

Influenza A H1N1 na UTI

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Pneumologista e Intensivista

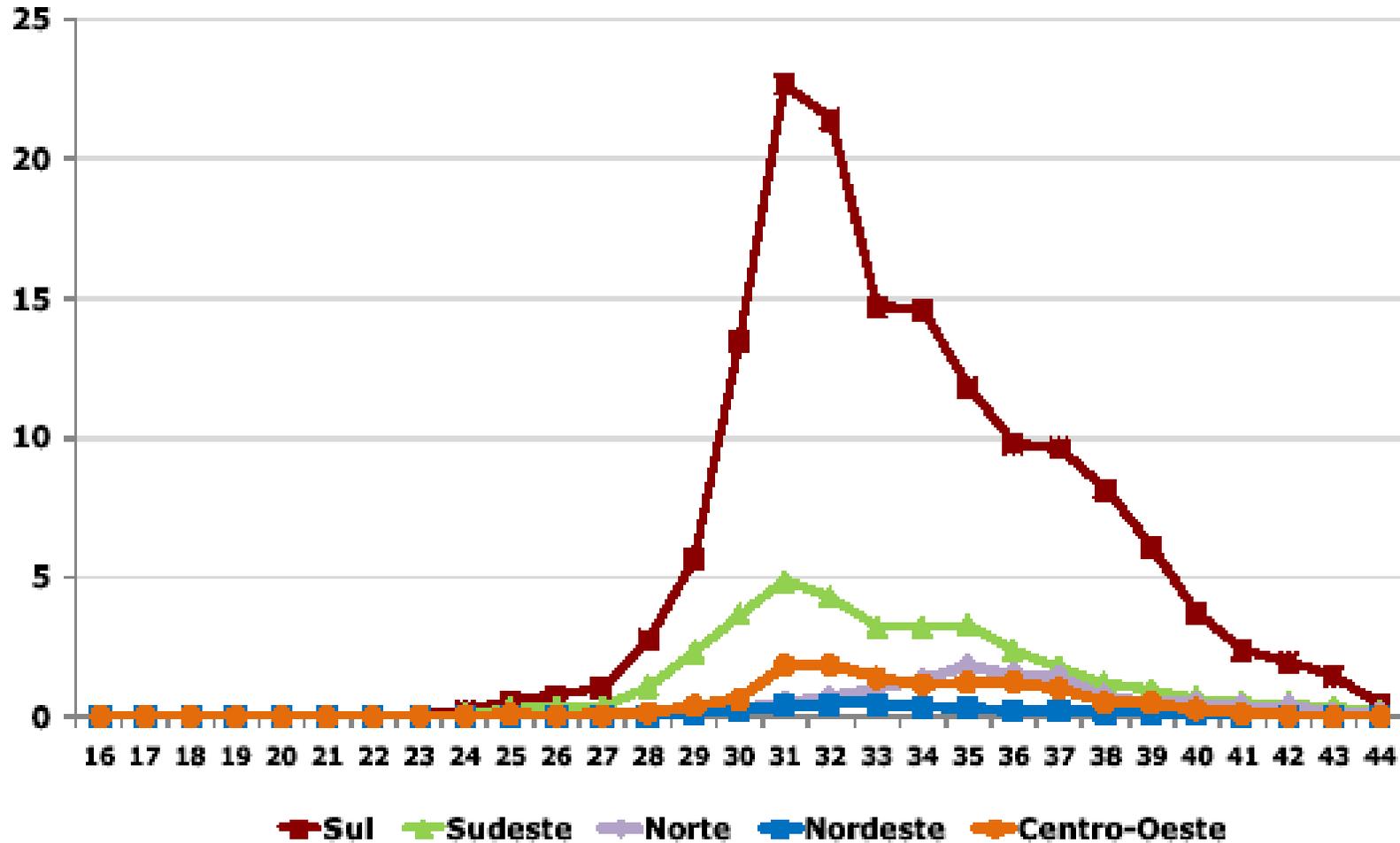
Chefe do Serviço de Terapia Intensiva

HNR – Fpolis



Incidência Brasil

Incidência por 100 mil hab.



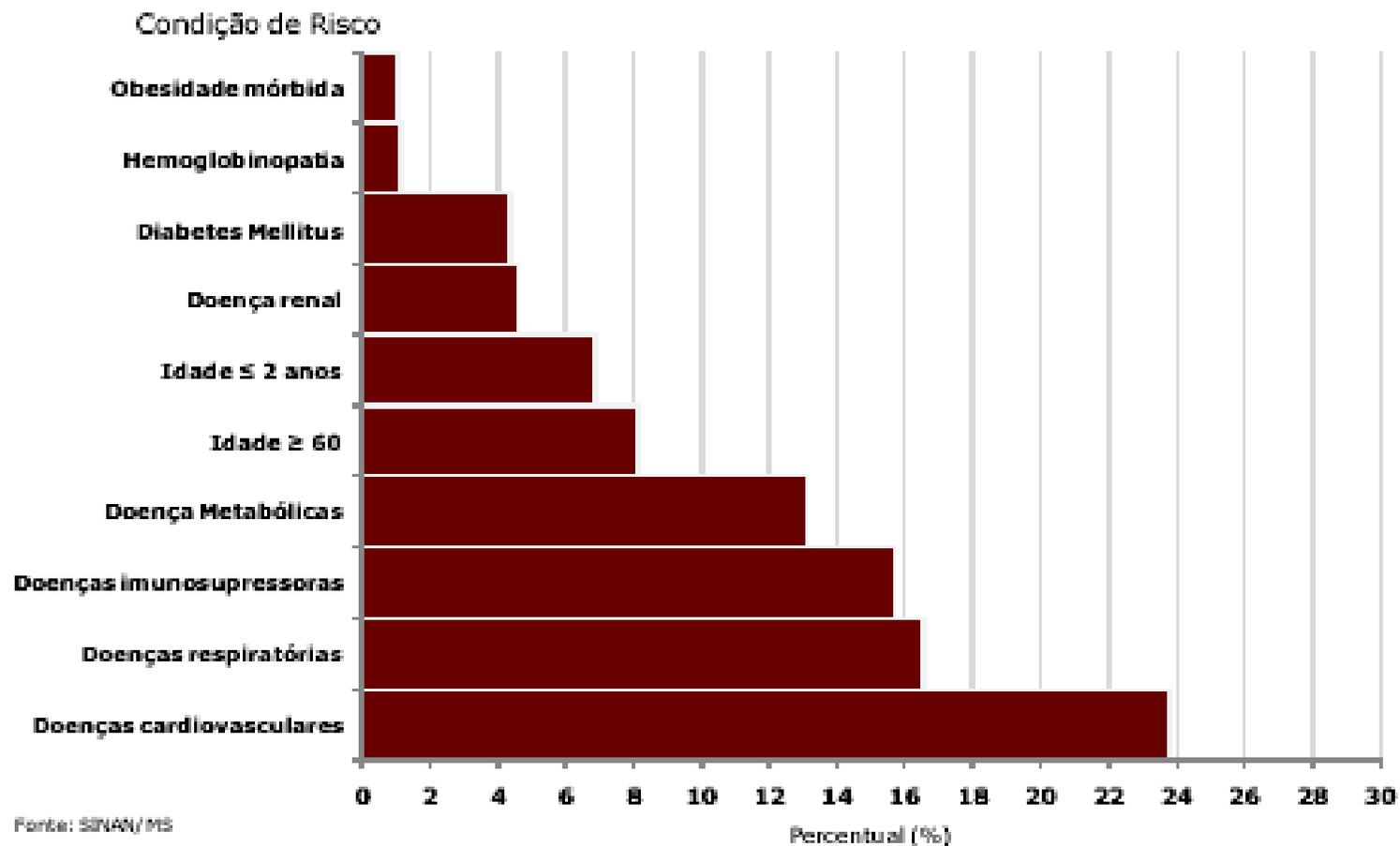
Incidência Brasil

Tabela 5. Distribuição de óbitos por Influenza Pandêmica por região e Unidade Federada de residência. SE 44/2009.

Região/UF	Óbitos Influenza Pandêmica		Estimativa populacional (IBGE, 2009)	Taxa de mortalidade (por 100 mil hab.)
	n	%		
Região Sul	607	39,7	27.718.997	2,19
.. Paraná	286	18,7	10.686.228	2,68
.. Rio Grande do Sul	208	13,6	10.914.042	1,91
.. Santa Catarina	113	7,4	6.118.727	1,85
Região Sudeste	786	51,4	80.915.637	0,97
.. São Paulo	530	34,7	41.384.089	1,28
.. Rio de Janeiro	134	8,8	16.010.386	0,84
.. Minas Gerais	113	7,4	20.034.068	0,56
.. Espírito Santo	9	0,6	3.487.094	0,26
Região Centro-Oeste	103	6,7	13.895.467	0,74
.. Goiás	66	4,3	5.926.308	1,11
.. Mato Grosso do Sul	15	1,0	2.360.550	0,64
.. Distrito Federal	9	0,6	2.606.884	0,35
.. Mato Grosso	13	0,9	3.001.725	0,43

Condições de risco para complicações

Gráfico 8. Proporção de condições de risco para complicação entre os óbitos por influenza pandêmica. Brasil, SE 44/2009.



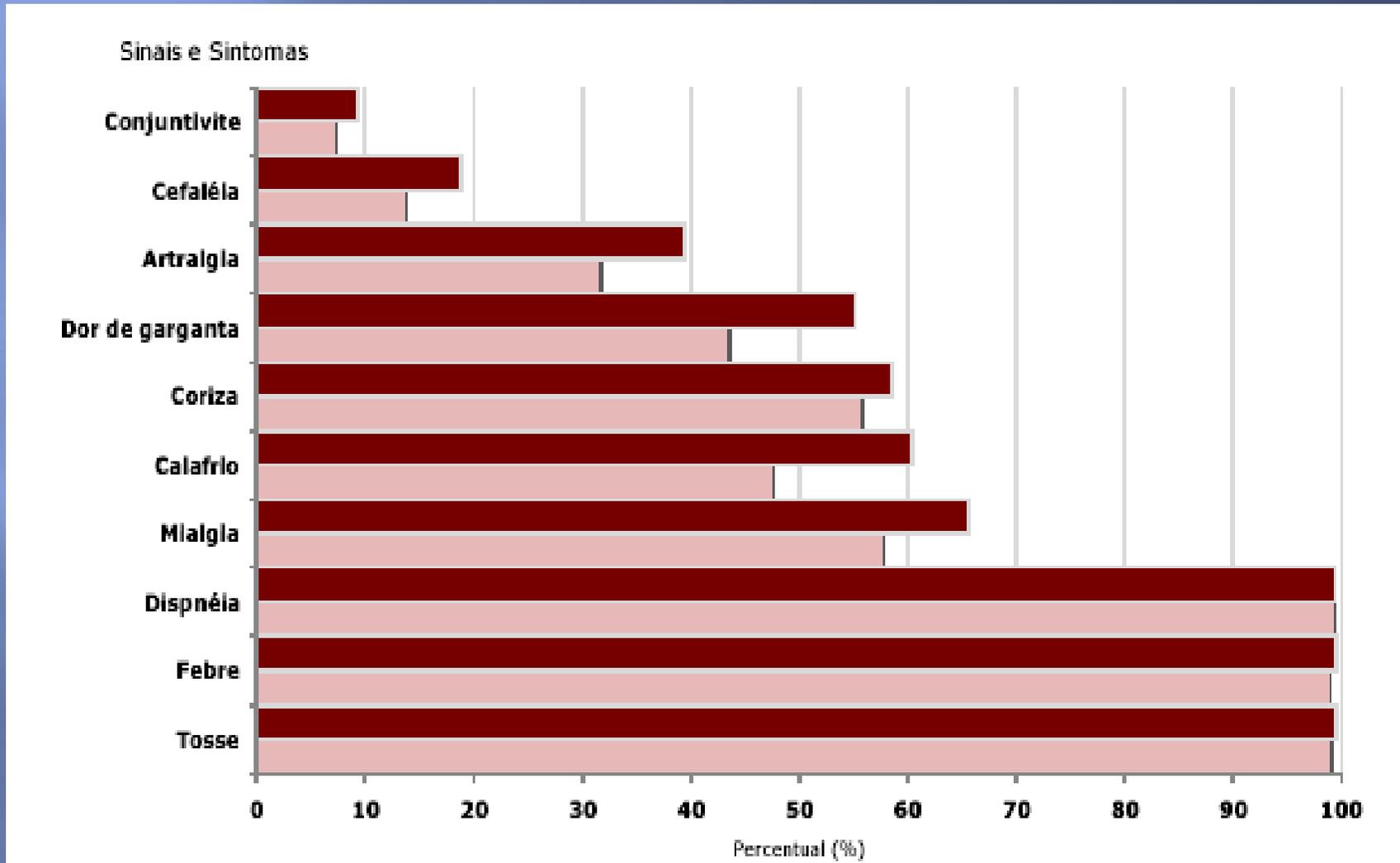
Complicações

Condições para complicação	n	%
Menor 2 anos	2.048	9,1
Comorbidade (uma ou mais)	6.954	16,4
Tabagismo	1.658	7,3
Maior 60 anos	924	4,1
Gestante (MIF* n= 8.709)	1.732	19,9

