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Practical Asthma Management: A Clinical Case Series

Case Study 1: Newly Diagnosed Asthma: Starting the Right Therapy Early

Case Presentation

Patient Profile

- 19-year-old male college student
- Symptoms for 4 months
- History of allergic rhinitis; non-smoker

Symptoms & Triggers

- Recurrent dry cough, wheeze, chest tightness
- Symptoms on 2–3 days/week
- Night waking: 2 episodes in the past month
- Reliever use: Used a reliever inhaler from a friend on 3–4 occasions, with temporary relief
- Worse with exercise, dust exposure, and weather change
- Missed 2 sports sessions in the last month

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Smart Masterclass

Clinical Assessment

Physical Findings	Spirometry Results
• Afebrile, comfortable at rest, SpO2 98% on room air • Mild expiratory wheeze on forced expiration • No signs of acute infection	• Pre-BD FEV1: 2.68 L (78% predicted) • Post-BD FEV1: 3.02 L (88% predicted) • Change: +340 mL, +12.7% • FEV1/FVC: improved from 0.71 to 0.79

Based on this presentation, what would be your preferred initial management approach for this young adult?

Diagnosis and Initial Management Decision

Diagnosis: Newly diagnosed asthma in a young adult with mild but clinically relevant symptoms and evidence of reversible airflow limitation.

Option A	Option B — Selected ✓
Reliever-only treatment for symptom relief	An ICS-containing reliever-based strategy that addresses both symptoms and inflammation

Because the patient had:

- → Recurrent symptoms
- → Night waking
- → Recent urgent visits
- → Likely inconsistent real-world adherence if asked to use separate preventer and reliever inhalers

A low-dose ICS-formoterol anti-inflammatory reliever approach was selected.

Reference: Levy ML et al. Br J Gen Pract. 2024 Jan 25;74(739):86-89.

GINA Recommendations

- **For mild asthma, GINA recommends initiating ICS-containing therapy from diagnosis, avoiding SABA-only treatment.**
- **The symptoms align with Track 1 (preferred): as-needed low-dose ICS–formoterol as an anti-inflammatory reliever.**
- **Track 1 is favored as it reduces severe exacerbation risk versus SABA-based regimens, while maintaining comparable symptom control and offering simpler use.**

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Reference: Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2025. Available from: https://ginasthma.org/2025-gina-strategy-report/.

Treatment Plan

The patient was started on:

Anti-Inflammatory Reliever

Low-dose budesonide-formoterol as needed for symptom relief, used as an anti-inflammatory reliever strategy

Inhaler Technique

Inhaler technique was demonstrated and checked using teach-back. Adherence counselling provided.

Additional Plan

- Trigger advice for dust exposure
- Rhinitis management reinforced
- Review visit planned after 4–6 weeks

References: Levy ML et al. Br J Gen Pract. 2024 Jan 25;74(739):86-89. Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2025. Available from: https://ginasthma.org/2025-gina-strategy-report/.

Follow-Up and Outcome

Reviewed after 6 weeks

78%

Pre-Treatment FEV1%

Predicted at baseline

90%

Post-Treatment FEV1%

Predicted at follow-up

2.68L

Baseline FEV1

Pre-treatment lung function

3.08L

Follow-Up FEV1

Post-treatment lung function

Symptom Frequency

Reduced from 2–3 days/week to 1 day/week or less

Night Waking

No night waking in the last 3 weeks

Urgent Visits

No urgent visits after treatment initiation

Sports

Returned to sports with improved tolerance; as-needed low-dose ICS-formoterol was advised before exercise for prevention of exercise-related symptoms

Inhaler technique

Was rechecked at follow-up, and adherence/barriers to use were reviewed.

Patient reported the regimen was simple and easy to follow

Case Discussion: Why Did This Approach Work?

Why It Fits Here?

