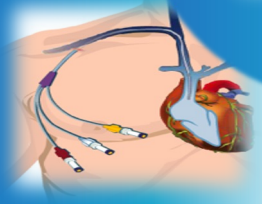
**Dottor L.VIASSOLO**
S.C. Pronto Soccorso e Medicina d'Urgenza
Ponente

# Gestione della crisi asmatica grave

3° Edizione

## Area Critica in Medicina Interna

**12 Aprile 2025**



**Savona**
**Nh Darsena Hotel**

## Conflitti interessi dichiarati:

- tanti ma non di tipo commerciale…….

# DI COSA PARLIAMO?

## DI COSA PARLIAMO?

Cos'è l'asma riacutizzata severa?

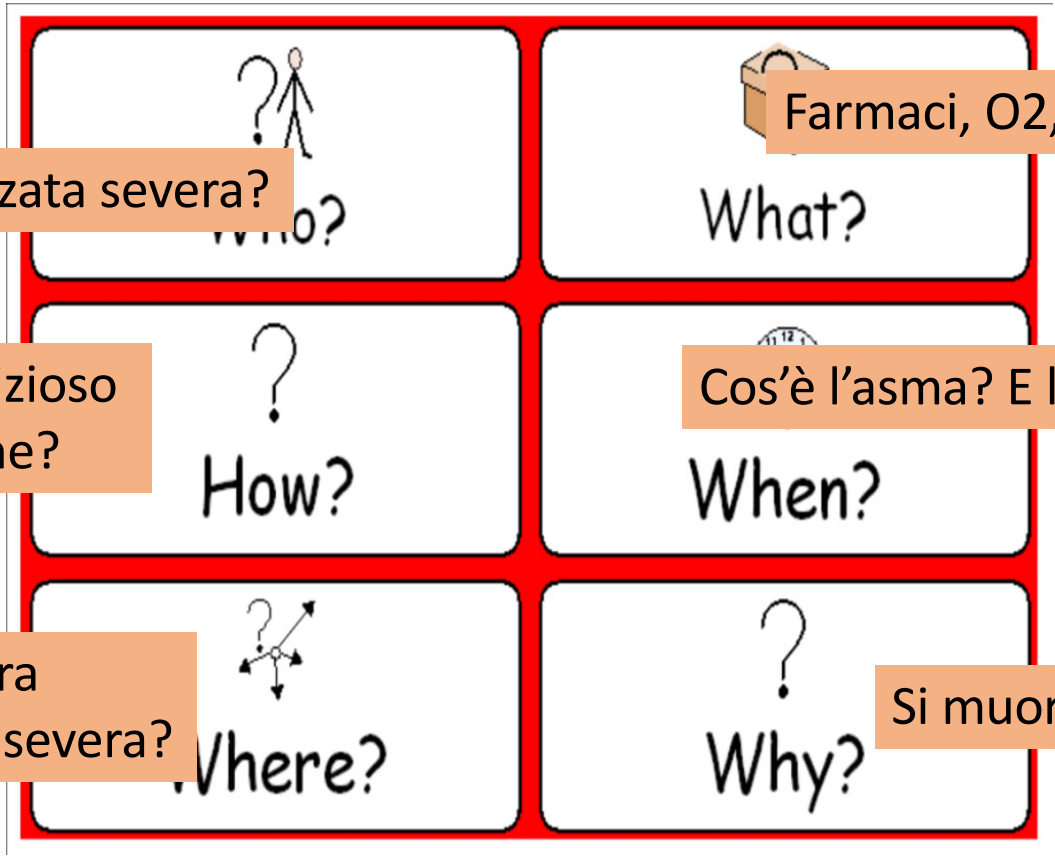
Farmaci, O2, ventilazione?

Quale è il circolo vizioso della riacutizzazione?

Cos'è l'asma? E la riacutizzazione?

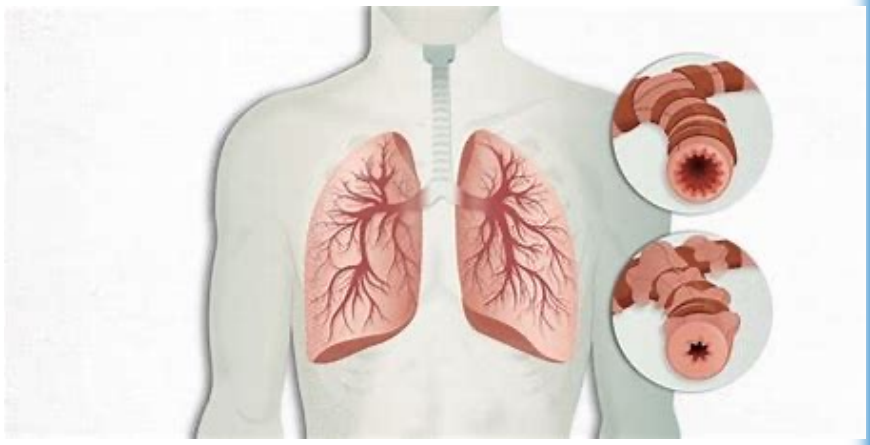
Quale è il setting di cura dell'asma riacutizzata severa?