Fonte: SINAN/ MS

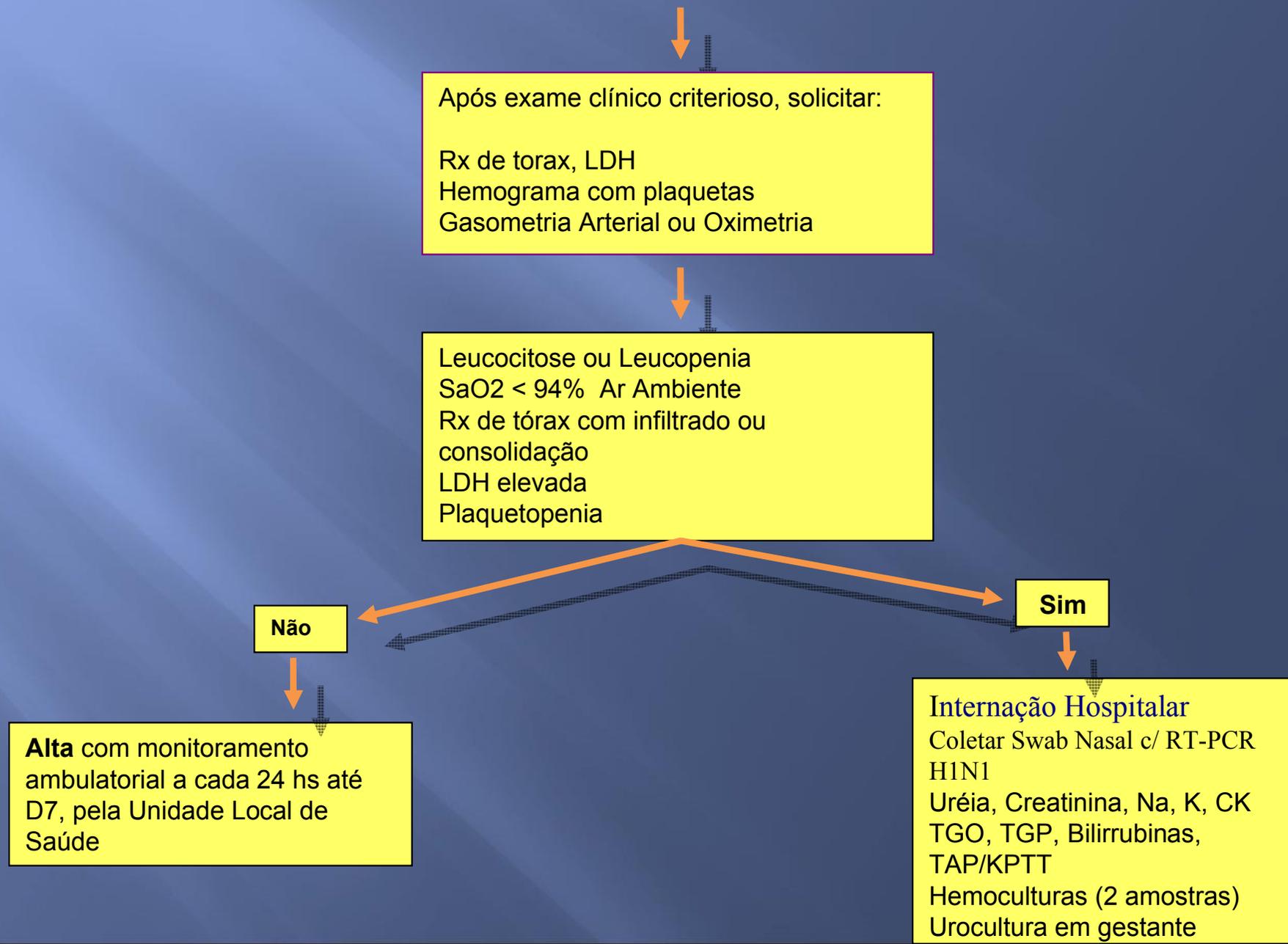
MIF: Mulheres em Idade Fértil.

Sintomas



Fluxograma de Atendimento de Pacientes com S.R.A.G. - Adultos

Paciente com doença respiratória aguda com febre $> 38^{\circ}\text{C}$, tosse e dispnéia ($\text{FR} > 25$ irpm), podendo ou não estar acompanhado de odinofagia ou sintomas gastrointestinais



Tratamento

•Oseltamivir:

•Oseltamivir deve ser prescrito para pacientes com sintomas \leq 48 horas, e a dose preconizada é de 75mg (oral ou por sonda) 12/12h por 5dias.

•A duração do tratamento com oseltamivir é de 7 a 10 dias nos casos graves.

•A dose deverá ser dobrada em obesos com IMC >35 e/ou quando o paciente estiver hemodinamicamente instável.

•O início de Oseltamivir após 48 horas do início dos sintomas deve ser considerado nos seguintes casos:

1.presença de 2 critérios de gravidade abaixo

Ou

1.presença de 1 critério de gravidade abaixo + 1 fator de risco associado

Critérios de gravidade	Fatores de risco
🕒 leucócitos > 12.000 ou < 4.000	🕒 SIDA
🕒 temperatura axilar $>38^{\circ}\text{C}$	🕒 DPOC
🕒 hipotensão – PAM < 60 mmHg ou PAD < 90 mmHg	🕒 DM
🕒 Alteração do sensorio (agitação, sonolência ou confusão mental)	🕒 ICC
	🕒 Asma
	🕒 Insuficiência Renal Crônica
	🕒 Hemoglobinopatias
	🕒 > 65 anos ou < 2 anos
	🕒 IMC > 35 (obesidade)
	🕒 Gravidez

• Lembrar de ajustar a dose conforme clearance de creatinina. O oseltamivir deve ser 50% da dose quando o clearance for menor que 30%.

Tratamento

•Antibioticoterapia:

•É recomendado o tratamento inicial para pneumonia comunitária grave:

a) **Amoxicilina + clavulanato** (1g 8/8h) ou **Ampicilina + sulbactan** (3g 6/6h) ou **Ceftriaxone** (1g 12/12h) – por 7 a 10 dias

+

Macrolídeo – Azitromicina (500mg 1x/dia) ou Claritromicina (500mg 12/12h) – por 14 dias

b) Para pacientes alérgicos a penicilinas sugere-se Levofloxacina 750mg 1x/d

c) Pacientes institucionalizados, portadores de DPOC, internados nos últimos 6 meses, com risco de infecção por Gram negativo, bronquiectásicos, avaliar a necessidade de cobertura anti-pseudomonas:

Piperacilina – tazobactan (4,5g 8/8h) ou Cefepime (2g 8/8h)

associado a

macrolídeo – Azitromicina (500mg 1x/dia) ou Claritromicina (500mg 12/12h) – por 14 dias

Tratamento - Suporte Hemodinâmico

Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock: 2008

Initial resuscitation (first 6 hours)

Strength of recommendation and quality of evidence have been assessed using the GRADE criteria, presented in brackets after each guideline. For added clarity: ● Indicates a strong recommendation or “we recommend”; ○ indicates a weak recommendation or “we suggest”

- Begin resuscitation immediately in patients with hypotension or elevated serum lactate > 4mmol/l; do not delay pending ICU admission. (1C)
- Resuscitation goals: (1C)
 - Central venous pressure (CVP) 8–12 mm Hg*
 - Mean arterial pressure \geq 65 mm Hg
 - Urine output \geq 0.5 mL.kg⁻¹.hr⁻¹
 - Central venous (superior vena cava) oxygen saturation \geq 70%, or mixed venous \geq 65%
- If venous O₂ saturation target not achieved: (2C)
 - consider further fluid
 - transfuse packed red blood cells if required to hematocrit of \geq 30% and/or
 - dobutamine infusion max 20 μ g.kg⁻¹.min⁻¹

* A higher target CVP of 12–15 mmHg is recommended in the presence of mechanical ventilation or pre-existing decreased ventricular compliance.

Tratamento - Suporte Hemodinâmico

Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock: 2008

Fluid therapy

Strength of recommendation and quality of evidence have been assessed using the GRADE criteria, presented in brackets after each guideline. For added clarity: ● Indicates a strong recommendation or “we recommend”; ○ indicates a weak recommendation or “we suggest”

- Fluid-resuscitate using crystalloids or colloids. (1B)
- Target a CVP of ≥ 8 mm Hg (≥ 12 mm Hg if mechanically ventilated). (1C)
- Use a fluid challenge technique while associated with a haemodynamic improvement. (1D)
- Give fluid challenges of 1000 ml of crystalloids or 300–500 ml of colloids over 30 min. More rapid and larger volumes may be required in sepsis-induced tissue hypoperfusion. (1D)
- Rate of fluid administration should be reduced if cardiac filling pressures increase without concurrent hemodynamic improvement. (1D)

Vasopressors

- Maintain MAP ≥ 65 mm Hg. (1C)
- Norepinephrine or dopamine centrally administered are the initial vasopressors of choice. (1C)
- Epinephrine, phenylephrine or vasopressin should not be administered as the initial vasopressor in septic shock. (2C)
 - Vasopressin 0.03 units/min maybe subsequently added to norepinephrine with anticipation of an effect equivalent to norepinephrine alone.
- Use epinephrine as the first alternative agent in septic shock when blood pressure is poorly responsive to norepinephrine or dopamine. (2B)
- Do not use low-dose dopamine for renal protection. (1A)
- In patients requiring vasopressors, insert an arterial catheter as soon as practical. (1D)

Inotropic therapy

- Use dobutamine in patients with myocardial dysfunction as supported by elevated cardiac filling pressures and low cardiac output. (1C)
- Do not increase cardiac index to predetermined supranormal levels. (1B)

Tratamento - Corticóides

- ▣ Não utilizar de rotina

Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock: 2008

Steroids

- Consider intravenous hydrocortisone for adult septic shock when hypotension remains poorly responsive to adequate fluid resuscitation and vasopressors. (2C)
- ACTH stimulation test is not recommended to identify the subset of adults with septic shock who should receive hydrocortisone. (2B)
- Hydrocortisone is preferred to dexamethasone. (2B)
- Fludrocortisone (50 µg orally once a day) may be included if an alternative to hydrocortisone is being used which lacks significant mineralocorticoid activity. Fludrocortisone is optional if hydrocortisone is used. (2C)
- Steroid therapy may be weaned once vasopressors are no longer required. (2D)
- Hydrocortisone dose should be \leq 300 mg/day. (1A)
- Do not use corticosteroids to treat sepsis in the absence of shock unless the patient's endocrine or corticosteroid history warrants it. (1D)

Considerações Gerais do Tratamento

- ▣ Todos pacientes devem ser mantidos sob precaução padrão mais gotículas
- ▣ Controle de sinais vitais e SaO₂ pelo menos 4x/d
- ▣ Exames alterados devem ser repetidos no mínimo a cada 48 hs
- ▣ Indica-se uso de medicamentos inalatórios com espaçador, contraindicando-se a nebulização
- ▣ Notificação imediata em casos suspeitos

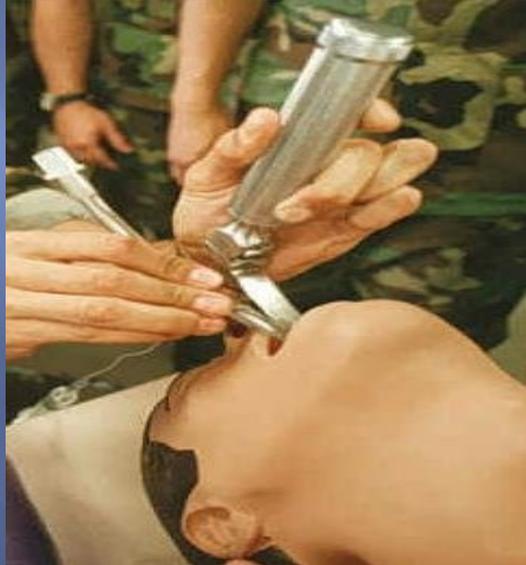
Tratamento – Suporte Ventilatório

- ▣ Oxigêniooterapia se $SaO_2 < 94\%$
- ▣ **Não recomendamos VNI** pois:
 1. A deterioração clínica pode ser rápida
 2. Pode retardar muito a intubação
 3. Está relacionada com formação de aerossol e aumento risco de transmissão



