

FAKULTNÍ NEMOCNICE BRNO  
A LÉKAŘSKÁ FAKULTA  
MASARYKOVY UNIVERZITY



**KLINIKA DĚTSKÉ  
ANESTEZIOLOGIE  
A RESUSCITACE**

# HOT topics z pohledu EBM v předatestační přípravě

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**F** FAKULTNÍ  
NEMOCNICE  
BRNO

**M U N I  
M E D**

# Zajištění obtížných dýchacích cest u dospělých a dětí

**V.Černý ,V. Chrobok, J. Klučka, et al., AIM journal, 2019**

Obtížná ventilace (maskou, LM, intubace) očekávané/ neočekávané

Doporučení pro situace „nelze intubovat / nelze oxygenovat“ (CICO)

Dospělý/ Dítě/ Porodnictví/ Hrudní chirurgie

Návaznost na Difficult Airway Society (DAS)

Volně dostupné

Algoritmy- dostupnost v praxi

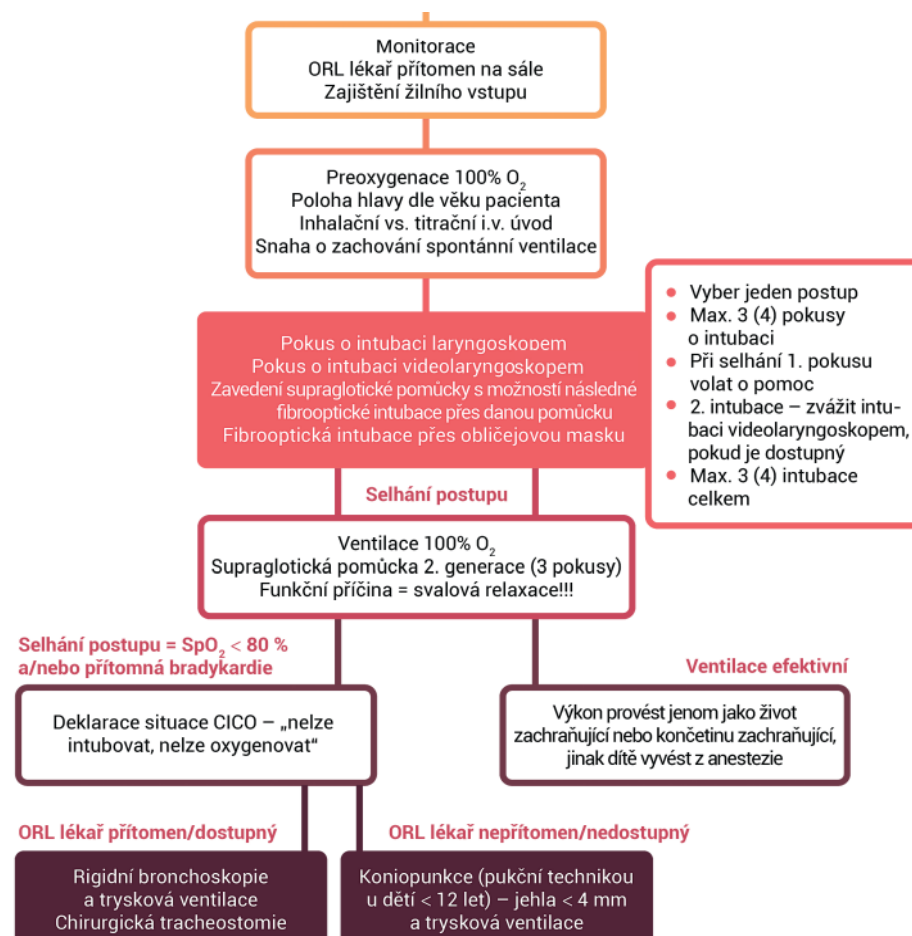
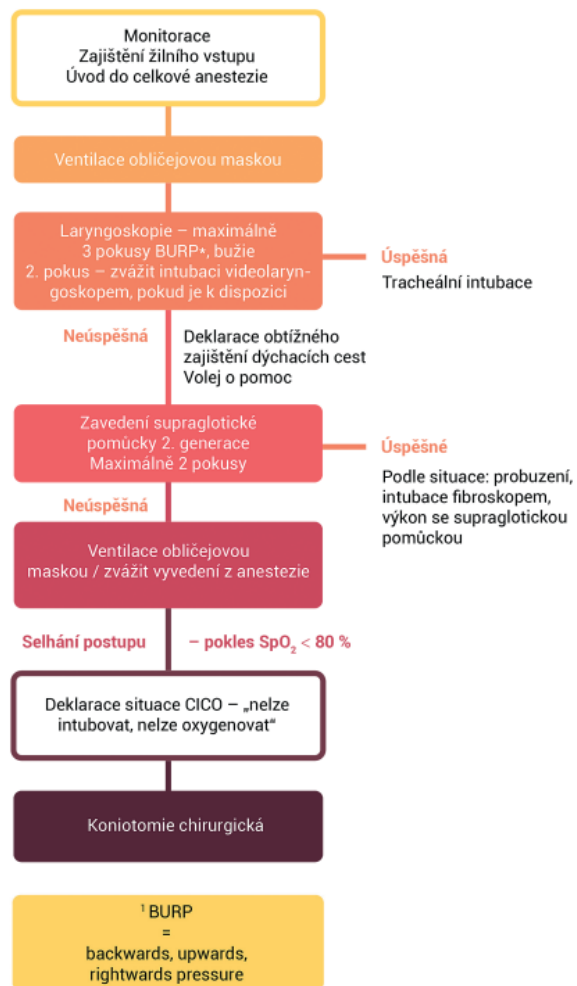


