CLINICALJUDGE™ · NGN NCLEX SERIES

ASTHMA EXACERBATION

Nursing Management, Priority Interventions & Patient Teaching

⚠ PRIORITY CONCEPT

RESPIRATORY EMERGENCY | OXYGENATION | ACUTE CARE | PHARMACOLOGY | PATIENT EDUCATION | DISCHARGE PLANNING

COLOR KEY — Critical / Emergency | Pathophysiology | Expected / Safe | Complications | NCLEX Traps | Medications | Patient Education

01 PATHOPHYSIOLOGY FLOW

TRIGGER → **INFLAMMATION** → **BRONCHOCONSTRICTION** → **EDEMA & MUCUS** → **HYPOXIA**

- **TRIGGER**: Allergen, exercise, infection, cold air, smoke, NSAID, stress
- **INFLAMMATION**: Mast cell degranulation → histamine, leukotrienes, cytokines released
- **BRONCHOCONSTRICTION**: Smooth muscle contraction → airway narrowing, ↑ airway resistance
- **EDEMA & MUCUS**: Mucosal edema + hypersecretion → air trapping, V/Q mismatch
- **HYPOXIA**: ↓ O_2, ↑ CO_2 (late) → respiratory failure if untreated

SEVERITY STAGING (NAEPP)

MILD
- SpO_2 ≥ 95%
- Speaks in sentences
- Alert, no distress
- Mild wheeze at end-exp
- PEFR ≥ 70% predicted

MODERATE
- SpO_2 91–94%
- Speaks in phrases
- Accessory muscle use
- Moderate wheeze
- PEFR 40–69% predicted

SEVERE / LIFE-THREATENING
- SpO_2 < 90%
- Speaks in words/unable
- Tripod/paradoxical mvmt
- **Silent chest** — airway nearly closed
- PEFR < 40% predicted

02 EXPECTED VS. CRITICAL S&S

✅ EXPECTED (MILD-MODERATE)

- Expiratory wheezing, tight chest
- Prolonged expiratory phase
- SpO_2 91–94%, RR 20–28
- Mild tachycardia (HR 100–110)
- Visible accessory muscle use
- Anxious, sitting upright
- Productive cough (clear/white)
- ABG: ↓ $PaCO_2$ early (hyperventilation)
- PEFR 40–69% of personal best

🚨 CRITICAL — NOTIFY MD IMMEDIATELY

- **Silent chest** — no air movement heard
- SpO_2 < 90%, cyanosis
- $PaCO_2$ rising (≥ 42 mmHg) = impending failure
- Pulsus paradoxus > 25 mmHg
- Paradoxical chest/abdominal movement
- Altered mental status, confusion
- Diaphoresis, extreme agitation
- Inability to speak any words
- PEFR < 40% or < 25% after treatment

03 LABS & DIAGNOSTICS

LAB / TEST	NORMAL VALUE	ASTHMA EXACERBATION FINDING	NCLEX SIGNIFICANCE
SpO_2	95–100%	Mild: 91–94% | Severe: <90%	CRITICAL THRESHOLD <90%

LAB / TEST	NORMAL VALUE	ASTHMA EXACERBATION FINDING	NCLEX SIGNIFICANCE
PaO_2 (ABG)	80–100 mmHg	↓ in moderate–severe	Hypoxemia driver
$PaCO_2$ (ABG)	35–45 mmHg	Early: ↓ (resp. alkalosis) → Late: ↑ = DANGER	Rising CO_2 = impending failure
pH (ABG)	7.35–7.45	Early: ↑ (alkalosis) → Late: ↓ (acidosis)	Biphasic pattern key
PEFR	≥80% predicted	40–69% (moderate) | <40% (severe)	Objective severity marker
WBC	4.5–11 k/μL	↑ with corticosteroid or infection trigger	Steroid effect — not always infection
Potassium (K^+)	3.5–5.0 mEq/L	↓ with albuterol use (β_2 shifts K^+ intracellular)	Monitor dysrhythmia risk
Chest X-Ray	Clear lung fields	Hyperinflation, flattened diaphragm	Rules out pneumo/pneumonia trigger
Eosinophils	1–4%	↑ in allergic/atopic asthma	Allergic pattern indicator