Tratamento

- ▣ Intubação Traqueal = SaO₂ < 92% em Macro a 7 litr/min

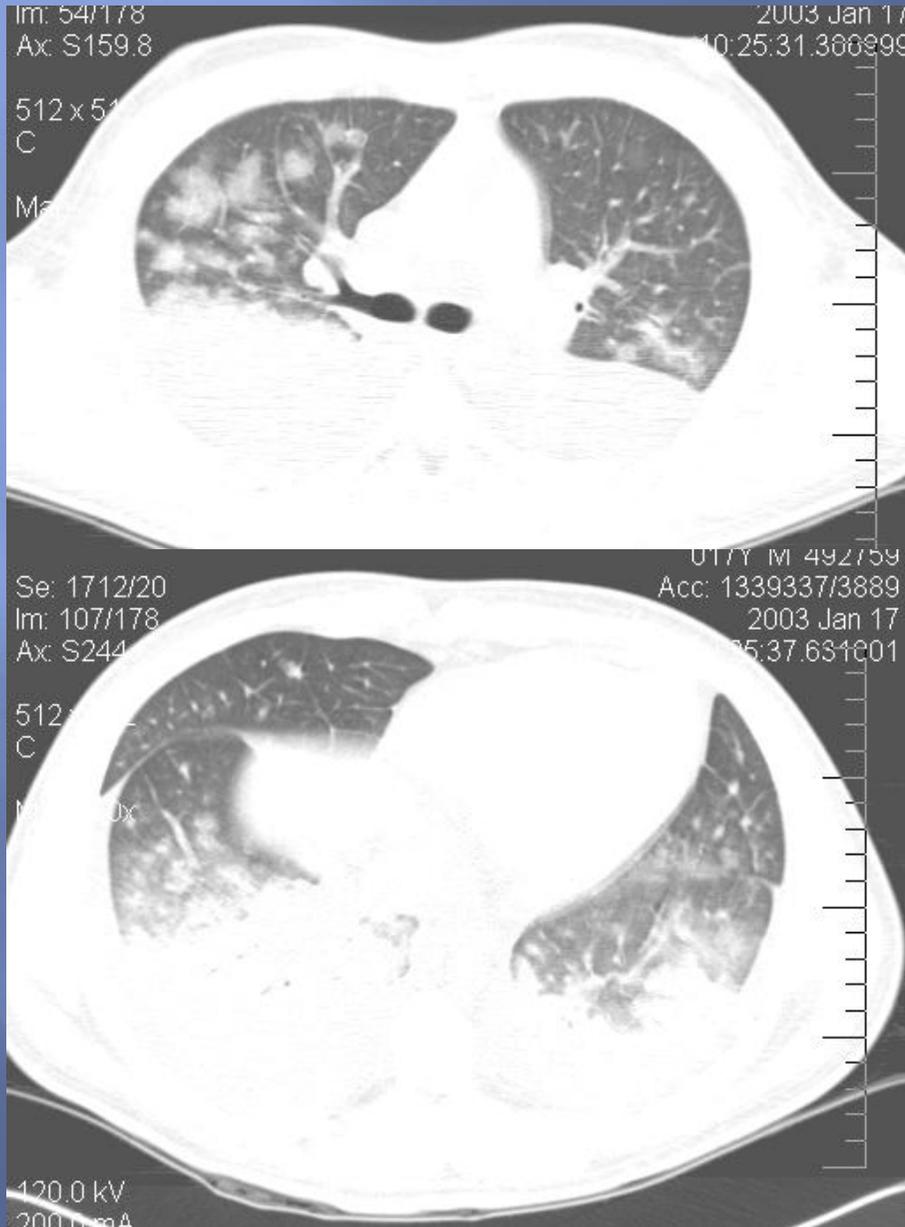


- ▣ Após intubado, utilizar sistema de aspiração fechado

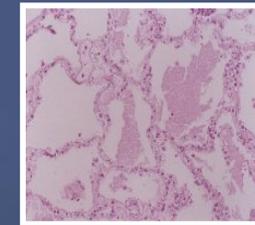


Tratamento Ventilatório

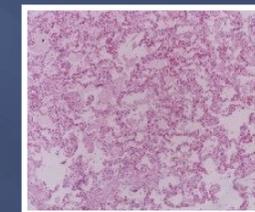
Fisiopatologia SDRA/LPA



EDEMA



**PRESSÃO
SUPERIMPOSTA**

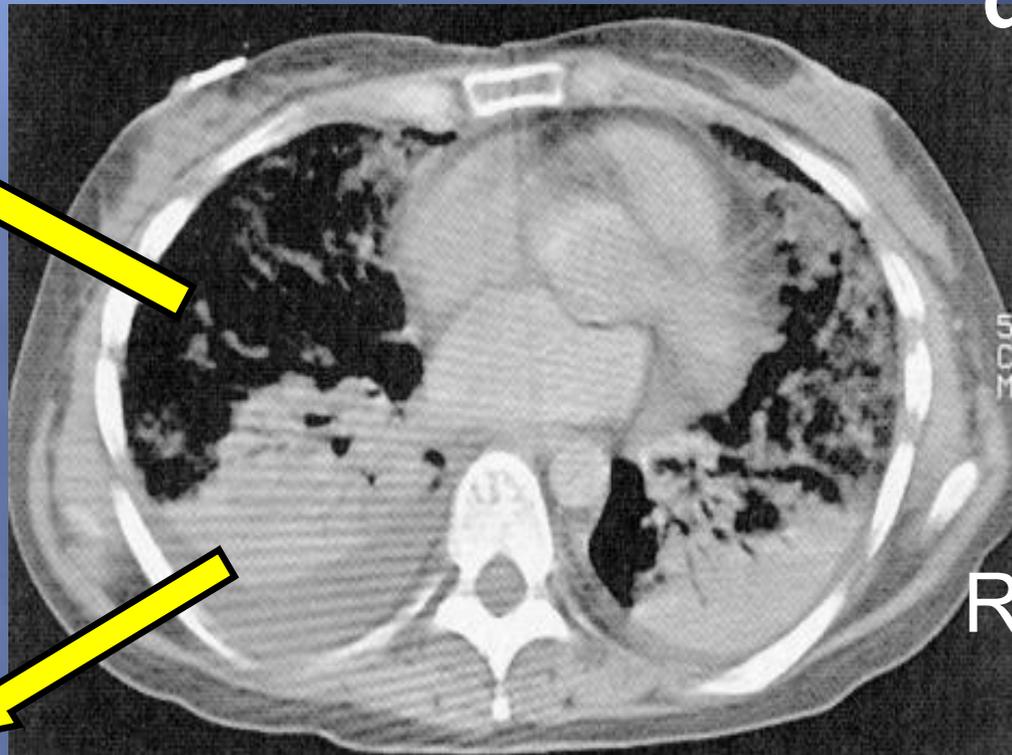
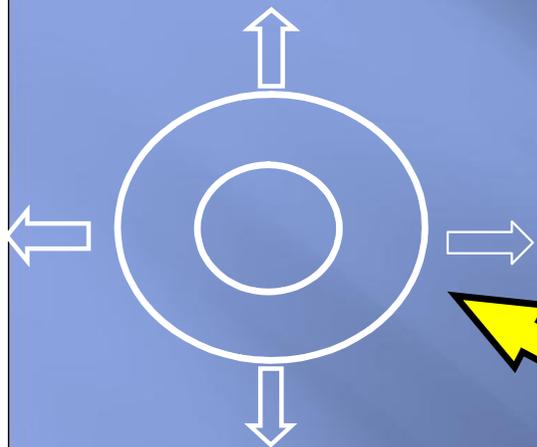


COLAPSO

**G
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E**

Ventilação Mecânica em LPA/SDRA

Mecanismos de lesão



Abordagens
de prevenção

↓ P alveolar

↓ VC

Recrutamento
alveolar

+

PEEP adequado

Homogenizar
ventilação



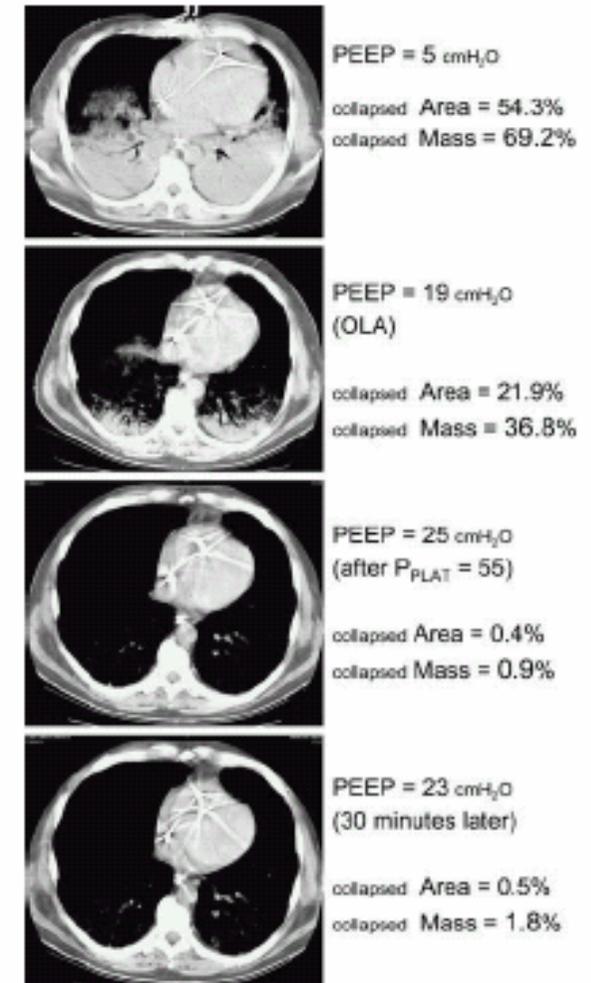
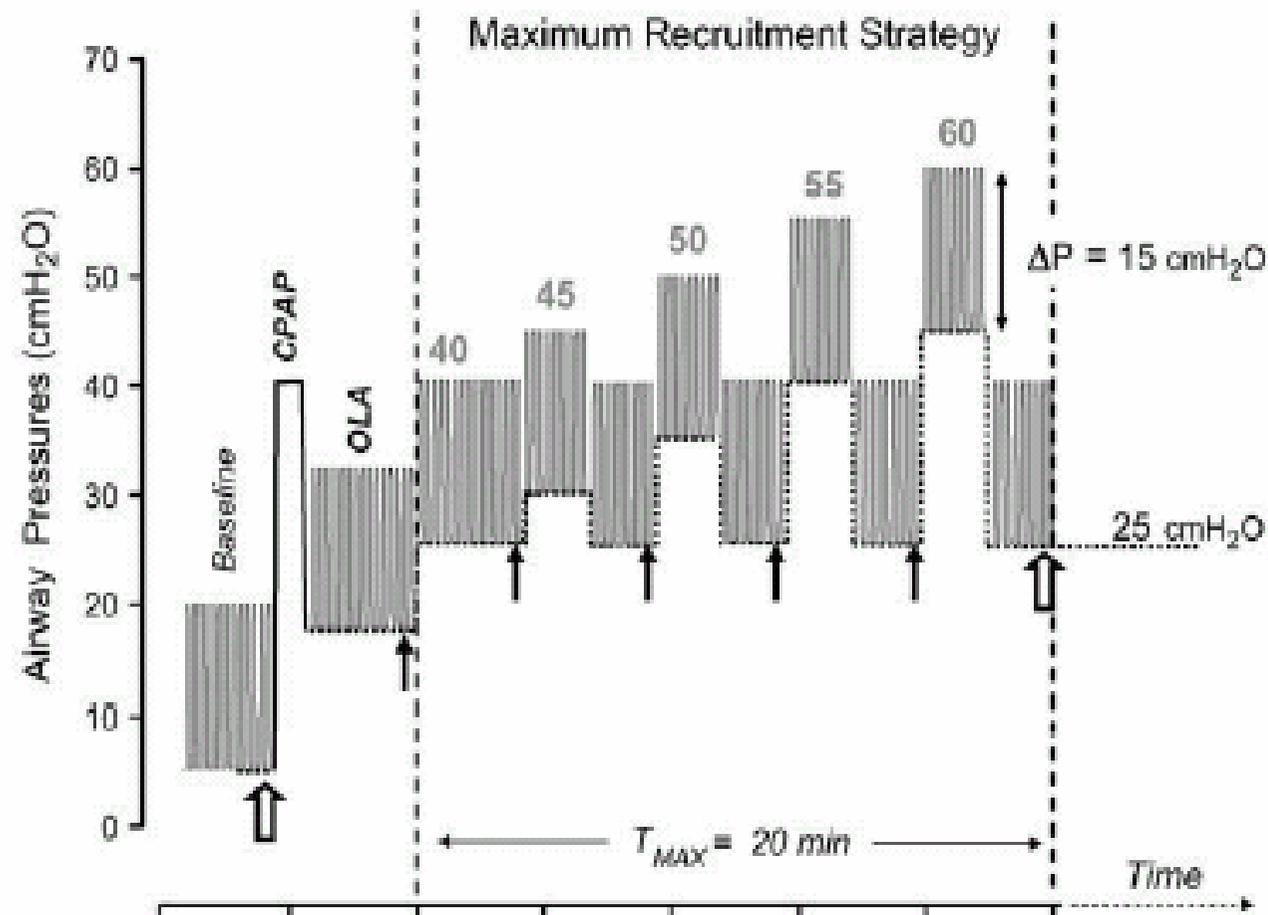
Reversibility of Lung Collapse and Hypoxemia in Early Acute Respiratory Distress Syndrome

João B. Borges, Valdelis N. Okamoto, Gustavo F. J. Matos, Maria P. R. Carames, Paula R. Arantes, Fabio Barros, Ciro E. Souza, Josué A. Victorino, Robert M. Kacmarek, Carmen S. V. Barbas, Carlos R. R. Carvalho, and Marcelo B. P. Amato

Respiratory Intensive Care Unit, Pulmonary Department, and General Intensive Care Unit, Emergency Clinics Division, Hospital das Clínicas, University of São Paulo, São Paulo, Brazil; and Department of Respiratory Care, Massachusetts General Hospital, Boston, Massachusetts

Borges, Okamoto, Matos, *et al.*: Reversibility of Lung Collapse

Borges, Okamoto, Matos, *et al.*: Reversibility of Lung Collapse





Posição Prona

Ventilation in the prone position Guérin 53

Table 2 Summary of the three multicenter prospective randomized controlled trials of prone position in acute lung injury/acute respiratory distress syndrome

	Gattinoni [1]		Guérin [4*]		Mancebo [19]	
	SP	PP	SP	PP	SP	PP
No. patients analyzed	152	152	378	413	60	76
Inclusion criteria	Acute lung injury ($\text{PaO}_2/\text{FIO}_2 < 300$)		$\text{PaO}_2/\text{FIO}_2 < 300$		ARDS ($\text{PaO}_2/\text{FIO}_2 < 200$)	
Dose of PP per day						
Planned	At least 6 h		At least 8 h		20 h	
Performed	7 h		8 h		13 h	
Randomization						
Tidal volume (ml/kg)	10.3 ± 2.9 p	10.3 ± 2.7 p	8.1 ± 1.9 m	8.1 ± 2.0 m	8.6 ± 1.5 i	8.3 ± 1.7 i
PEEP (cmH ₂ O)	9.6 ± 3.2	9.7 ± 2.9	7.5 ± 3.2	7.9 ± 3.4	12 ± 2	12 ± 2
F _I O ₂ (%)	72.7 ± 18.7	73.4 ± 18.3	65.7 ± 20.4	65.7 ± 20.9	79 ± 21	84 ± 19
PaO ₂ /F _I O ₂	129.5 ± 49.5	125.3 ± 48.8	155 ± 59	150 ± 59	159 ± 22^a	127 ± 34^a
PaCO ₂	44.2 ± 11.8	45.1 ± 11	44 ± 11	44 ± 12	43 ± 11	45 ± 9
pH	Not provided		7.38 ± 0.09	7.39 ± 0.10		
Mortality	Unchanged		Unchanged		Unchanged	
VAP incidence	Not assessed		Significantly reduced in PP group			
Oxygenation	Improved in PP group		Improved in PP group			
Duration of MV	Unchanged		Unchanged			
Side effects	More pressure sores in PP group		Pressure sores, endotracheal tube obstruction or displacement more frequent in PP group			

SP, supine position; PP, prone position; ARDS, acute respiratory distress syndrome; p, predicted body weight; m, measured body weight; i, ideal; VAP, ventilator-associated pneumonia; MV, mechanical ventilation.