Si muore di asma?



Definizione di asma l'asma è una **patologia eterogenea**, in genere caratterizzata da infiammazione cronica delle vie aeree. E' definita tramite storia di sintomi respiratori, quali **respiro sibilante, dispnea, costrizione toracica e tosse**, che variano nel corso del tempo e **si modificano per intensità**, contestualmente alla limitazione di flusso espiratorio. Uno o più sintomi possono essere predominanti. La limitazione di flusso aereo può diventare persistente

Global Initiative for Asthma – GINA 2025



## Definizione di crisi asmatica

Una riacutizzazione rappresenta un peggioramento acuto o subacuto di sintomi e/o funzionalità respiratoria dall'usuale del paziente, tale da richiedere una modifica della terapia

Global Initiative for Asthma – GINA 2025

**Dottor L.VIASSOLO**
S.C. Pronto Soccorso e Medicina d'Urgenza Ponente

## Definizione di crisi asmatica grave

La gravità della riacutizzazione viene stabilita da grado della dispnea, frequenza respiratoria, frequenza cardiaca e saturazione di ossigeno

Global Initiative for Asthma – GINA 2025

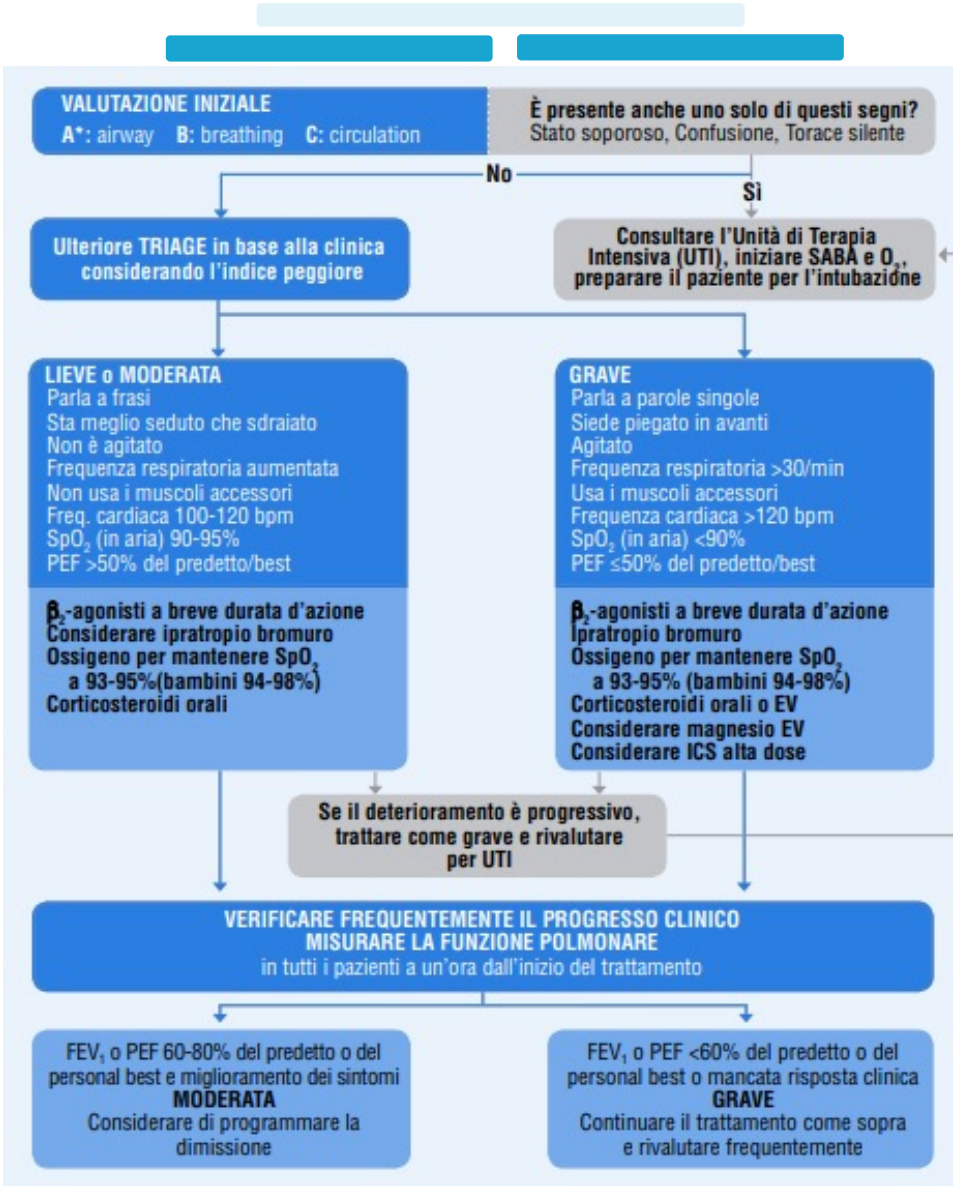
| LIEVE O MODERATA | GRAVE |
|---|---|
| Riesce a formulare frasi, preferisce sedere e non stare sdraiato, non è agitato | Comunica con singole parole, siede chino in avanti, è agitato |
| Frequenza respiratoria aumentata | Frequenza respiratoria >30 atti/min |
| Muscoli accessori non utilizzati nel respirare | Muscoli accessori utilizzati nel respirare |
| Polso 100-120 bpm | Polso >120 bpm |
| Saturazione $O_2$ (in aria) 90-95% | Saturazione $O_2$ (in aria) <90% |
| PEF>50% del teorico o del migliore | PEF≤50% del teorico o del migliore |