- Intermittent symptoms but active inflammation
- ICS-formoterol → relieves bronchospasm + treats inflammation

Clinical Value

- Simple regimen; suitable for new patients
- Useful when preventer adherence is uncertain
- Reduces symptoms + future exacerbation risk

Evidence Supporting the Choice

- As-needed budesonide–formoterol provides better exacerbation prevention than reliever-only treatment.

Practice Takeaway

- Start with therapy targeting symptoms + inflammation
- ICS-based reliever = practical, evidence-based option

References:
1. Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2025. Available from: https://ginasthma.org/2025-gina-strategy-report/.
2. Beasley R, et al. N Engl J Med. 2019 May 23;380(21):2020-2030. 3. O'Byrne PM, et al. N Engl J Med. 2018 May 17;378(20):1865-1876.

Uncontrolled Asthma on Reliever-Led Treatment: Transition to MART

A 10-year-old boy with frequent symptoms, reliever dependence, and worsening lung function — illustrating the rationale for moving to a MART strategy.

Case Presentation

Patient Profile

- 10-year-old boy
- Weight: 31 kg
- Asthma history: diagnosed 18 months ago
- Current treatment: as-needed reliever inhaler only; no regular anti-inflammatory controller in routine use

Current Symptoms & Impact

Symptom Frequency

Cough/wheeze on 4–5 days/week

Night Symptoms

1–2 nights/week

Reliever Use

most days / 4–5 times/week

Activity Impact

Avoids running at school; misses games

Recent Events

1 urgent care visit and 1 short oral steroid course in past 6 months

Assessment

Physical & Clinical Findings	Spirometry & Variability
• At presentation: RR 22/min, SpO2 97% room air • Mild bilateral expiratory wheeze on auscultation • Technique with reliever inhaler acceptable • Adherence by caregiver history: missed doses only occasionally	• Pre-BD FEV1: 1.32 L (68% predicted) • Post-BD FEV1: 1.54 L (79% predicted) • Change: +220 mL, +16% • PEF variability: approximately 20% over 2 weeks

Reference: O'Byrne PM, et al. Am J Respir Crit Care Med. 2005 Jan 15;171(2):129-36.

Diagnosis and Escalation Need

Diagnosis: Uncontrolled asthma on reliever-led treatment, with persistent symptoms and moderate airflow limitation

1 Frequent Symptoms Persist

Frequent symptoms and reliever dependence persist

2 Increased Exacerbation Risk

Night waking and recent steroid-requiring worsening suggest increased exacerbation risk