# Zajištění obtížných dýchacích cest u dospělých a dětí

V.Černý, V. Chrobok, J. Klučka, et al., AIM journal, 2019

NEOČEKÁVANÉ OBTÍŽNÉ ZAJIŠTĚNÍ DC U DOSPĚLÉHO

OČEKÁVÁNÍ OBTÍŽNÉ ZAJIŠTĚNÍ DC U DĚTÍ



# Effect of a protective-ventilation strategy on mortality in the acute respiratory distress syndrome

M.B Amato, C.S Barbas, D.M Medeiros, et al., N Engl J Med. 1998

## Conventional ventilation

- lowest PEEP for acceptable oxygenation
- Vt 12 ml /kg IBW
- Normal PaCO<sub>2</sub>

## Protective ventilation

- end-expiratory pressures above the lower inflection point
- Vt 6 ml/ kg IBW
- driving pressures max 20 cmH<sub>2</sub>O above PEEP
- permissive hypercapnia
- pressure-limited ventilatory modes

# Effect of a protective-ventilation strategy on mortality in the acute respiratory distress syndrome

M.B Amato, C.S Barbas, D.M Medeiros, et al., N Engl J Med. 1998

Conventional ventilation

Protective ventilation

**Conclusions:** As compared with conventional ventilation, the protective strategy was associated with improved survival at 28 days, a higher rate of weaning from mechanical ventilation, and a lower rate of barotrauma in patients with the acute respiratory distress syndrome. Protective ventilation was not associated with a higher rate of survival to hospital discharge.

# Ventilation with lower tidal volumes as compared with traditional tidal volumes for acute lung injury and the ARDS

Acute Respiratory Distress Syndrome Network, N Engl J Med. 2000

## Traditional ventilation

- Vt 12 ml/kg IBW
- plateau pressure of 50 cmH2O or less

## Protective ventilation

- Vt 6 ml/ kg IBW
- plateau pressure of 30 cmH2O or less

**Results:** The trial was stopped after the enrollment of 861 patients because mortality was lower in the group treated with lower tidal volumes than in the group treated with traditional tidal volumes

# Ventilation with lower tidal volumes as compared with traditional tidal volumes for acute lung injury and the ARDS

Acute Respiratory Distress Syndrome Network, N Engl J Med. 2000

Traditional ventilation

Protective ventilation

**Conclusions:** In patients with acute lung injury and the acute respiratory distress syndrome, mechanical ventilation with a lower tidal volume than is traditionally used results in decreased mortality and increases the number of days without ventilator use.

# Management of severe perioperative bleeding: Guidelines from the European Society of Anaesthesiology First update 2016

Kozek-Langenecker, Sibylle A.; Ahmed, Aamer B, et al., Eur J Anaesthesiol 2017

Evaluation of coagulation status	Evaluation of platelet function	Preoperative correction of anemia	Optimising macrocirculation	Transfusion triggers
Oxygen fraction	Transfusion of blood products	Cell salvage	Coagulation management	Antifibrinolytics
Emergency interventions to reduce blood loss	Algorithm for specific clinical fields	Antiplatelet agents	Anticoagulans	Patients with bleeding disorders



# The European guideline on management of major bleeding and coagulopathy following trauma: fifth edition

D.R Spahn, B. Bouillon, V. Cerny, et al. *Critical Care*, 2019

## Key messages

Quick transport and treatment by a specialised trauma centre

Monitor and support coagulation as early as possible and use to guide a goal-directed treatment

Coagulation support and thromboprophylaxis in trauma patients pre-treated with anticoagulants or platelet inhibitors.