Dottor L.VIASSOLO
S.C. Pronto Soccorso e Medicina d'Urgenza Ponente

FATTORI ASSOCIATI A MORTE ASMA CORRELATA:

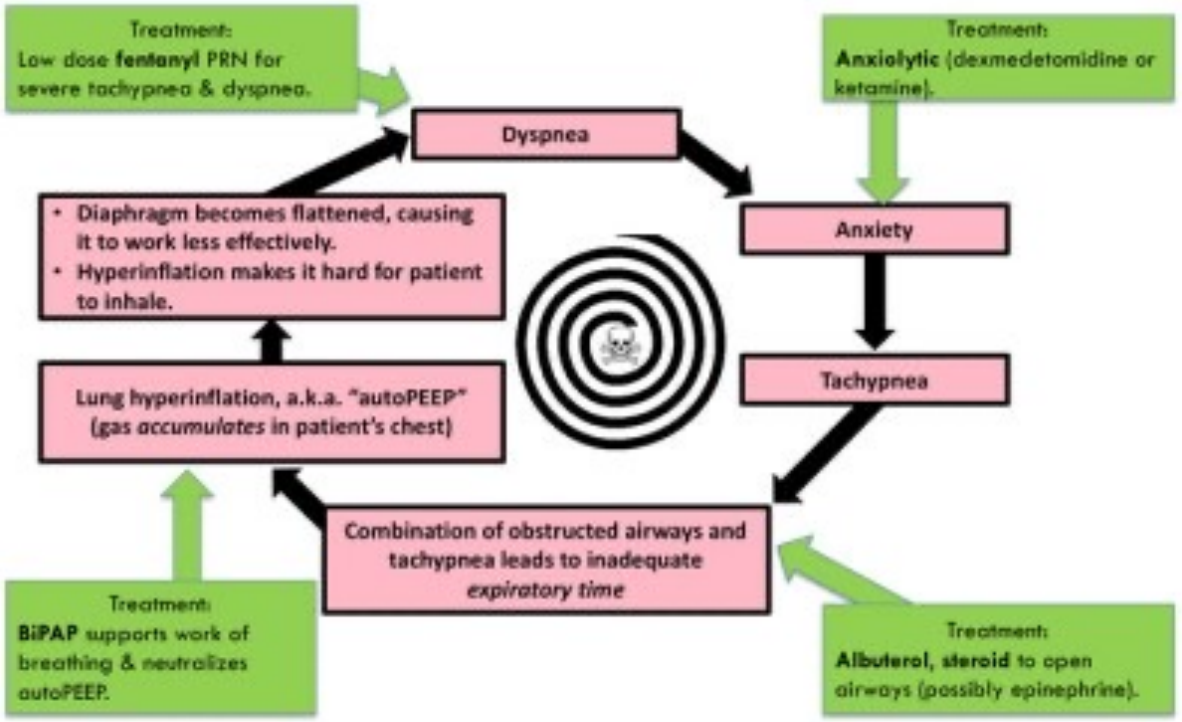
- Pregresso episodio di riacutizzazione quasi fatale, con necessità di intubazione e ventilazione meccanica
- Ospedalizzazione o visita in PS per riacutizzazione asmatica nell'ultimo anno
- Uso corrente o recente cessazione di steroide sistemico
- Non utilizzo corrente di steroide inalatorio
- Utilizzo eccessivo di rescue medication SABA (> 1 confezione/mese)
- Scarsa aderenza alla terapia inalatoria con steroidi
- Storia di comorbidità psichiatrica o difficile contesto sociale
- Allergie alimentari
- Gravi comorbidità