3 Control Remains Inadequate

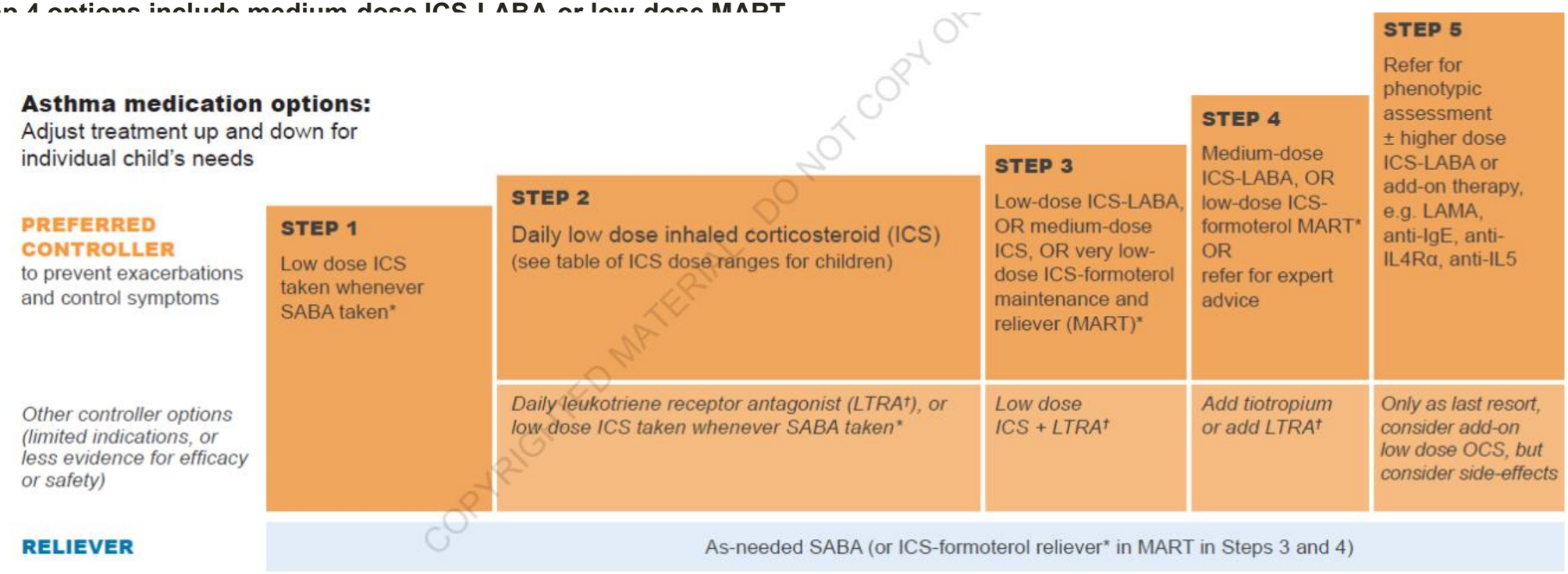
Absence of regular anti-inflammatory treatment likely contributed to poor control

Next step needed: treatment escalation

Reference: Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2025. Available from: https://ginasthma.org/2025-gina-strategy-report/.

GINA Recommendations

- For children 6–11 years, GINA recommends stepping up treatment after checking technique, adherence, exposures, and comorbidities.
- GINA Step 3 options include low-dose ICS-LABA, medium-dose ICS, or very-low-dose ICS-formoterol MART.
- Step 4 options include medium-dose ICS-LABA or low-dose MART.



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Reference: Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2025. Available from: https://ginasthma.org/2025-gina-strategy-report/.

Treatment Plan

MART Strategy — Budesonide-Formoterol

- Started on budesonide-formoterol MART (same inhaler for maintenance and relief)
- Maintenance: 1 inhalation once daily
- Reliever: additional inhalations as needed for symptoms

Chosen Because It Offers:

- Step-up anti-inflammatory treatment
- Rapid symptom relief
- One-inhaler simplicity

Additional Plan

- Spacer/inhaler technique taught and checked with caregiver and child
- Written symptom and reliever diary advised
- Review planned in 8 weeks

References: O'Byrne PM, et al. Am J Respir Crit Care Med. 2005 Jan 15;171(2):129-36. Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2025. Available from: https://ginasthma.org/2025-gina-strategy-report/.

Follow-Up and Outcome

Reviewed after 8 weeks

68%

Baseline FEV1%

Predicted pre-treatment

78%

Follow-Up FEV1%

Predicted post-treatment

20%

Baseline PEF Variability

Over 2 weeks pre-treatment

10-12%

Follow-Up PEF Variability

Reduced at 8-week review

Symptom Days

Reduced from 4–5 days/week to 1 day/week

Night Waking

Reduced from 1–2/week to none in last 3 weeks

Reliever Use

Reduced from most days to 1-2/week or less

Urgent Visits

No urgent visits or steroid bursts during follow-up

Returned to school sports with better tolerance. FEV1 improved from 1.32 L to 1.50 L.

Reference: O'Byrne PM, et al. Am J Respir Crit Care Med. 2005 Jan 15;171(2):129-36.