^aComputed from PaO₂ and F_IO₂ values given in [19].

Conclusão - Assistência Ventilatória

- ▣ Usar sistema de aspiração fechado
- ▣ Ventilar os pacientes como SDRA
- ▣ Pressão de plateau até 30 cmH₂O
- ▣ VC de 6 ml/kg
- ▣ Melhor PEEP para conseguir SaO₂ \geq 90% com FiO₂ < 60%
- ▣ Alternativas: Manobras de recrutamento alveolar, Posição prona ou Ventilação de Alta Frequência

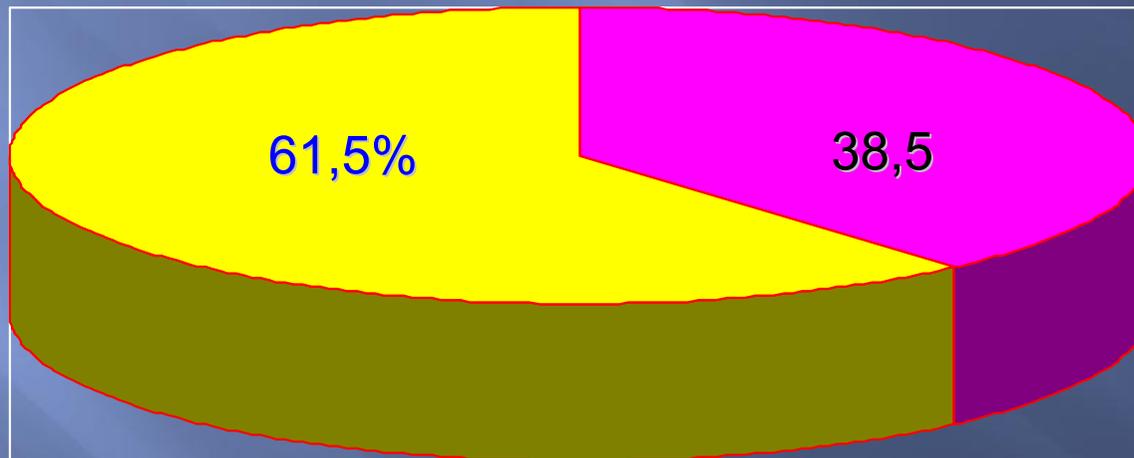
Pacientes H1N1

- 32 internações com suspeita SGRAG
- 13 confirmados H1N1 por PCR nasal
- Idade: $32,8 \pm 12,63$

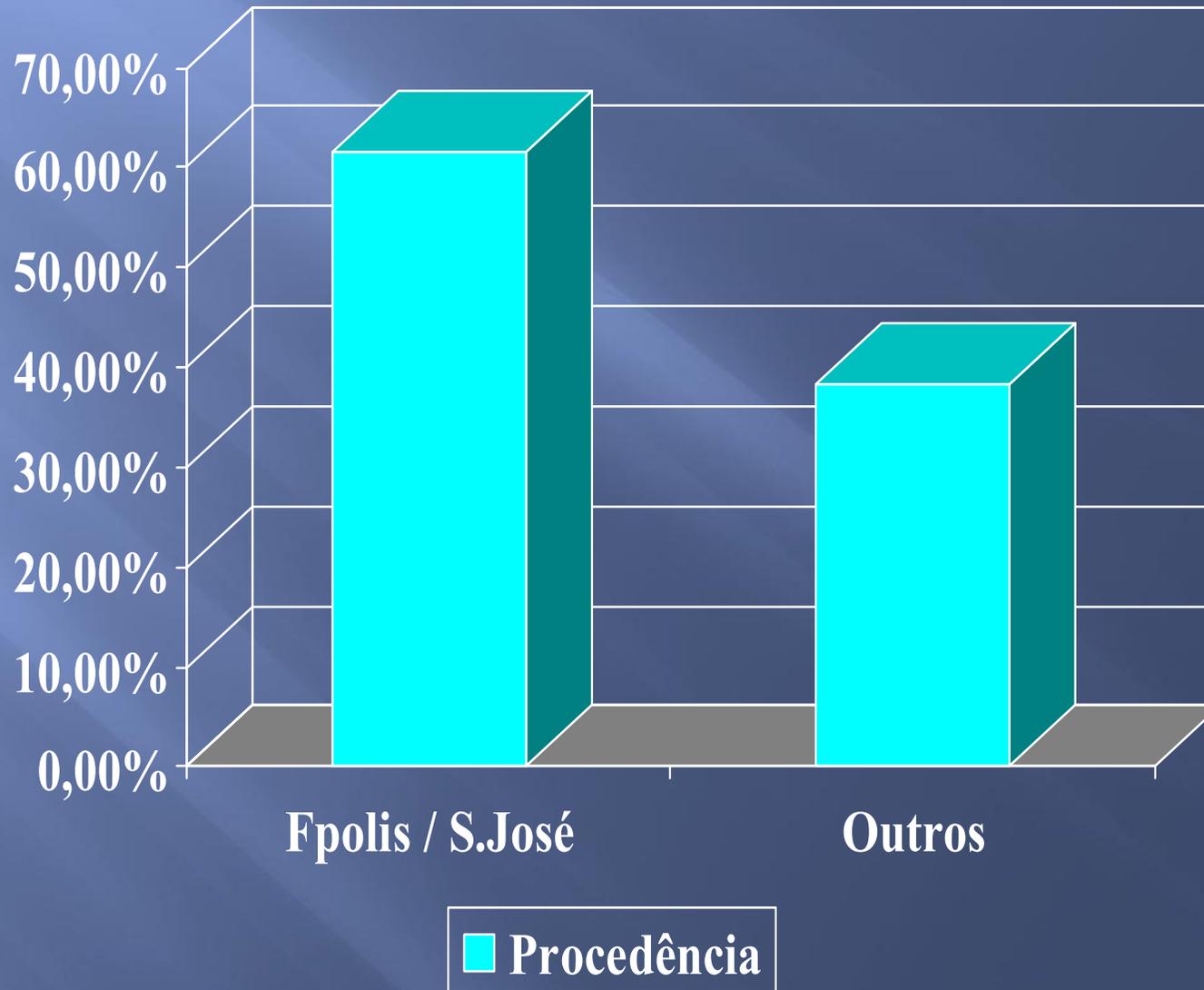
Sinais Vitais de entrada

- PAS: 128 ± 32 mmHg
- PAD: 75 ± 17 mmHg
- Pulso: 99 ± 17 bpm
- FR: 26 ± 9
- SaO₂: $89,8 \pm 7,8$
- Tax: $37,5 \pm 1,4$