Global Initiative for Asthma – GINA 2025




**Dottor L.VIASSOLO**
S.C. Pronto Soccorso e Medicina d'Urgenza Ponente
**Gestione della crisi asmatica grave**

## Vicious Cycle of asthma exacerbation & how to break it




Asthma involves a vicious cycle of airway obstruction and dyspnea that leads to tachypnea. Asthmatics will be unable to exhale properly if they are breathing fast, so they can't tolerate tachypnea. Over time, this cycle will lead to diaphragmatic fatigue and exhaustion. Aggressive intervention before the point of exhaustion can generally avoid intubation.

Dottor L.VIASSOLO
S.C. Pronto Soccorso e Medicina d'Urgenza Ponente

## EPIDEMIOLOGIA DELL' ASMA

## Dati epidemiologici EPICENTRO, art scaricato, GINASTHMA

INCIDENZA: 5% in Italia
PREVALENZA: 10% in Italia
MORTALITA': 500 mila morti nel Mondo nel 2017 per asma

## Asthma is often inappropriately treated as a recurrent acute disease, with no treatment in between

- Burden to patients, family, health system, economy
- Risk of asthma mortality
- Cumulative risk of adverse effects of oral corticosteroids, with even 4–5 lifetime courses *(Price, 2018)*
- Asthma morbidity and mortality are largely preventable

## OSSIGENO

To achieve arterial oxygen saturationof 93-95%, oxygen should be administered by nasal cannulae or mask

| Oxygen Flow L/min | Approximate FiO2 |
|---|---|
| 1 | 24% |
| 2 | 28% |
| 3 | 32% |
| 4 | 36% |
| 5 | 40% |
| 6 | 44% |
| 7 | 48% |
| 8 | 52% |
| 9 | 56% |
| 10 | 60% |

Critical asthma exacerbation - EMCrit Project

# BRONCODILATATORI INALATORI

**high dose inhaled albuterol**

Patients should be started on high-dose albuterol. Two options are roughly equivalent:

(a) Stacked nebs: 2.5-5 mg via nebulizer Q20 minutes back-to-back.

(b) Continuous nebulized therapy (10-15 mg/hour initially).

As patients improve, this should gradually be weaned down and spaced out.

**inhaled ipratropium**

Addition of ipratropium to *initial therapy* (e.g. 1.5 mg inhaled over the first hour of therapy) may be helpful. Subsequently 0.5 mg may be nebulized Q4-6 hours.

Critical asthma exacerbation - EMCrit Project

# BRONCODILATATORI SISTEMICI

**epinephrine**
Not supported by any high-quality evidence.
Indications may include:

(a) Patient unable to tolerated inhaled bronchodilators (e.g. due to coughing).
(b) Failure to improve with inhaled bronchodilators.

**Intramuscular epinephrine:**

Dose is 0.3 – 0.5 mg IM, may repeat 1-2 times Q20 minutes.
Not preferred: lack of control over the dose; unable to down-titrate if complications occur.

Critical asthma exacerbation - EMCrit Project

# BIPAP

**potential indications?**

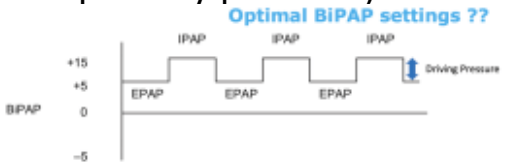
Respiratory rate >25-30/min.

Significant work of breathing.

**initial settings**

Start with standard settings (10 cm inspiratory pressure / 5 cm expiratory pressure).

Titrate FiO2 to keep the saturation ~93-95%.