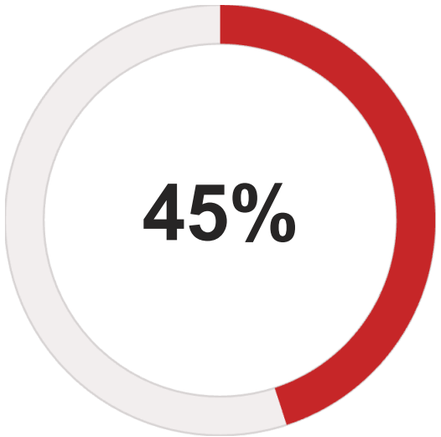
Case Discussion: Why MART Was Appropriate

Clinical Rationale

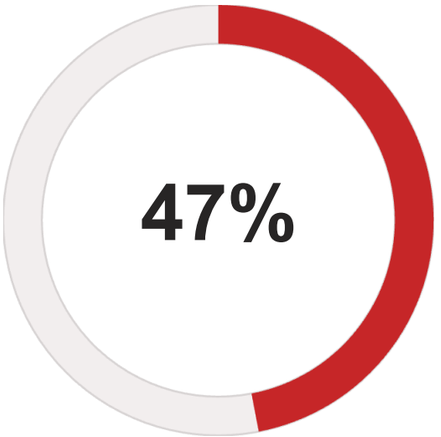
- The child had persistent symptoms**, reliever dependence**, and worsening lung function on reliever-led treatment.
- **MART allowed maintenance and reliever therapy in one inhaler**
- **Studies suggest that budesonide/formoterol used as maintenance and reliever reduced severe exacerbation risk by 45%–47%**
- **Improvement in symptoms, awakenings, and lung function has also been shown, along with an acceptable safety profile**
- One-inhaler use may also improve practical implementation in children and caregivers

Practice Takeaway

In a child with persistent symptoms on reliever-led treatment, MART is a practical step-up option that adds anti-inflammatory control and simplifies treatment in one inhaler.

