this may represent a decrease (or an increase) in potency, and the patient's asthma may become unstable (or they may be at increased risk of adverse effects).

Inhaled corticosteroid (alone or in combination with LABA)	Total daily ICS dose (mcg) – see notes above		
	Low	Medium	High
Adults and adolescents (12 years and older)			
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 – see product information		
Mometasone furoate (pMDI, standard particle, HFA)	200–400		>400

Change in 2025

DPI: dry powder inhaler; HFA: hydrofluoroalkane propellant; ICS: inhaled corticosteroid; LABA: long-acting beta$_2$-agonist; pMDI: pressurized metered dose inhaler

SHARED DECISION-MAKING ABOUT CHOICE OF INHALER DEVICE



exacerbations, in risk of adverse effects of OCS, and in urgent health care, but also, if implemented with a dry powder inhaler (as in most of the clinical trials), it provides a very large reduction in carbon footprint.[7,87] For both Track 1 and Track 2, GINA fully supports initiatives to encourage use of dry-powder inhalers, where they are available and clinically appropriate, and to replace environmentally harmful propellants with low-carbon alternatives. At the same time, it is

5 *Investigate* further and provide *patient support*

- Investigate for differential diagnoses/ comorbidities and treat/refer as appropriate
  - CXR or HRCT chest, if not already done
  - Skin prick testing or specific IgE for relevant allergens, if not already done
  - Investigate for other airway conditions, e.g. AERD, CRSwNP, ILO, OSA, ABPA, bronchiectasis, airway stenosis or malacia, infection (e.g. TB, MAC)
  - Investigate for adverse effects of OCS or high-dose ICS, e.g. DEXA scan; a.m. serum cortisol for adrenal insufficiency
  - Investigate for other non-pulmonary conditions, e.g. GERD, cardiac failure, pulmonary embolic disease, anxiety, depression, depending on clinical suspicion and tests already done
  - If blood eosinophils ≥300/µl, look for and treat non-asthma causes, including parasites (e.g. Strongyloides serology, or stool examination)
  - If hypereosinophilia, e.g. ≥1500/µl, consider causes such as EGPA
- Consider need for social/psychological support
- Involve multidisciplinary team care (if available)

6 Assess the *severe asthma phenotype*

DIAGNOSIS: ***Severe asthma***

Do biomarkers suggest Type 2 inflammation?

yes

no

Biomarkers that, in severe asthma, suggest Type 2-high inflammation

- Blood eosinophils ≥150/µl and/or
- FeNO ≥20 ppb and/or
- Sputum eosinophils ≥2%, and/or
- Asthma is clinically allergen-driven

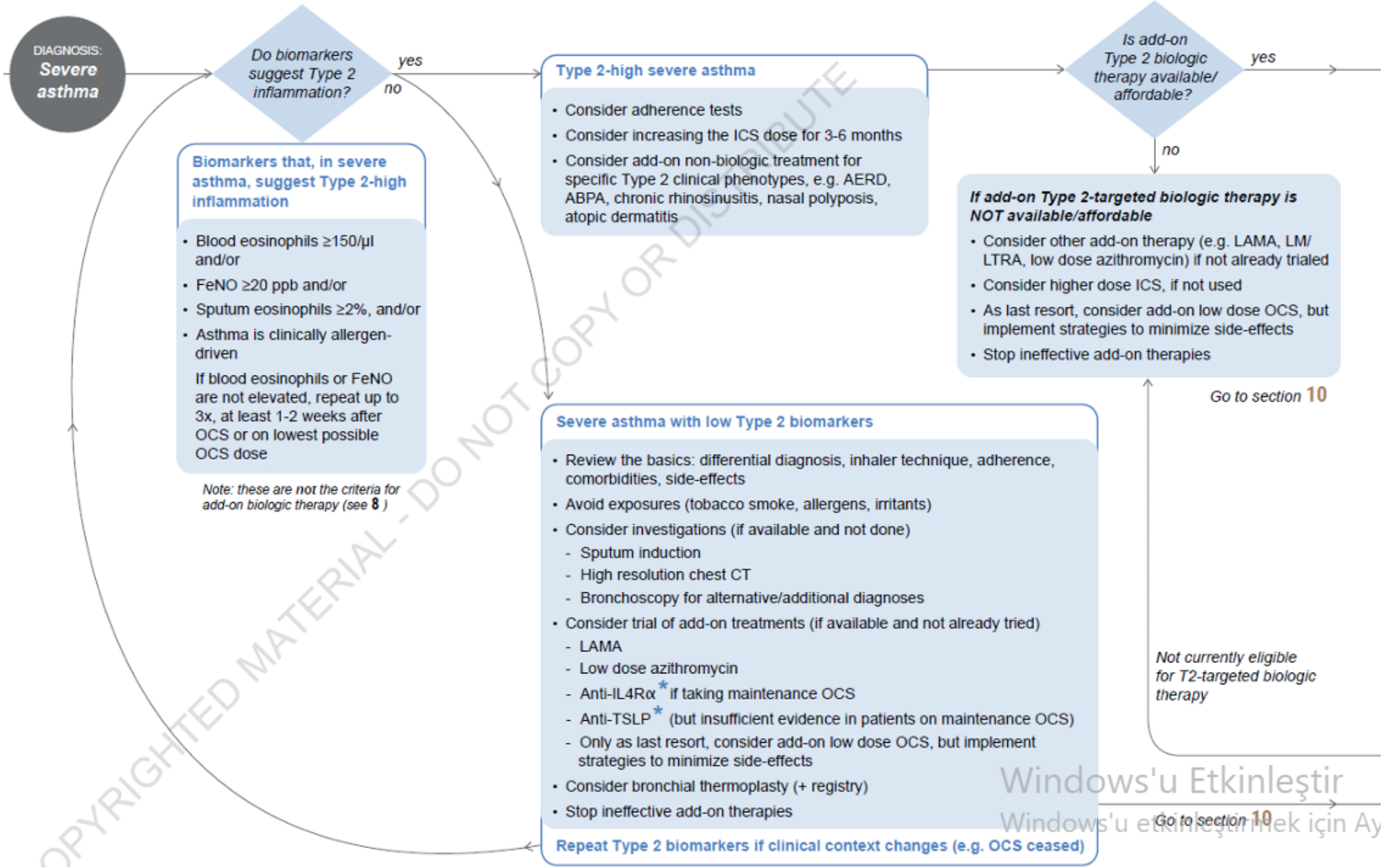
If blood eosinophils or FeNO are not elevated, repeat up to 3x, at least 1-2 weeks after OCS or on lowest possible OCS dose