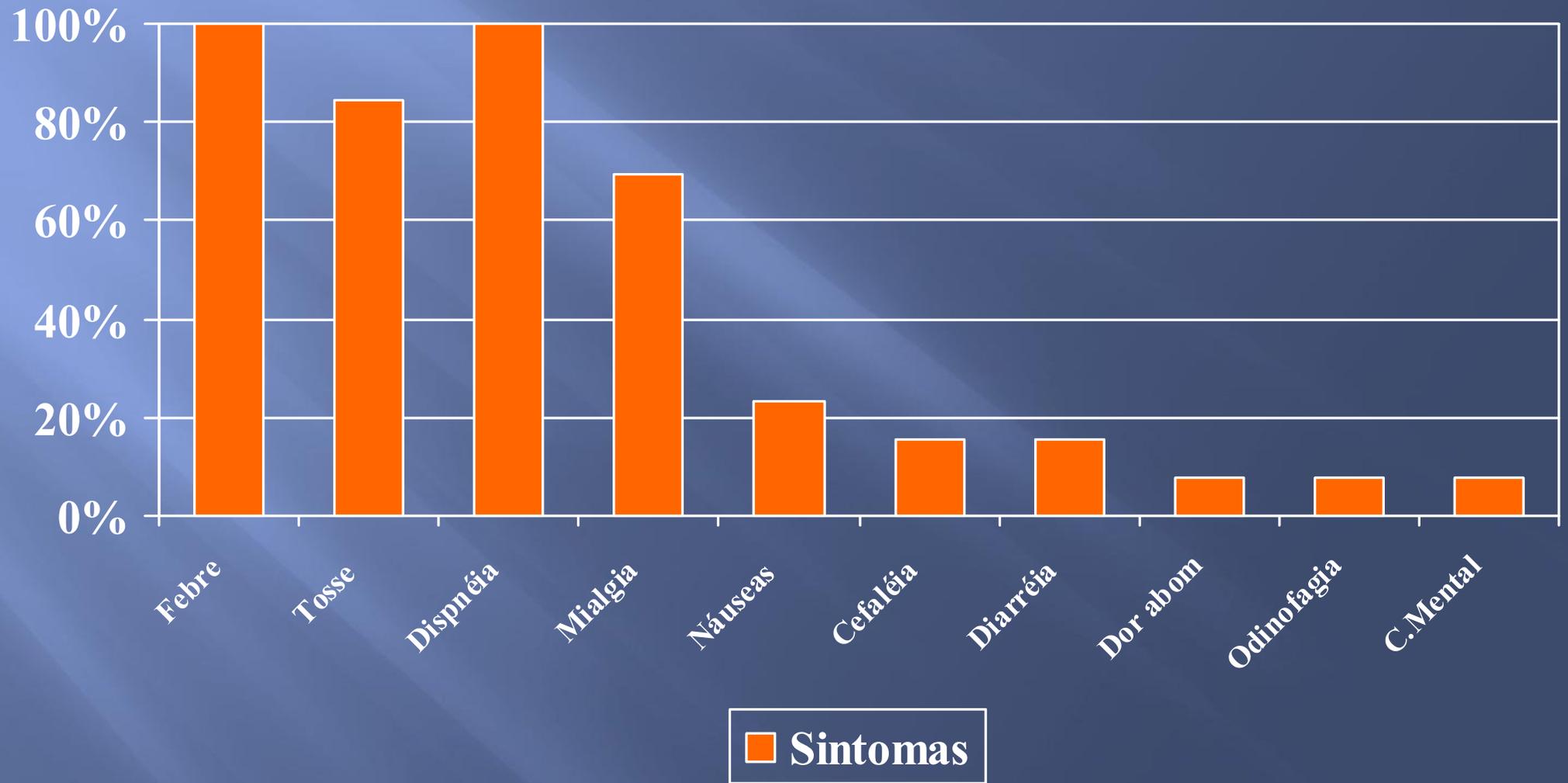
Sexo



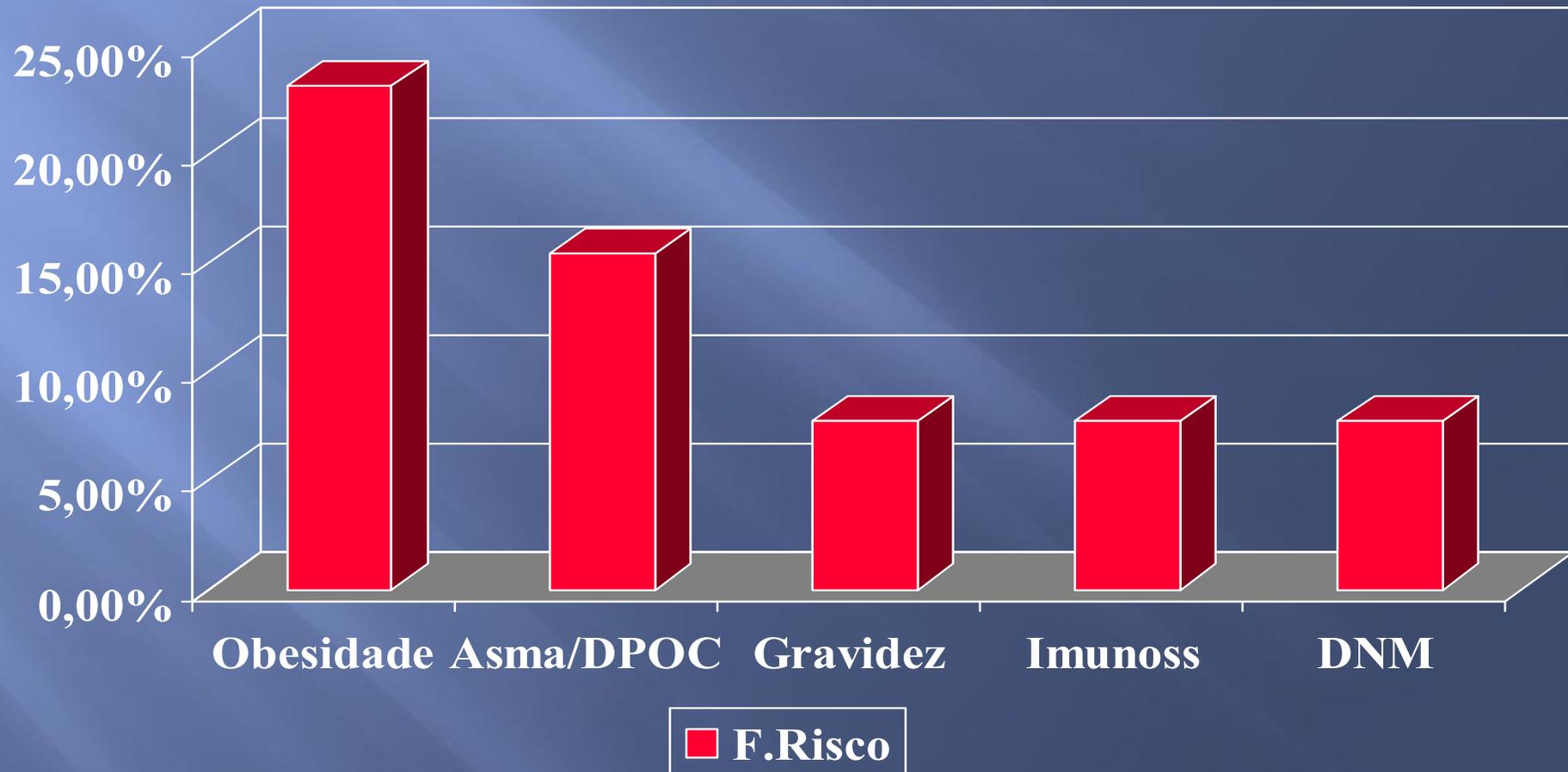
Procedência



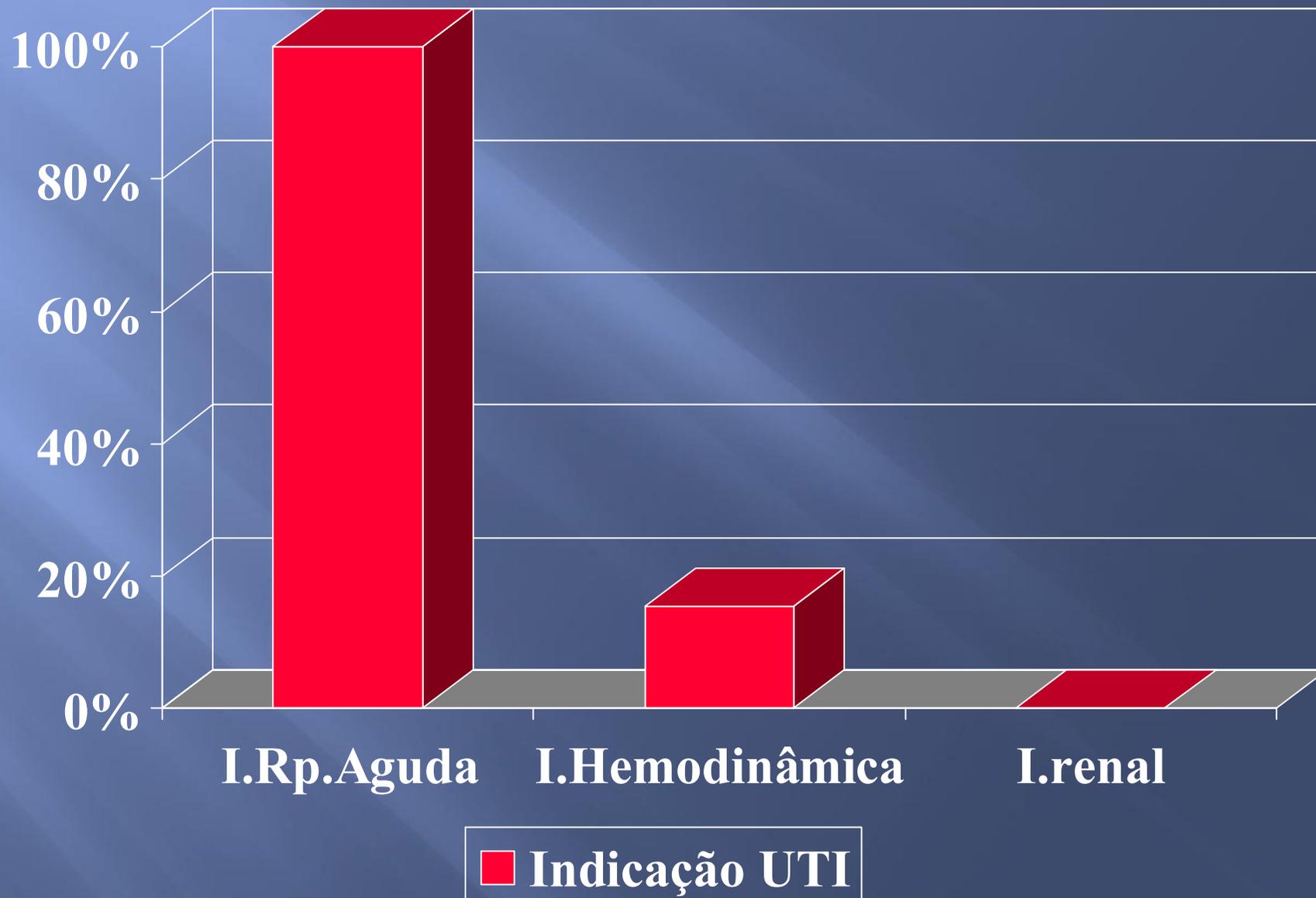
Sintomas Iniciais



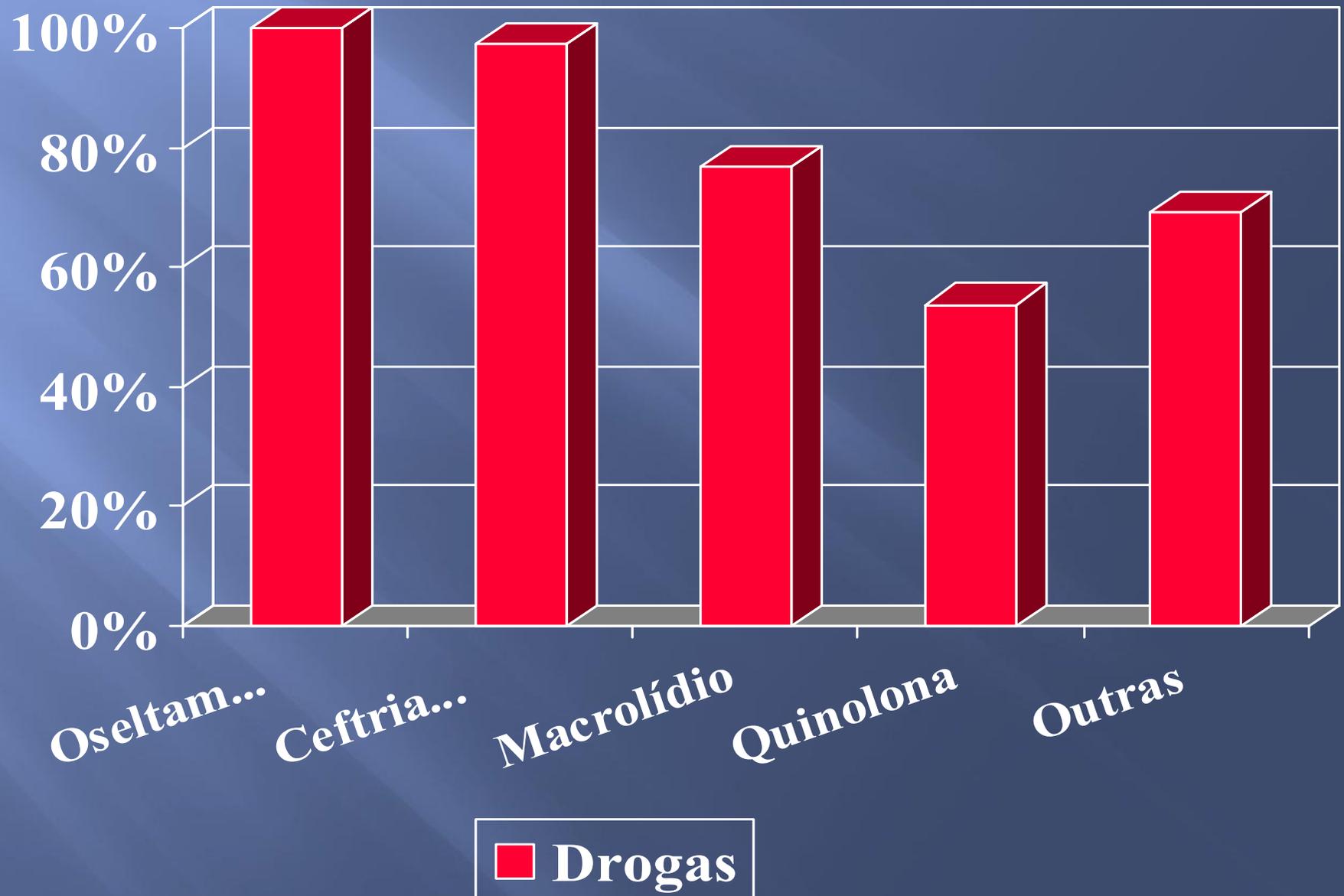
Fatores de Risco



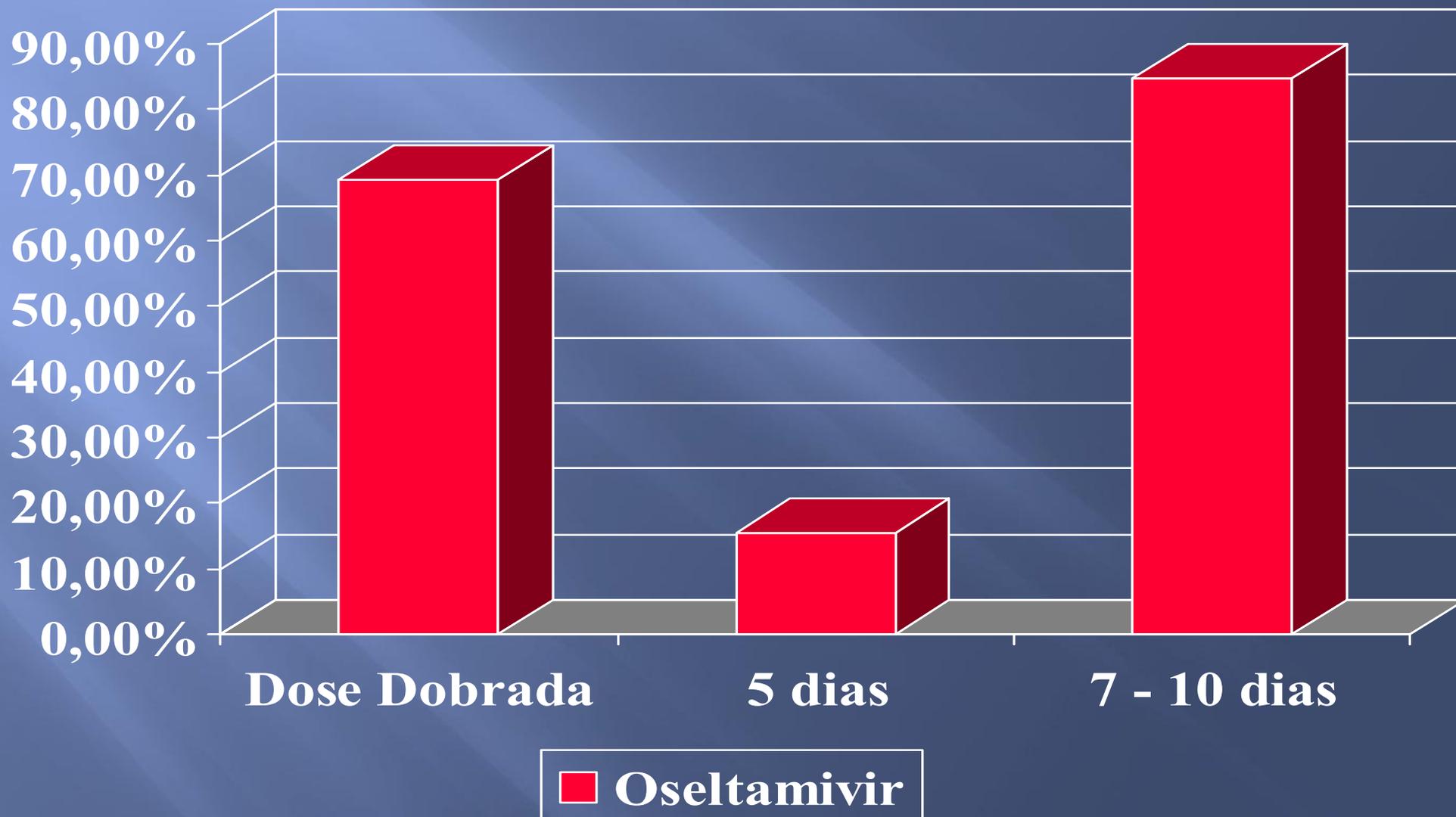
Indicação UTI



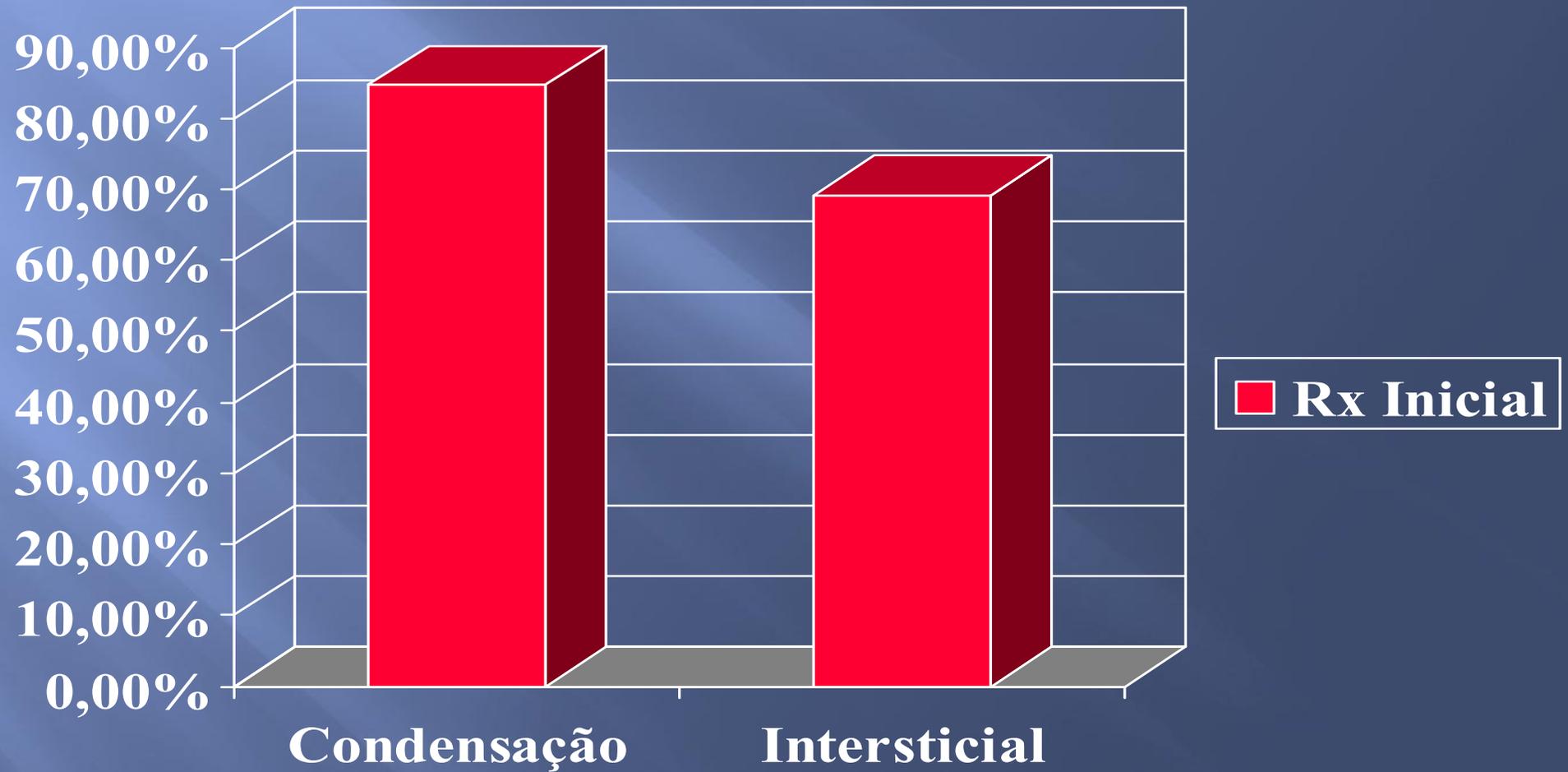