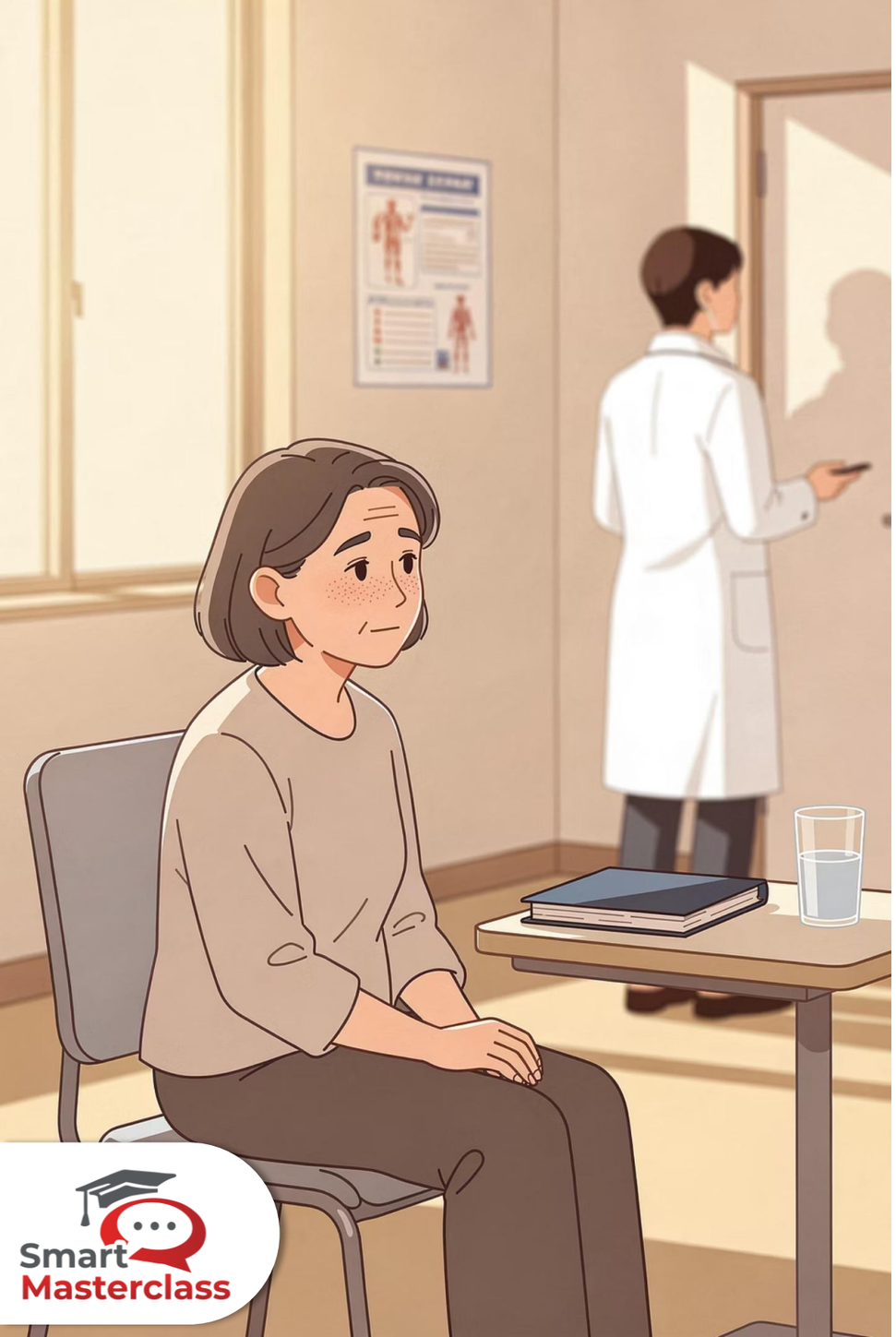


Exacerbation Risk Reduction

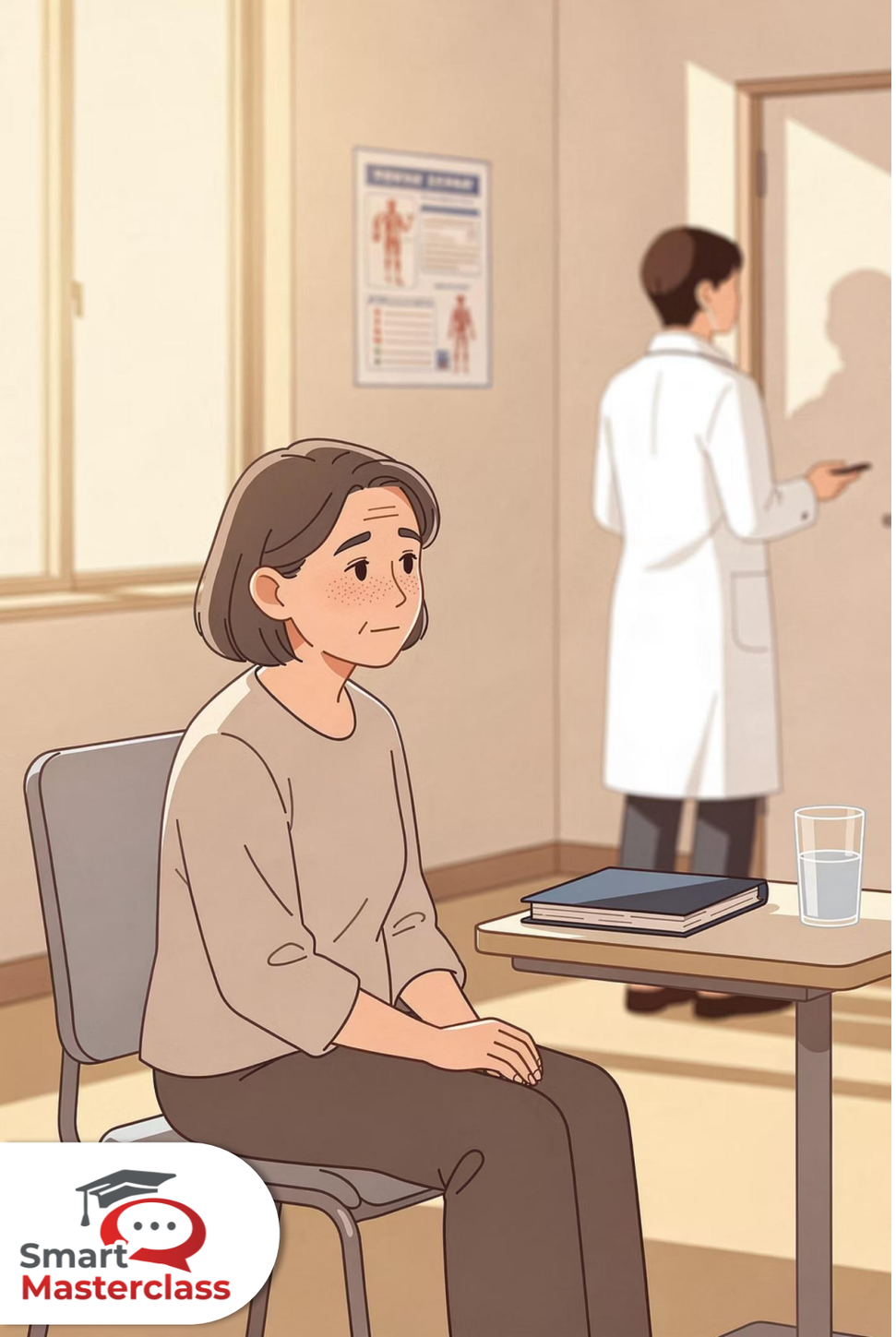


Severe Exacerbation Prevention

References: O'Byrne PM, et al. Am J Respir Crit Care Med. 2005 Jan 15;171(2):129-36. Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2025. Available from: https://ginasthma.org/2025-gina-strategy-report/.



Moderate-to-Severe Asthma in a Middle-Aged Woman: Why MART Was the Right Step-Up



Case Presentation

Patient Profile

- 46-year-old woman
- Asthma diagnosed 6 years ago
- History of allergic rhinitis
- Non-smoker
- Current treatment: low-dose ICS-LABA twice daily + as-needed SABA for the last 5 months

Current Symptoms & Impact

- Cough, wheeze, and breathlessness on 5–6 days/week
- Night waking 2–3 times/week
- Reliever use on most days, often 1–2 times/day
- Breathlessness while climbing stairs and during brisk walking
- Missed 2 workdays in the last month

Recent Events

- 2 exacerbations in the past 12 months
- 1 urgent care visit and 1 oral steroid course in the last 6 months

Assessment

Physical & Clinical Findings	Spirometry