A damage-control approach to surgical intervention guides patient management

Local adherence to a multidisciplinary, evidence-based treatment protocol that undergoes regular quality assessment

# The European guideline on management of major bleeding and coagulopathy following trauma: fifth edition

**D.R Spahn, B. Bouillon, V. Cerny, et al. Critical Care, 2019**

- Tranexamic acid
- Fibrinogen
- Goal-directed coagulation management (labs and/or VEM)

# Surviving Sepsis Campaign Guidelines 2021

Sepsis and septic shock are medical emergencies, and we recommend that treatment and resuscitation begin immediately.

**Initial Resuscitation** **Best Practice** **Treatment & Resuscitation (if time fits please use)**

We recommend against using qSOFA compared with SIRS, NEWS, or MEWS as a single screening tool for sepsis or septic shock.

Quality of evidence: Moderate

**Screening** **Strong** **Screening Tools**

For adults with sepsis or septic shock, we recommend using crystalloids as first-line fluid for resuscitation.

Quality of evidence: Moderate

**Hemodynamic Management** **Strong** **Fluid Resuscitation**

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## Guideline Section:

- Additional Therapies
- Admission to ICU
- Hemodynamic Management
- Infection
- Initial Resuscitation
- LTO-GOC
- Mean Arterial Pressure
- Screening
- Ventilation

## Strength:

- Strong
- Weak
- Best Practice
- No Recommendation

## Identifier:

- Anti-fungal Therapy
- Antiviral Therapy
- Beta-lactams
- Bicarbonate Therapy
- Blood Lactate
- Blood Loss Reduction

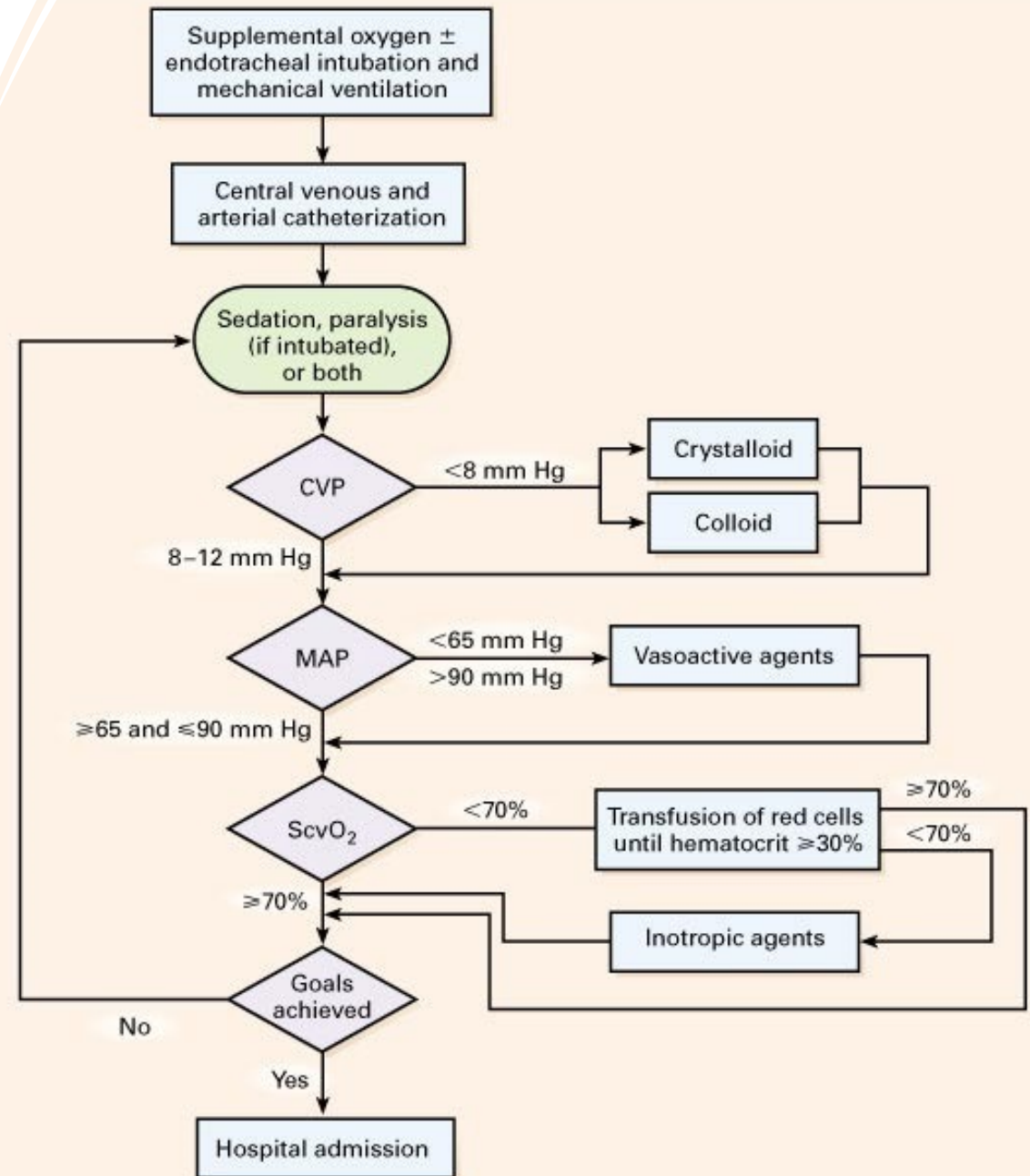
# Early Goal-Directed Therapy in the Treatment of Severe Sepsis and Septic Shock