Drogas



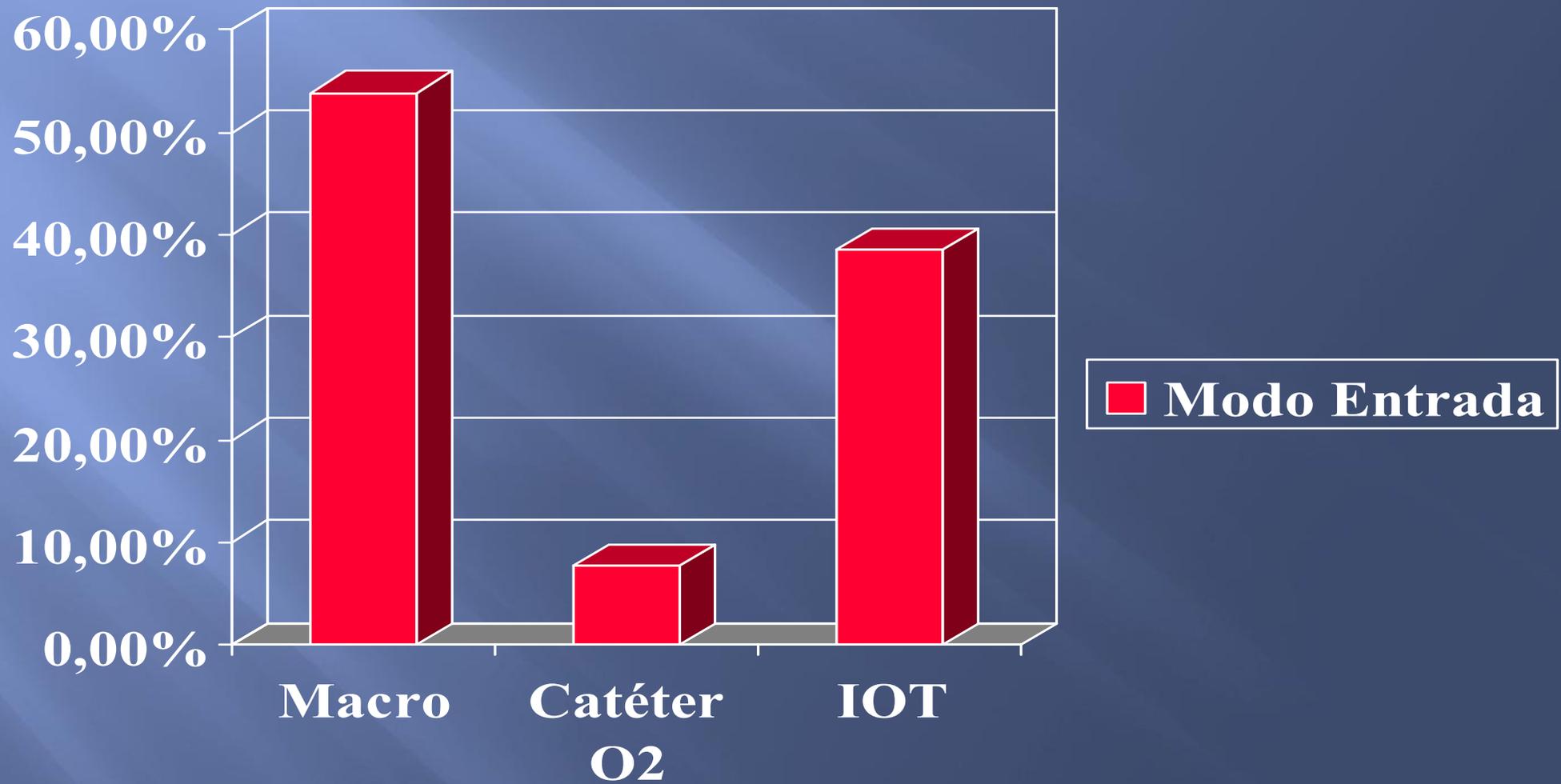
Oseltamivir



Rx de Torax



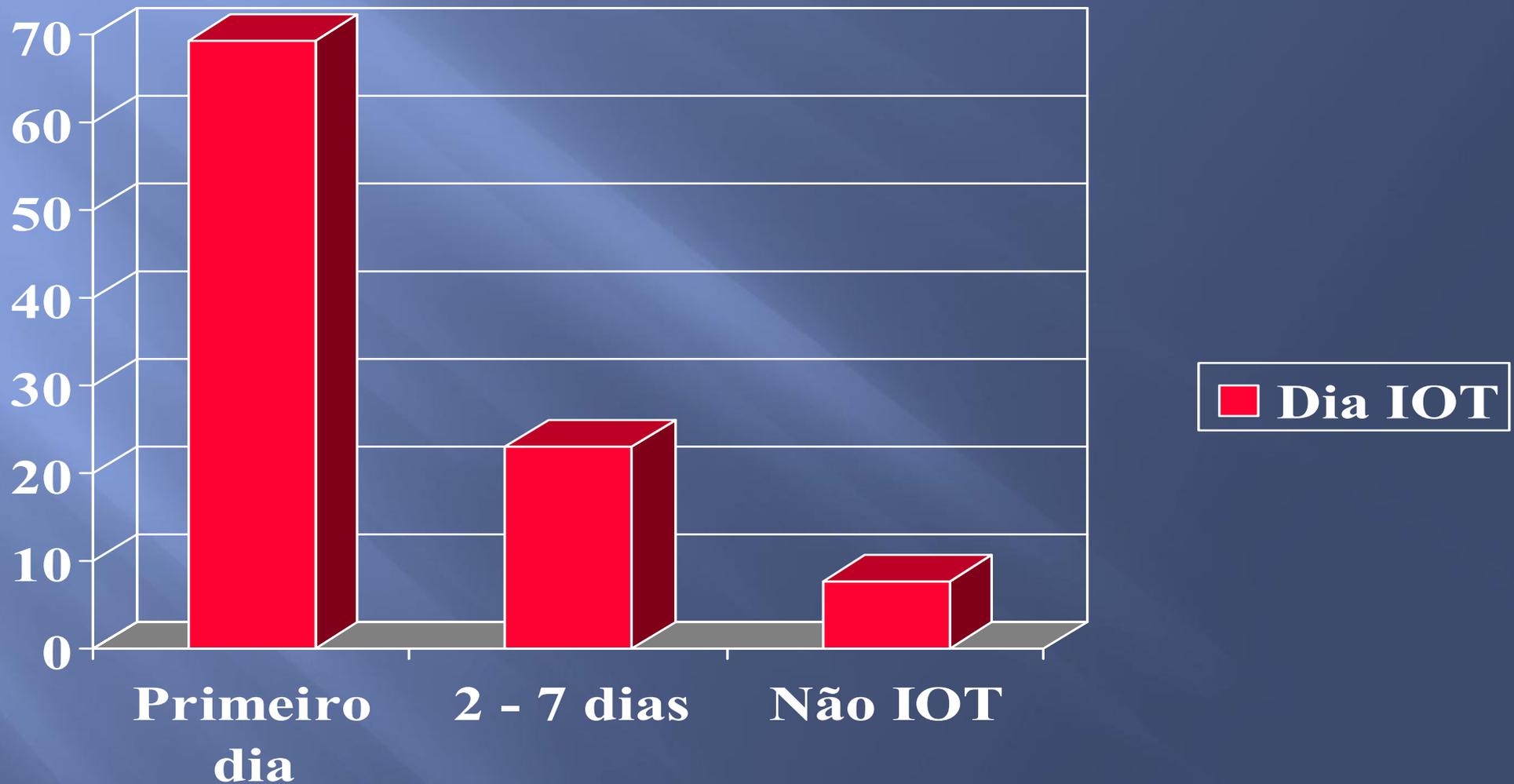
Modo de Entrada



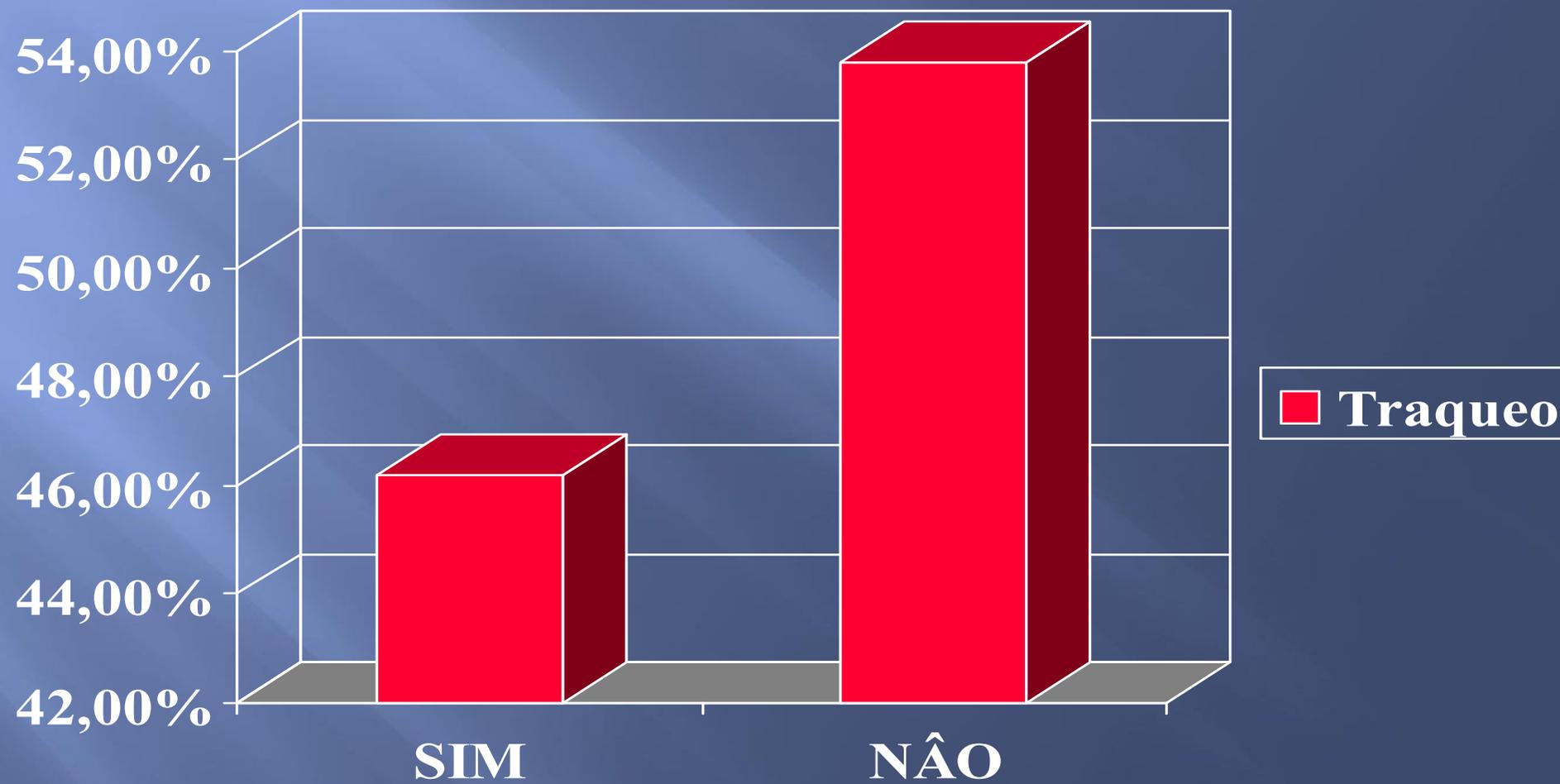
H1N1 UTI HNR

- SaO₂ 88 ± 9 mmHg
- PaO₂ 76 ± 20 mmHg
- FiO₂ 61 ± 27%
- PaO₂/FiO₂ 132 ± 39 mmHg
- SvcO₂ 73 ± 7,34%
- Lactato 2,43 ± 2,01