• Afebrile, mild expiratory wheeze • SpO2 96% on room air; no acute distress • Inhaler technique reviewed and corrected • Adherence reported as fair but not perfect	• Pre-BD FEV1: 1.78 L (64% predicted) • Post-BD FEV1: 2.05 L (74% predicted) • Change: +270 mL, +15% • FEV1/FVC improved from 0.66 to 0.73

Overall Picture: poor control with clinically relevant exacerbation risk.

Reference: Beasley R, et al. JAMA Netw Open. 2022 Mar 1;5(3):e220615.

Diagnosis and Escalation Need

Diagnosis: Uncontrolled moderate-to-severe asthma in an adult on maintenance inhaled therapy, with ongoing symptoms and exacerbation risk despite current treatment.

Why was escalation needed

- Frequent daytime symptoms persisted despite maintenance therapy
- Night waking and daily reliever dependence indicated suboptimal control
- Recent exacerbation history increased future risk
- Technique was reviewed, and symptoms still remained inadequately controlled

Reference: Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2025. Available from: https://ginasthma.org/2025-gina-strategy-report/.

GINA Recommendations

With symptoms on 5–6 days/week, night waking 2–3 times/week, reduced lung function, and recent exacerbations, GINA recommends Track 1 step-up therapy using MART with ICS-formoterol.