E.Rivers, B.Nguyen, S. Havstad, et al. 2001

## Goal:

efficacy of early goal-directed therapy before admission to the intensive care unit (6 hours)

**Primary outcome:** in hospital mortality



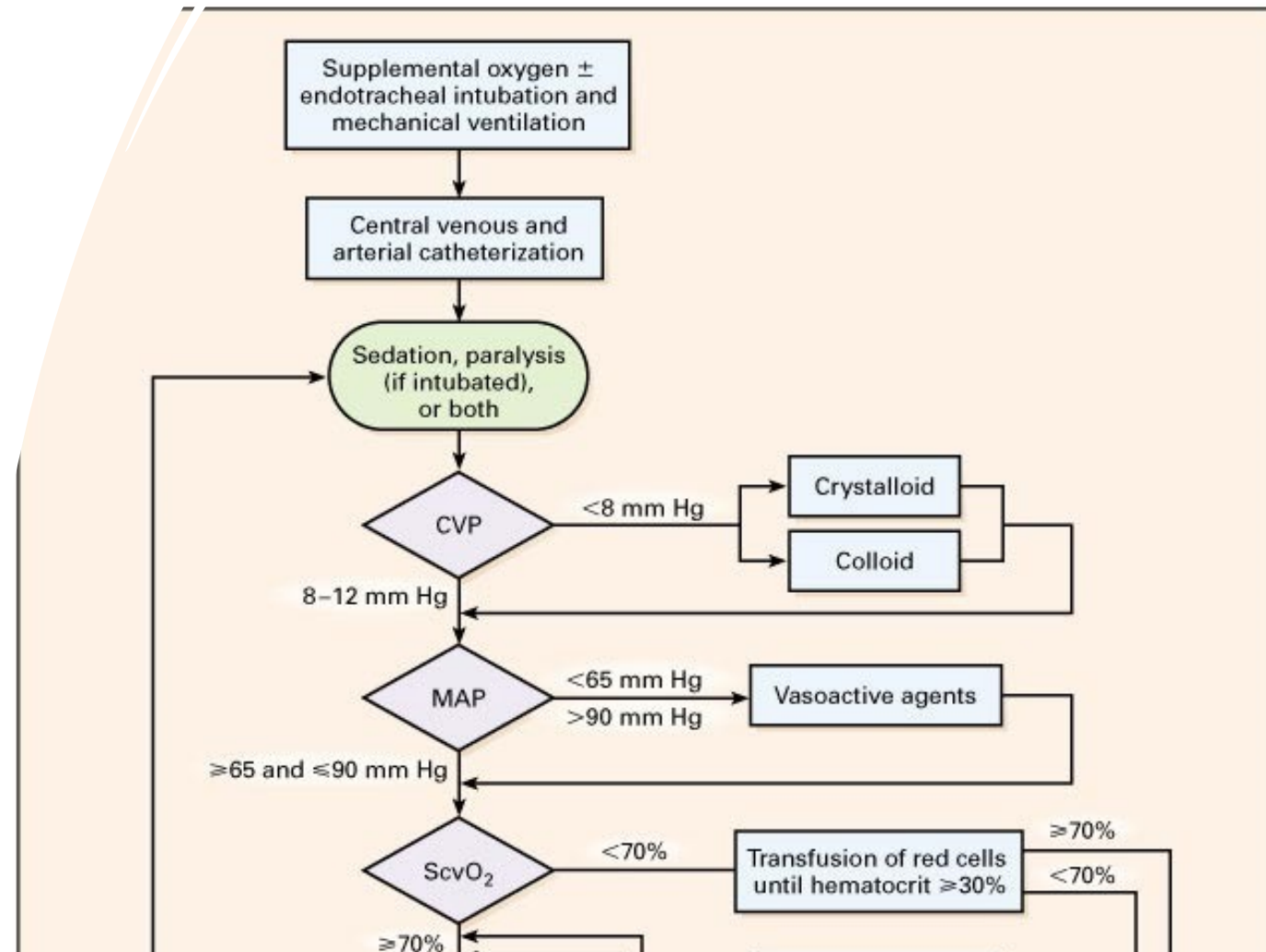
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## Goal:

efficacy of early goal-directed therapy before admission to the intensive care unit (6 hours)

Primary outcome: in hospital



**Conclusion: Early goal-directed therapy provides significant benefits with respect to outcome in patients with severe sepsis and septic shock**

# Consensus on circulatory shock and hemodynamic monitoring. Task force of the European Society of Intensive Care Medicine

M.Cecconi, D. de Backer, M. Antonelli, et al., Intensive Care Med. 2014

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- (1) What are the **epidemiologic** and **pathophysiologic** features of shock in the intensive care unit?
- (2) Should we **monitor preload and fluid responsiveness** in shock?
- (3) How and when should we **monitor stroke volume or cardiac output** in shock?
- (4) What **markers** of the **regional and microcirculation** can be monitored, and how can cellular function be assessed in shock?
- (5) What is the **evidence** for using **hemodynamic monitoring to direct therapy** in shock?

## Intensive insulin therapy in critically ill patients

G van den Berge, P. Wouters, F. Weekers et al., N Engl J Med. 2001

- intensive insulin therapy  
(blood glucose 4.4- 6.1 mmol/l)
  
- conventional treatment  
(insulin only if glucose over 11.9 mmol/l, maintenance between 10.0 and 11.1 mmol/l)

## Intensive versus Conventional Glucose Control in Critically Ill Patients

The NICE-SUGAR Study Investigators, N Engl J Med 2009

- intensive glucose control  
(blood glucose 4.5 to 6.0 mmol/l)
  
- conventional glucose control,  
(blood glucose 10.0 mmol/l or less)

**Conclusions:** Intensive insulin therapy to maintain blood glucose at or below 110 mg per deciliter reduces morbidity and mortality among critically ill patients in the surgical intensive care unit.



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- conventional glucose control,  
(blood glucose 10.0 mmol/l or less)

### CONCLUSIONS

In this large, international, randomized trial, we found that intensive glucose control increased mortality among adults in the ICU: a blood glucose target of 180 mg or less per deciliter resulted in lower mortality than did a target of 81 to 108 mg per deciliter.

# Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU

J.W.Devlin, Y. Skrobik, C.Gélinas et al., Crit Care Med.2018

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**Pain** - multimodal analgesia therapy, validated pain scales

**Sedation** - light over deep sedation, propofol or dexmedetomidine **over** benzodiazepine

**Delirium** - CAM-ICU, ICDSC risk factors, therapy

**Immobilisation** - indicators for starting/stopping rehabilitation sessions

**Sleep (disruption)** - delirium link

# **2022 Society of Critical Care Medicine Clinical Practice Guidelines on Prevention and Management of Pain, Agitation, Neuromuscular Blockade, and Delirium in Critically Ill Pediatric Patients With Consideration of the ICU Environment and Early Mobility**

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H. A B SMith, J. B Besunder, K. A Betters, et al. *Pediatr Crit Care Med*. 2022

Strong recommendations and good practice:

- Age adjusted scoring systems
- Dexmedetomidine as a primary sedative at PICU
- Minimizing benzodiazepine-based sedation when feasible
- Routine screening for ICU delirium
- Check and treat Iatrogenic Withdrawal Syndrome

# ESPEN guideline on clinical nutrition in the intensive care unit

P.Singer, A. R. Blasser, M. M Berger, Clin Nutr . 2019



- who are the patients at risk
- how to assess nutritional status
- define the amount of energy to provide
- route to choose and how to adapt it
- when to start and how to progress in nutrition administration
- determination of amount and nature of carbohydrates, fat and protein

ASPEN



**Děkuji**