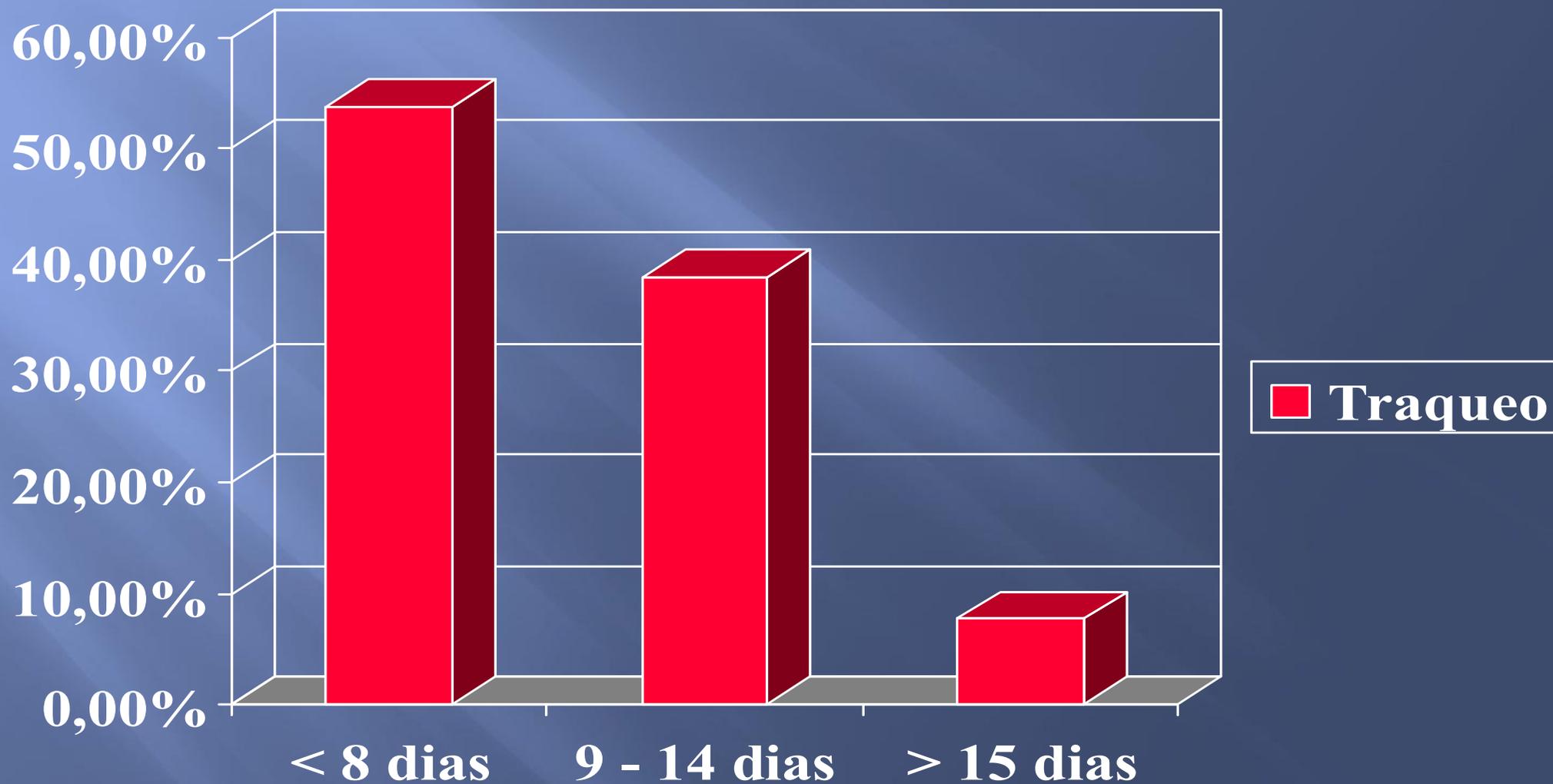
Intubação Orotraqueal



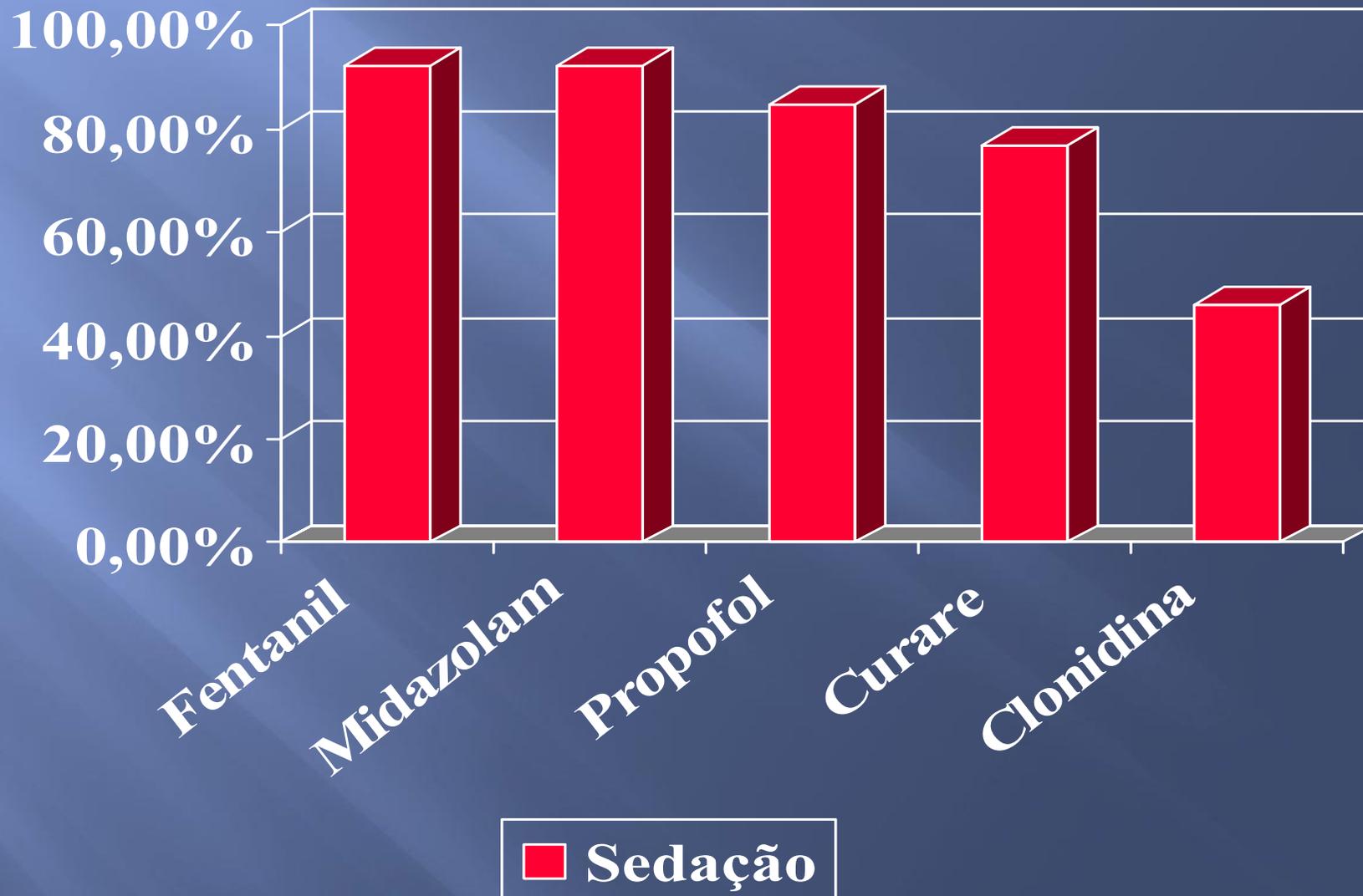
Traqueostomia



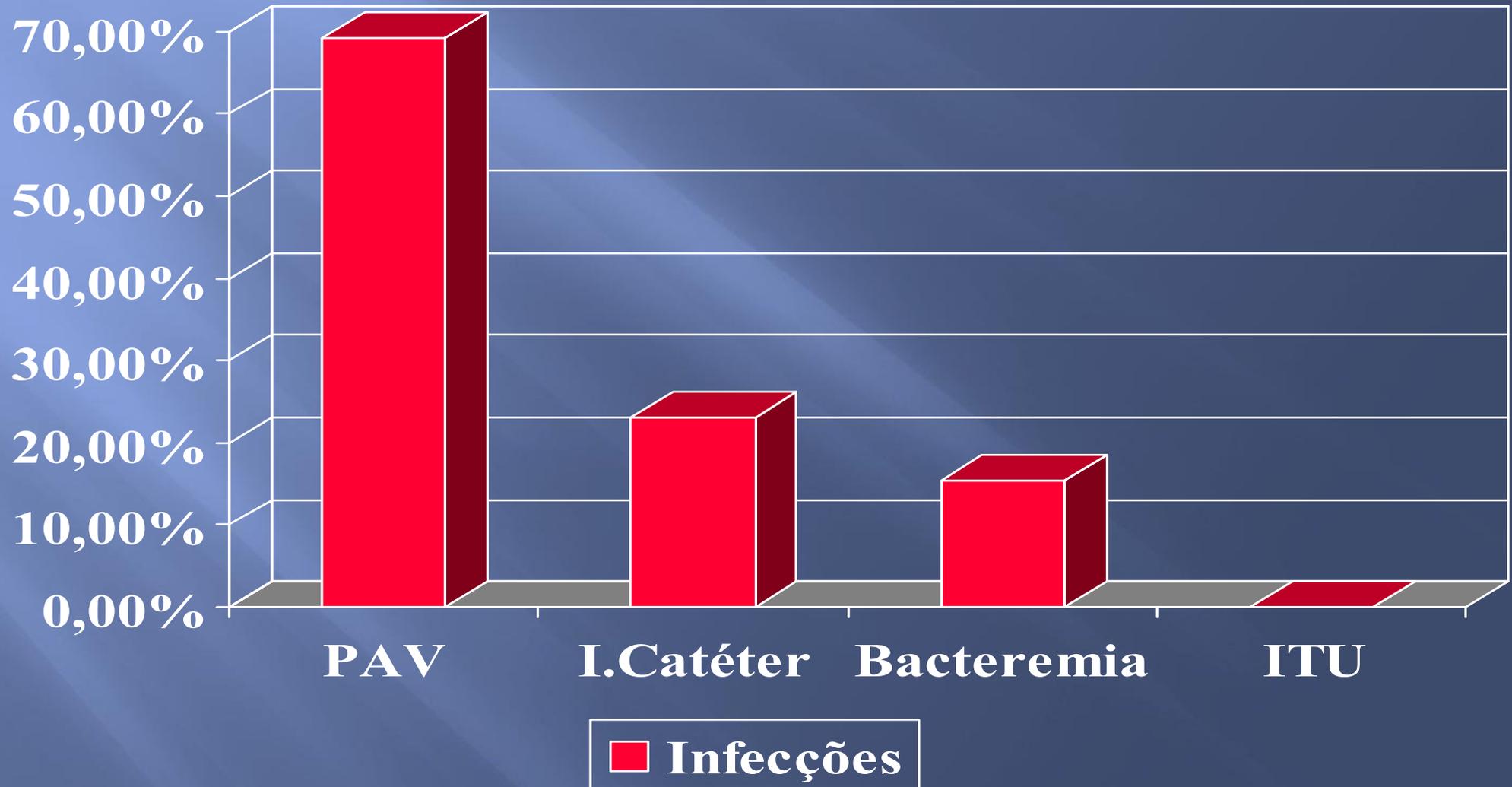
Traqueostomia



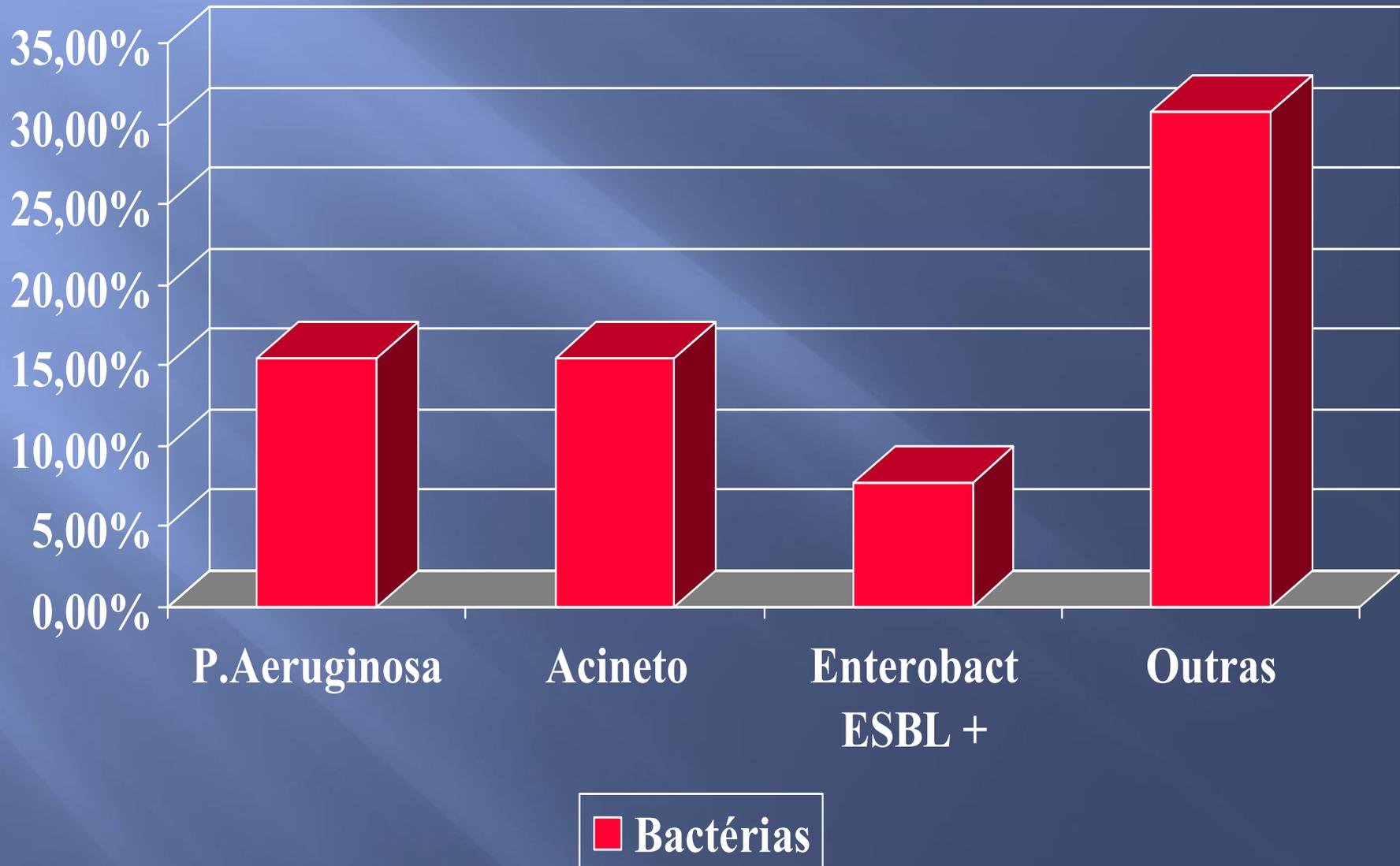
Sedação



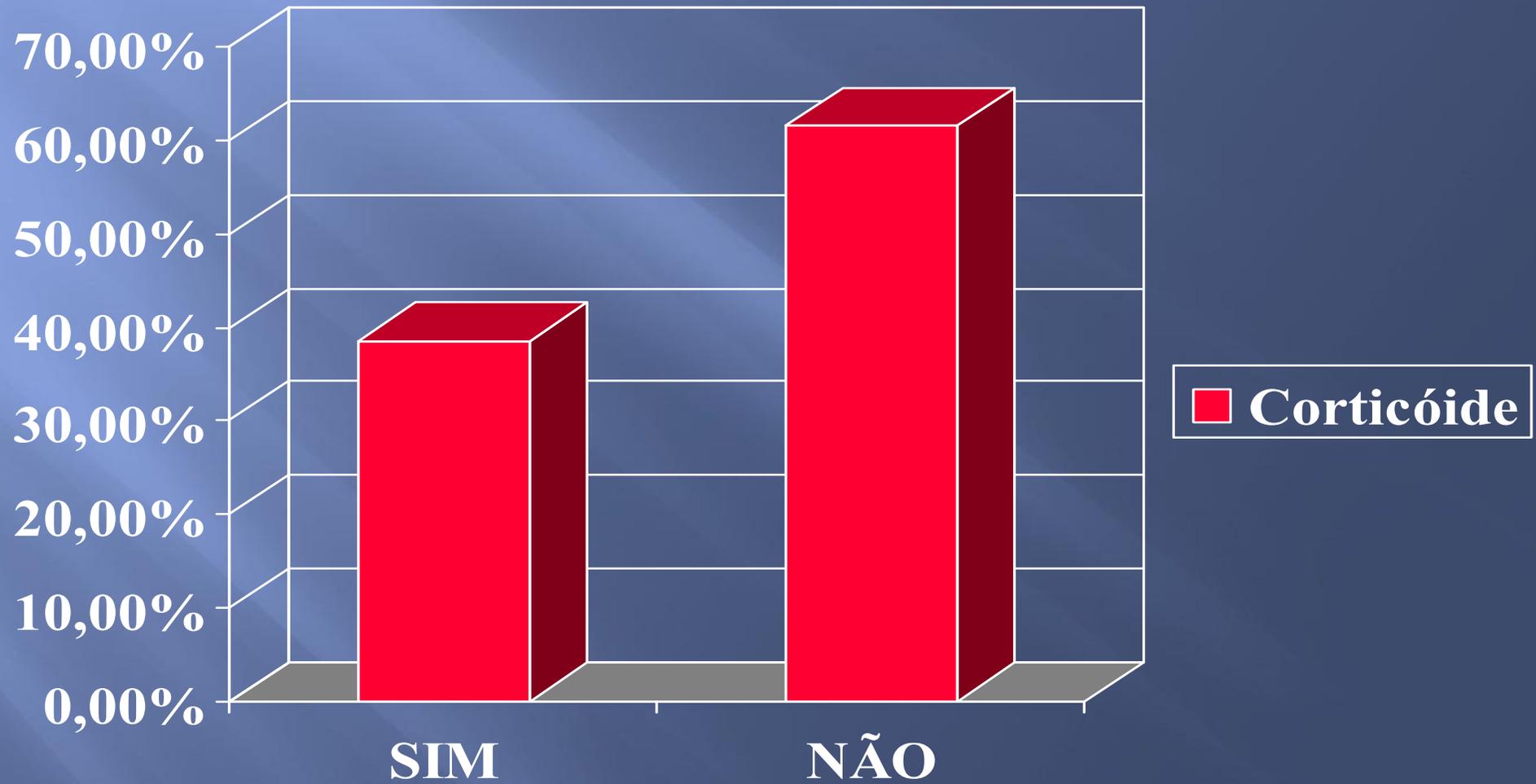
Infecções



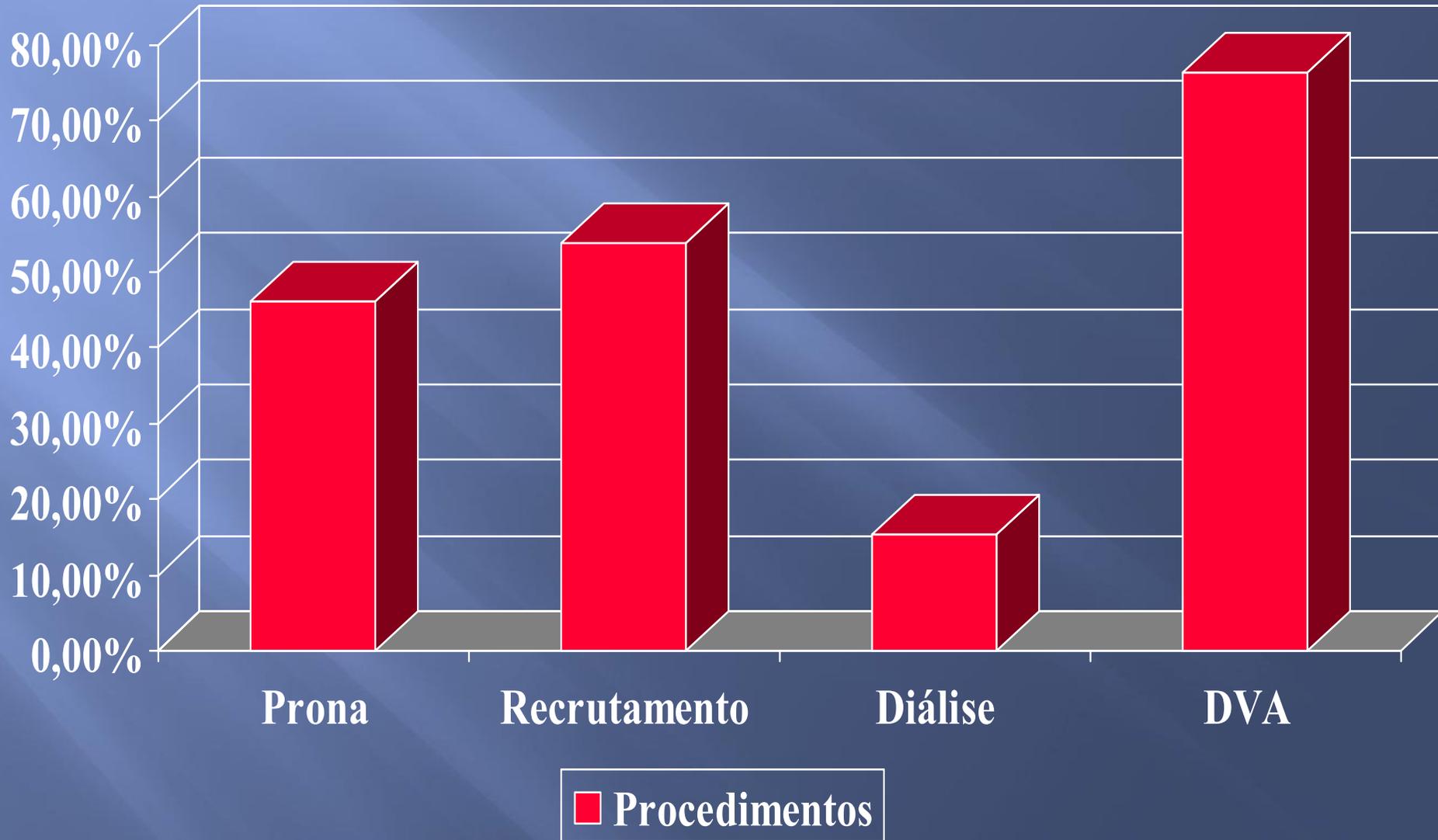
Infecções



Uso de Corticóide



Procedimientos



Laboratório

Inicial

- Hb - 14 ± 3
- Ht - 41 ± 8
- L - 6615 ± 2613
- Linf - 861 ± 465
- Plaq - 121.240 ± 48.711
- LDH- 1298 ± 796
- CK - 172 ± 59