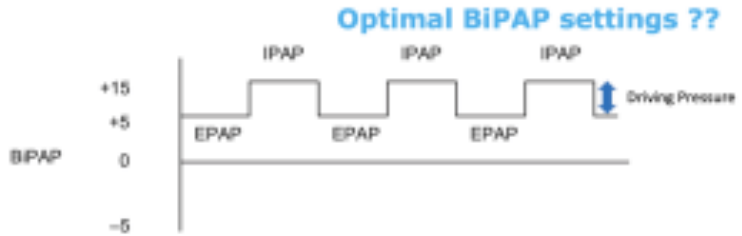

| | Expiratory pressure (EPAP) | Driving pressure (inspiratory pressure– expiratory pressure) |
|---|---|---|
| Benefit | - Main role = balances out intrinsic PEEP, thereby allowing patient to trigger breath easily.<br>- Possible theoretical role: stents open airways during exhalation. | - Provides mechanical support for breathing.<br>- Ideally will *off-load* work of breathing (patient will expend *less* work during inhalation) |
| Situation where this is *most* beneficial | - Extreme bronchospasm | - Respiratory muscle fatigue due to persistent status asthmaticus over a long time period (without profound bronchospasm) |
| Risk | - If set too high, will impair exhalation (decreases exhalatory pressure gradient) | - If patient *doesn't* reduce their own effort, then augmentation may increase the tidal volume and worsen gas trapping. |
| Typical range | 5-8 cm | 5-8 cm |
| How to titrate* | Patient comfort ? | Tidal volume (target 4-8 ml/kg) |

*Titration is only needed if patient is tachypneic or uncomfortable. The primary goal of titration is a comfortable patient with reduced respiratory rate. If this goal is achieved with higher tidal volumes (e.g. 8-10 cc/kg) that's probably fine.

-Internet Book of Critical Care, by @PulmCrit

MCrit Project

# BIPAP




| | Expiratory pressure (EPAP) | Driving pressure (inspiratory pressure– expiratory pressure) |
|---|---|---|
| Benefit | - Main role = balances out intrinsic PEEP, thereby allowing patient to trigger breath easily.<br>- Possible theoretical role: stents open airways during exhalation. | - Provides mechanical support for breathing.<br>- Ideally will *off-load* work of breathing (patient will expend *less* work during inhalation) |
| Situation where this is *most* beneficial | - Extreme bronchospasm | - Respiratory muscle fatigue due to persistent status asthmaticus over a long time period (without profound bronchospasm) |
| Risk | - If set too high, will impair exhalation (decreases exhalatory pressure gradient) | - If patient *doesn't* reduce their own effort, then augmentation may increase the tidal volume and worsen gas trapping. |
| Typical range | 5-8 cm | 5-8 cm |
| How to titrate* | Patient comfort ? | Tidal volume (target 4-8 ml/kg) |

*Titration is only needed if patient is tachypneic or uncomfortable. The primary goal of titration is a comfortable patient with reduced respiratory rate. If this goal is achieved with higher tidal volumes (e.g. 8-10 cc/kg) that's probably fine.

-Internet Book of Critical Care, by @PulmCrit

[Critical asthma exacerbation - EMCrit Project]

# FARMACI AGGIUNTIVI, STEROIDE SISTEMICO

(#1) Loading dose: methylprednisolone 125 mg IV.

(#2) Initial maintenance dose:

No solid evidence on this.

~125 mg IV methylprednisolone daily seems reasonable (or roughly 2 mg/kg daily).

much higher doses may not be beneficial.

(#3) Taper:

Once patients are making a solid recovery, steroid dose can be decreased 60 mg/day prednisone.

If this is tolerated, a reasonable taper might be to decrease to 40 mg/day prednisone for 5 days, then stop.

Critical asthma exacerbation - EMCrit Project

# FARMACI AGGIUNTIVI, MAGNESIO

This is a source of ongoing controversy. IV magnesium is safe and possibly effective, but hasn't been borne out in large adult RCTs such as the 3MG trial.

This therapy is reasonable. However, it's probably not enormously effective and definitely should not interfere with other treatments.

Administration of two grams of magnesium over 20 minutes is reasonable (this dose of magnesium is extremely safe).

Critical asthma exacerbation - EMCrit Project

# FARMACI AGGIUNTIVI, KETAMINA

Molto promettente, anche se ancora scarse evidenze scientifiche

Esercita broncodilatazione per effetto antimuscarinico

Dosaggi da analgesici 0.2mg/kg a psicomimetici 0.5mg/kg


Critical asthma exacerbation - EMCrit Project

# GRAZIE PER L'ATTENZIONE

**l.viassolo@asl2.liguria.it**