*Note: these are **not** the criteria for add-on biologic therapy (see **8**)*


FeNO by
NIOX®


62446043492
25ppb
#00031
FeNO by
NIOX®

6 Assess the *severe asthma phenotype* → 7 Consider *other* treatments



AĞIR ASTIM DA BİYOLOJİK SEÇİMİ

- Lokal erişim mümkün mü (SUT koşulları)
- Tip 2 komorbiditeler (nazal polip, atopik dermatit)
- Alerjenle tetiklenen septomlar var mı?
- Yanıtı öngören faktörlere bakın
- Maliyet
- Uygulama yolu (sc, iv) ve sıklığı
- Hasta tercihi

Ağır astım fenotiplerini değerlendirin ve tedavi edin

Bölüm 3 teki tedaviyi uygun hale getirmeye devam edin (İnhaler tekniği, uyum, komorbiditeler)

6b Tip 2 hedefli biyolojik ajanları eklemeyi düşün

Yüksek doz İKS-LABA tedavisi altında semptom kontrolü kötü/ ataklar mevcut, eozinofilik /alerjik belirteçleri / idame OKS ihtiyacı olan hastada Tip 2 hedefli biyolojik tedavileri göz önüne alın

Mevcut tedaviler içinde seçim yaparken geri ödeme koşullarını ve yanıtı öngören faktörleri göz önüne alın

Ayrıca maliyet, doz sıklığı, uygulama yolu (sc, iv), hasta tercihlerini göz önüne alın

İlk hangi biyolojikle başlamak uygun

Anti-IgE

Hasta anti-IgE için (ağır alerjik astım için) uygun mu?
- Deri prick testinde/ spesifik IgE de duyarlılık
- Total serum IgE si ve ağırlığı doz aralığında olmalı
- Son bir yıldaki ataklar

Hangi faktörler anti-IgE'ye iyi yanıtı öngörebilir?
- Kan eozinofil ≥ 260
- FeNO ≥ 25 ppb
- Alerjene bağlı semptomlar
- Çocuklukta başlayan astım

hayır ⇕ hayır

Anti-IL5 / Anti-IL5R

Hasta anti-IL5 / anti-IL 5R için (ağır eozinofilik astım için) uygun mu?
Son bir yıldaki ataklar
Kan eozinofil sayısı ≥ 150 veya 300

Hangi faktörler anti-IL5/5R ye iyi yanıtı öngörebilir?
- Yüksek kan eozinofilleri+++
- Önceki yıl çok sayıda atak+++
- Erişkin yaşta başlayan astım++
- Nazal polipozis ++

hayır ⇕ hayır

Anti IL-4R

Hasta anti-IL 4R için (ağır eozinofilik astım için) uygun mu?
Son 1 yıldaki ataklar
Kan eozinofil ≥ 150 µl veya FeNO ≥ 25 ppb veya idame OCS ihtiyacı olması