- U- 29 ± 14
- Cr- $0,78 \pm 0,42$

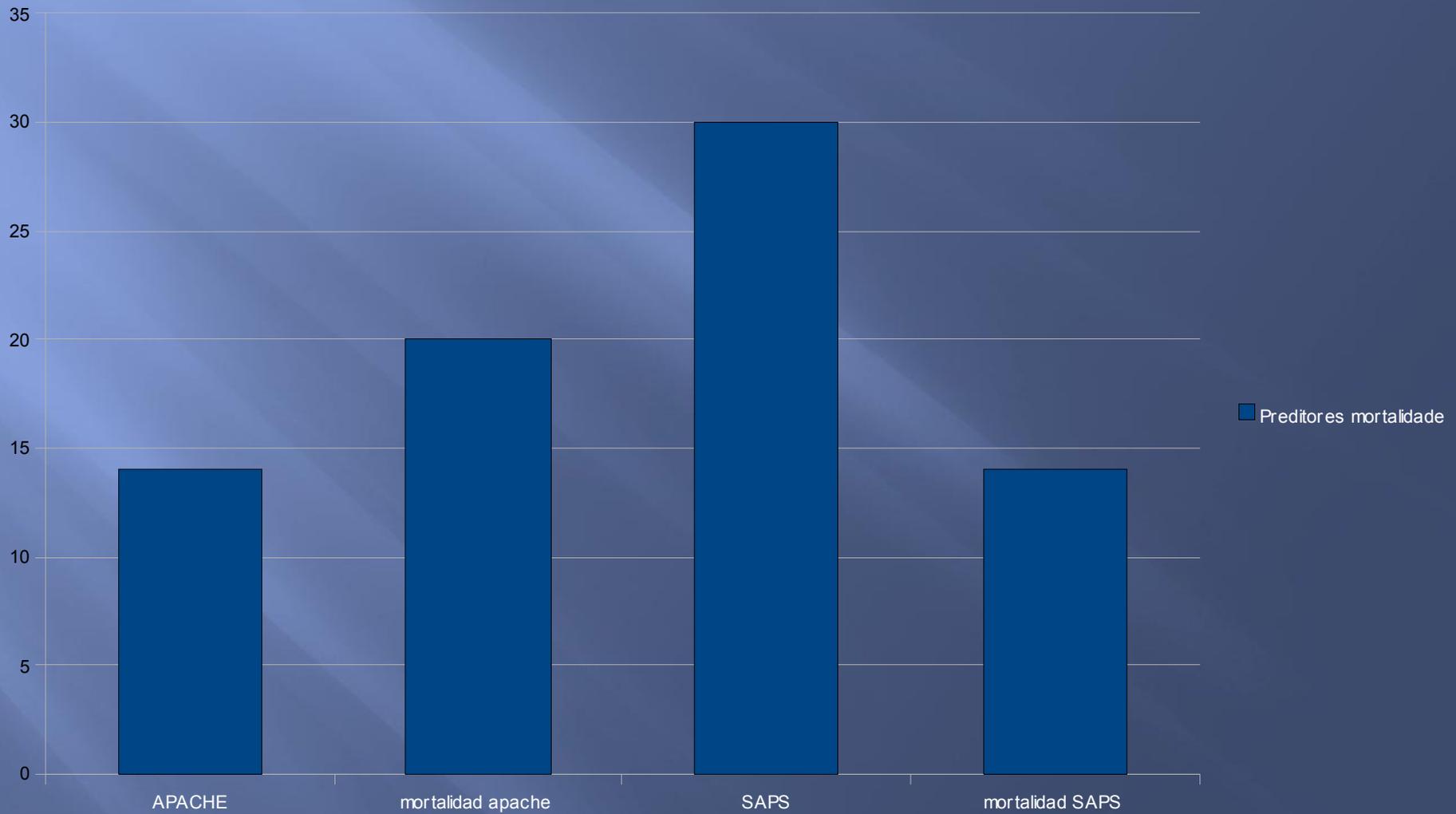
Final

- Hb - 11 ± 2
- Ht - 33 ± 5
- L - 6615 ± 2613
- Linf - 2291 ± 1273
- Plaq - 283880 ± 192138
- LDH- 959 ± 424
- CK - 238 ± 263
- U- 49 ± 49
- Cr- $1,19 \pm 1,26$

Resultados

- Dias de UTI $15,5 \pm 9,9$
- Dias de VM $13,9 \pm 10,3$
- Dias FiO₂ > 60% $7 \pm 8,3$
- Dias PEEP > 15 $6,4 \pm 7,8$
- Dias P_{pi} > 35 $3,4 \pm 6,3$
- Horas Prona $40,6 \pm 44$
- Bhídrico $50\% = 2 - 4 \text{ l} / 24 \text{ hs}$

Predictores



Desfechos