04 PRIORITY NURSING INTERVENTIONS

1 Airway Positioning & Oxygen
Sit patient upright (tripod if needed) · Apply O_2 to target SpO_2 ≥ 92% (94–98% preferred) · Nasal cannula or NRB depending on severity

2 Administer Short-Acting Bronchodilator (SABA)
Albuterol (Salbutamol) via MDI with spacer or nebulizer · Repeat q 20 min × 3 for first hour per order · Continuous neb for severe

3 Continuous Monitoring
SpO_2, HR, RR, BP q 15–30 min · Continuous cardiac monitoring (albuterol → ↑ HR, ↓ K^+) · Observe for silent chest, AMS

4 Administer Systemic Corticosteroids
IV methylprednisolone or oral prednisone per order · Works in 4–6 hrs; reduces airway inflammation and edema · Do not delay while waiting for other orders

5 Ipratropium (Anticholinergic) – Moderate to Severe
Added to albuterol for synergistic bronchodilation · Most effective in first 24 hrs · Dry mouth expected; monitor urinary retention

6 IV Access & Fluid Management
Establish IV access · Correct dehydration if present (dehydration worsens mucus plugging) · Avoid fluid overload

7 Peak Flow Measurement & Response Assessment
PEFR before and after each treatment · Document trend — failure to improve or <40% after 3 treatments = escalation indicator

8 Patient Education & Trigger Identification
Identify precipitating trigger · Begin asthma action plan education · Reinforce rescue vs. controller inhaler distinction prior to discharge

05 PHARMACOLOGY – KEY DRUG CLASSES

RESCUE MEDICATIONS (QUICK RELIEF)

DRUG	CLASS	KEY NURSING POINTS
Albuterol (ProAir, Ventolin)	SABA	First-line; monitor HR & K^+; >3 uses/week = poor control

CONTROLLER MEDICATIONS (LONG-TERM)

DRUG	CLASS	KEY NURSING POINTS
Fluticasone / Budesonide	ICS	Rinse mouth after use! Prevents oral candidiasis

DRUG	CLASS	KEY NURSING POINTS
Levalbuterol (Xopenex)	SABA	Fewer cardiac SE; used if tachycardia limits albuterol
Ipratropium (Atrovent)	SAMA	Combo with SABA; avoid in BPH; dry mouth SE
Epinephrine (SQ/IM)	Adrenergic	Anaphylaxis/severe only; monitor cardiac closely

DRUG	CLASS	KEY NURSING POINTS
Salmeterol / Formoterol	LABA	NEVER use alone without ICS — ↑ asthma death risk
Montelukast (Singulair)	LTRA	PO daily; mood/suicidal ideation black box warning
Omalizumab (Xolair)	Anti-IgE biologic	Observe 30 min post-injection for anaphylaxis

SYSTEMIC CORTICOSTEROIDS

DRUG	ROUTE	KEY NURSING POINTS
Methylprednisolone (Solu-Medrol)	IV	Moderate–severe; ↑ glucose, ↓ K^+, GI protection needed
Prednisone	PO	Mild–moderate; 5–10 day burst; do NOT abruptly stop
Dexamethasone	IV/PO	Alternative; longer half-life; 2-dose regimen option

MAGNESIUM SULFATE (SEVERE / REFRACTORY)

- IV $MgSO_4$ for severe exacerbation unresponsive to initial Rx
- Mechanism: smooth muscle relaxation
- Monitor: BP, RR, deep tendon reflexes, serum Mg
- Antidote: Calcium gluconate at bedside
- Therapeutic Mg: `1.5–2.5 mEq/L`

CORRECT MDI TECHNIQUE (TEACH-BACK REQUIRED)

① Shake 5× vigourously → ② Attach spacer → ③ Exhale fully → ④ Seal lips on spacer → ⑤ Actuate & slow deep inhale → ⑥ Hold breath 10 sec → ⑦ Wait 60 sec before 2nd puff → ⑧ Rinse mouth if ICS