Hangi faktörler anti-IL4R ye iyi yanıtı öngörebilir?
- Yüksek kan eozinofilleri+++
- Yüksek FeNO++

Anti-TSLP
Tezepelımab

AĞIR EOZİNOFİLİK ASTIM

- **Mepolizumab---**EGPA, Hipereozinofilik sendrom, Kronik Rinosinüzit+Nazal Polip
- **Benralizumab---**EGPA
- **Reslizumab**

Add on tedavileri yanıt iyi ise devam et yanıt yoksa kes ama İKS kesme

NON-RECOMMENDED BRONKODILATORS

- Fenoterol (Hipokalemi ve Kardiyovasküler etkiler)
- Oral bronkodilatör (**oral SABA ya da teofilin**)
- **İKS olmadan** formoterol
- **İKS olmadan** antikolinerjik ilaçlar (SAMA; LAMA)

HAVA KOŞULLARI VE ASTIM

Aşırı sıcak, soğuk, fırtına, kum toz, yangınlar

- **Sıcak dalgaları**, yaklaşık 1 hafta boyunca astım nedeniyle acil servise başvurma riskini %7–34 oranında artırmaktadır.
- **Soğuk hava** dalgaları acil servis ziyaretleri riskini %20 artırır
- **Fırtına astımı**: -- çim poleni/mantarlarla ilişkili astım alevlenmelerinin artması

Etki Azaltma stratejileri

- Yüz maskesi
- Isı kontrollü ortam
- Hava durumunu izleyen mobil cihazlar

Box 9-2. Medication options for written asthma action plans

Track & step	Usual asthma treatment	Short-term action plan change (1–4 weeks) for worsening asthma	Evidence level
GINA Track 1 with ICS-formoterol reliever*			
Steps 1–2	As-needed-only ICS-formoterol (AIR-only)	For symptom relief, use 1 inhalation of ICS-formoterol (e.g., budesonide-formoterol 200/6 [160/4.5] mcg or BDP-formoterol 100/6 mcg) whenever needed. Maximum 12 inhalations in any 24-hour period.	A
Steps 3–5	Maintenance and reliever therapy (MART) with ICS-formoterol	Continue usual maintenance dose of ICS-formoterol. For symptom relief, use 1 inhalation of ICS-formoterol whenever needed. Maximum total 12 inhalations in any 24-hour period (as-needed + maintenance doses).	A
GINA Track 2 with combination ICS-SABA reliever#			
Step 1	As-needed-only combination ICS-SABA	For symptom relief, take 2 inhalations of ICS-SABA as needed. Do not take more than 6 doses (12 inhalations) in any 24-hour period.	B
Step 2	Maintenance ICS	Continue usual maintenance ICS dose. For symptom relief, take 2 inhalations of ICS-SABA as needed. Do not take more than 6 doses (12 inhalations) of ICS-SABA in any 24-hour period.	A
Steps 3–4	Maintenance ICS-LABA	Continue usual maintenance ICS-LABA dose. For symptom relief, take 2 inhalations of ICS-SABA as needed. Do not take more than 6 doses (12 inhalations) of ICS-SABA in any 24-hour period.	B

Astım Eylem Planı

GINA Track 2 with SABA reliever			
Step 1	As-needed SABA plus ICS (separate inhalers)	For symptom relief, use SABA as below, and take ICS whenever SABA is taken (e.g., 1 inhalation of BDP 40 mcg per inhalation of SABA).	B
Step 2	Maintenance ICS	Consider quadrupling maintenance dose of ICS for 1–2 weeks. For symptom relief with SABA, see below.	B
Steps 3–4	Maintenance ICS-formoterol	Consider quadrupling maintenance dose of ICS-formoterol for 1–2 weeks. For symptom relief with SABA, see below.	B
	Maintenance ICS-LABA (non-formoterol)	Consider stepping up to higher dose formulation of ICS-LABA, if available. In adults, consider adding a separate ICS inhaler to quadruple ICS dose. For symptom relief with SABA, see below.	D
Reliever	As-needed SABA	For symptom relief, take 2 inhalations of SABA every 4–6 hours if needed. More frequent use or more inhalations of SABA is not recommended.	-

Severe exacerbations – all regimens	
All steps	• For severe exacerbations, e.g., PEF or FEV1 <60% personal best or predicted), or if not responding to above treatment over 2–3 days, consider adding short-course of oral corticosteroids. After first dose, morning dosing is preferable to minimize insomnia. Advise patients about potential adverse effects.


NEFES
ZİRVESİ