GINA prefers Track 1 because ICS-formoterol reduces severe exacerbation risk compared with SABA-based regimens, while also offering a simpler single-inhaler approach.

Reference: Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2025. Available from: https://ginasthma.org/2025-gina

Treatment Plan

MART Strategy — Budesonide-Formoterol

Switched to budesonide-formoterol MART

Maintenance: low-dose maintenance regimen as appropriate

Reliever: same inhaler used additionally as needed for symptoms

Why this strategy was chosen

- Provides controller + reliever in one inhaler
- Simplifies treatment in a patient with frequent reliever need
- Aligns with GINA Track 1 Step 3/4 approach for adults

Additional Plan

- Inhaler technique reinforced with teach-back
- Trigger and rhinitis review repeated
- Follow-up planned after 8–10 weeks

References: Beasley R, et al. JAMA Netw Open. 2022;5(3):e220615. Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2025. Available from: https://ginasthma.org/2025-gina-strategy-report/.

Follow-Up and Outcome

Reviewed after 10 weeks

Symptom Days Reduced

5–6 days/week → 1–2 days/week

Night Waking Reduced

2–3/week → None/Rare

Reliever Use

Daily → Occasional

FEV1 Improvement

64% → 79% (1.78 L → 2.18 L)

Patient-reported outcome: Single-inhaler therapy was easier to follow and improved daily activity tolerance.

Also note: No urgent visit or steroid burst during follow-up.

Reference: Beasley R, et al. JAMA Netw Open. 2022;5(3):e220615.

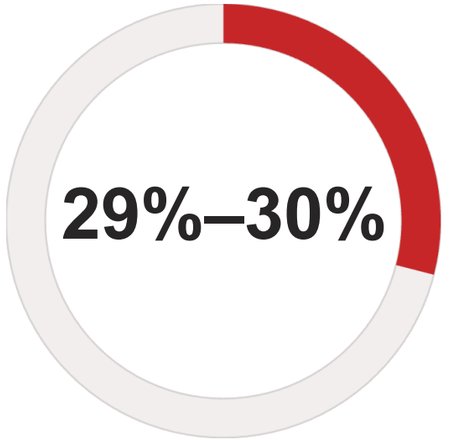
Clinical Rationale: Why This Step-Up Was Appropriate

Clinical Rationale

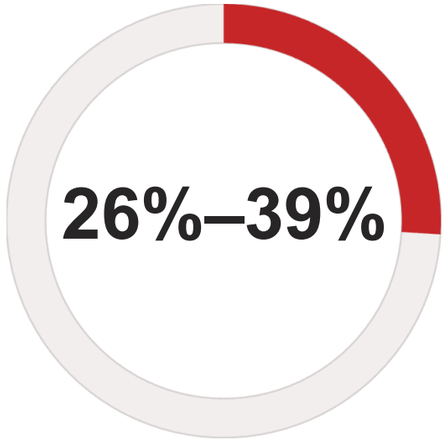
- Persistent symptoms and prior exacerbations warranted step-up therapy.
- GINA recommends MART at Step 3 (low-dose) and Step 4 (medium-dose) in adults/adolescents.
- SMART/MART reduced severe exacerbation risk by 29%–30% in poorly controlled asthma.
- Earlier studies also showed 26%–39% fewer severe exacerbations with budesonide-formoterol MART.

Practice Takeaway

> In patients with uncontrolled moderate-to-severe asthma on maintenance therapy, MART is a clinically supported step-up strategy that addresses both symptom control and exacerbation prevention.



Severe Exacerbation Risk Reduction (SMART/MART)



Fewer Severe Exacerbations (Earlier Studies)

References: Beasley R, et al. JAMA Netw Open. 2022;5(3):e220615.
Kuna P, et al. Int J Clin Pract. 2007 May;61(5):725-36.
Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2025. Available from: https://ginasthma.org/2025-gina-strategy-report/ .