06 IF → THEN CLINICAL DECISION RULES

IF	THEN
SpO_2 drops below 90% despite O_2 therapy	Escalate O_2 to NRB mask, notify provider immediately, prepare for possible NIV or intubation
Patient develops a SILENT CHEST (wheezing disappears)	Treat as respiratory emergency — this is NOT improvement; call rapid response
PEFR fails to reach 40% after 3 albuterol treatments in first hour	Notify provider, consider IV magnesium sulfate, heliox, or ICU transfer
$PaCO_2$ begins to rise (≥ 42 mmHg) on repeat ABG	Prepare for mechanical ventilation — patient fatiguing, respiratory failure imminent
Patient is on albuterol and K^+ drops to < 3.5 mEq/L	Report to provider; anticipate K^+ replacement order; monitor cardiac rhythm
Patient on prednisone reports blood glucose of 250 mg/dL	Expected corticosteroid effect — report, monitor q-shift, anticipate sliding-scale insulin

IF Patient uses rescue inhaler > 2 days per week at home → **THEN** Asthma is NOT well-controlled — intensify controller therapy & reinforce action plan

IF Patient is receiving Xolair (omalizumab) injection → **THEN** Observe patient for 30–60 minutes post-injection; keep epinephrine at bedside

07 8-TRAP NCLEX PITFALL GRID

01
⚠ "Silent Chest = Improvement"
WRONG. Silent chest = severe obstruction with no air movement. This is a respiratory emergency, not resolution.

02
⚠ Confusing Rescue vs. Controller Inhalers
SABA (albuterol) = rescue. ICS/LABA (fluticasone, salmeterol) = controller. NCLEX asks about PRIORITY use — always rescue first during exacerbation.

03
⚠ Early $PaCO_2$ ↓ = Falsely Reassuring
Low CO_2 early is due to hyperventilation. A normalizing or rising CO_2 in an asthma patient is DANGEROUS — respiratory muscles are fatiguing.

04
⚠ Albuterol Tachycardia = Stop Drug
WRONG. Mild tachycardia is an expected β_2 side effect. Do NOT withhold albuterol for HR 100–110 unless life-threatening arrhythmia develops.

05
⚠ LABA Monotherapy is Safe
WRONG. LABAs (salmeterol, formoterol) must ALWAYS be prescribed with an ICS. Using LABA alone increases asthma-related death risk (Black Box Warning).

06
⚠ Skip Mouth Rinse with ICS
WRONG. Inhaled corticosteroids deposit in the oropharynx → oral candidiasis (thrush). Rinse mouth and spit after EVERY ICS dose.

07
⚠ High-Flow O_2 Always Safe in Asthma
Target SpO_2 94–98%. Unlike COPD, hypercapnic drive is not the issue here — but over-oxygenation can still suppress respiratory effort in severe cases.

08
⚠ Abrupt Steroid Discontinuation is Safe
WRONG. Systemic corticosteroids must be tapered. Abrupt discontinuation can trigger adrenal crisis. Teach patients NEVER to stop prednisone without provider guidance.

08 NCLEX PATTERNS GRID

PRIORITIZE FIRST
- SpO_2 < 90%
- Silent chest
- Rising $PaCO_2$
- AMS / agitation
- PEFR < 40%

MEDICATION PRIORITY ORDER
- 1st: O_2 + albuterol
- 2nd: Steroids (IV/PO)
- 3rd: Ipratropium
- 4th: $MgSO_4$ (severe)
- 5th: Intubation (last resort)

EXPECTED FINDINGS
- Wheezing (exp > insp)
- HR ↑ with albuterol
- K^+ ↓ with albuterol
- Glucose ↑ with steroids
- WBC ↑ with steroids

DISCHARGE CRITERIA
- SpO_2 ≥ 92% on room air
- PEFR ≥ 70% predicted
- Minimal wheeze
- Able to perform ADLs
- Teach-back completed

09 NGN BOW-TIE CLINICAL JUDGMENT

RECOGNIZE CUES

SUBJECTIVE
Chest tightness, difficulty breathing, "can't catch my breath," anxiety

OBJECTIVE
SpO_2 88%, RR 32, HR 118, expiratory wheezing, use of SCM muscles

ACUTE ASTHMA EXACERBATION
IMPAIRED GAS EXCHANGE
INEFFECTIVE AIRWAY CLEARANCE

TAKE ACTIONS

IMMEDIATE
Sit upright, apply O_2, administer albuterol × 3 neb q20 min

URGENT
IV access, corticosteroids per order, cardiac monitoring, PEFR tracking

ANXIETY

HISTORY
Asthma dx, missed controller doses, recent URI, exposure to dust/smoke

LABS / DIAGNOSTICS
$PaCO_2$ rising to 42, PEFR 35% predicted, CXR: hyperinflation

ONGOING
Reassess q15–30 min; notify provider if no improvement; prepare for escalation

EVALUATE OUTCOMES
SpO_2 ≥ 92%, PEFR ≥ 70%, RR normalizing, wheeze diminishing, patient calm

ANALYZE CUES — HIGHEST PRIORITY PROBLEMS

- 🔴 Impaired gas exchange (hypoxemia)
- 🔴 Ineffective airway clearance (bronchospasm/mucus)
- 🟡 Anxiety (↑ O_2 demand, ↓ cooperation)
- 🟡 Risk for medication SE (hypokalemia, hyperglycemia)

GENERATE HYPOTHESES — WHAT COULD GO WRONG?

- ⚠️ Respiratory failure → mechanical ventilation needed
- ⚠️ Status asthmaticus → life-threatening, ICU transfer
- ⚠️ Pneumothorax (air trapping complication)
- ⚠️ Cardiac dysrhythmia from hypokalemia (albuterol)

10 PATIENT EDUCATION CHECKLIST

ASTHMA ACTION PLAN

- **GREEN zone:** PEFR ≥ 80%, take controller meds daily
- **YELLOW zone:** PEFR 50–79%, add rescue inhaler, call provider if no improvement in 24 hr
- **RED zone:** PEFR <50%, use rescue inhaler, call 911 if no response within 15 min
- Keep written copy of action plan; post on fridge
- Share plan with school / employer / family

INHALER TECHNIQUE & MEDICATIONS

- Rescue (albuterol) = when symptomatic — NOT daily
- Controller (ICS) = every day, even when feeling well
- NEVER stop ICS/controller without provider approval
- Shake MDI, use spacer, hold breath 10 sec
- Rinse mouth after ICS (prevents thrush)
- Replace rescue inhaler when counter reaches 20 doses

TRIGGER AVOIDANCE

- Avoid tobacco smoke (active & secondhand)
- Use allergen-proof pillow/mattress covers
- No pets in bedroom; HEPA filter in home
- Avoid NSAIDs/aspirin (if aspirin-sensitive asthma)
- Avoid exercise in cold dry air; use scarf/mask
- Stay indoors on high pollen/pollution days

PEAK FLOW MONITORING

- Measure PEFR every AM (same time daily)
- Establish personal best over 2 weeks when well
- Record readings in diary / app
- Bring peak flow meter to all follow-up visits
- PEFR trending down = worsening before symptoms appear

PREVENTIVE HEALTH

- Annual influenza vaccine (flu exacerbates asthma)
- COVID & pneumococcal vaccines as indicated
- Follow up with pulmonologist or allergist q3–6 mo
- Report GERD symptoms — untreated GERD worsens asthma
- Weight management if obesity-related asthma

WHEN TO CALL 911 / GO TO ER

- Rescue inhaler not working after 2 treatments (15–20 min apart)
- Blue lips or fingernails (cyanosis)
- Cannot speak in full sentences
- Neck/chest muscles pulling in with each breath
- Extreme anxiety or confusion
- PEFR < 50% of personal best after rescue inhaler

✅ TEACH-BACK VERIFICATION CHECKLIST (DOCUMENT IN MAR/NURSING NOTES)

☐ Patient demonstrates correct MDI technique with spacer
☐ Patient states the difference between rescue and controller inhaler
☐ Patient verbalizes at least 3 personal triggers
☐ Patient correctly interprets their 3-zone action plan
☐ Patient demonstrates proper PEFR technique
☐ Patient states when to seek emergency care
☐ Patient verbalized importance of not stopping steroids abruptly
☐ Family member/caregiver included in teaching
☐ Written action plan provided in preferred language

CLINICALJUDGE™

NGN NCLEX Content Series · Respiratory System · Asthma Exacerbation

References: NAEPP EPR-3 Guidelines · GINA 2024 · ATI Nursing Education · Hinkle & Cheever Medical-Surgical Nursing 15e

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