

# Epidemiológia sepsy

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7. Česko – slovenský kongres detskej intenzívnej  
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# Epidemiology of sepsis

## The impact of:

- **Age**
- Gender
- Birth weight
- Underlying disease
- Microbiologic etiology

## On:

- Incidence
- **Mortality**
- **Hospital cost**

# Sepsis: age related differences

- Children – adults
- Infants – older children

- **physiology**
- **predisposing factors...**

- **incidence**
- **mortality**
- **comorbidity**
- **site infection**
- **organ dysfun.**

# Incidence – 9675 cases severe sepsis

- Annual incidence: 0,56 cases per 1 000 children
- **Infants** : 48% 5,16 „



69% neonatal sepsis (52% VLBVW)

- Older children: 0,2 cases per 1 000 children  
10-14 years
- **55% male**
- 49% comorbidity

# Sepsis: gender differences

## Incidence:

- **Boys:**

higher incidence 0,60 / 0,52 girls of 1,000  $p < 0,0001$

- **Infants :**


largest differences 5,73 / 4,57 of 1,000  $p < 0,001$

- **1 – 4 y:** 0,51 / 0,45  $p < 0,01$

- **5 – 9 y:** 0,24 / 0,20  $p < 0,01$

- **≥ 9 y:** -----

# mortality – 9675 cases severe sepsis

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- 993 (10,3%) died before discharge
  - **Gender related differences only in infants**
  - **LBW boys** > **LBW girls** (13,% / 7,8% p< 0.01)
  - **Infant boys** > **infants girls** (63,9 / 45,1 per 100,000 p<0.002)
  - **LBW babies** > **normal BW** (11,0% / 6,1% p= 0.04)

# Sepsis: gender differences

- **Animal studies:**

**males** – increased susceptibility to sepsis  
hormonal/immunologic changes

- **Adults:**

surgical sepsis 52 pts. (33♂ ; 19♀)

**mortality rate:** ♂ 70% (23 z 33)

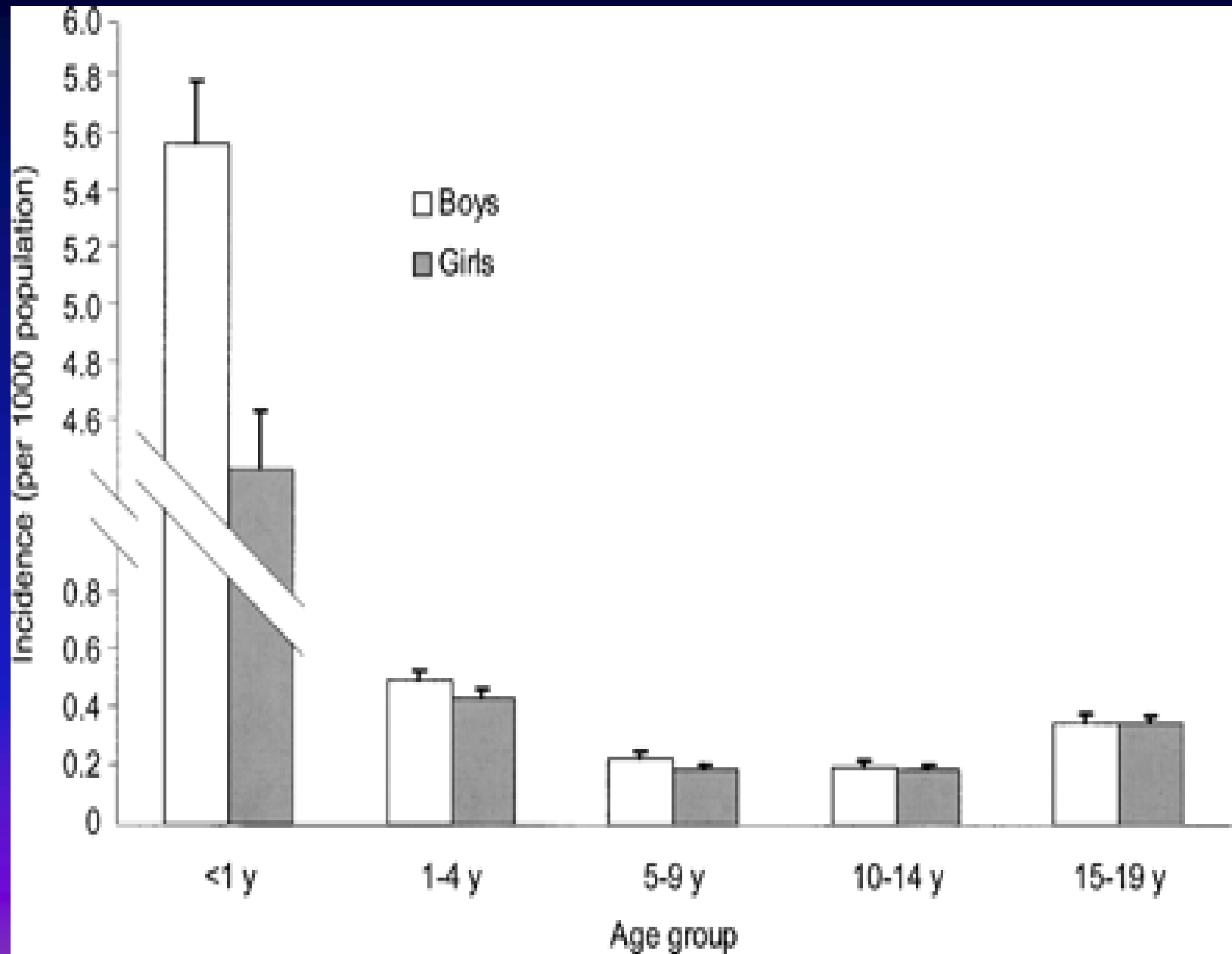
♀ 26% (5 z 19)

women: better prognosis -



IL 10

## Incidence of severe sepsis by age and sex



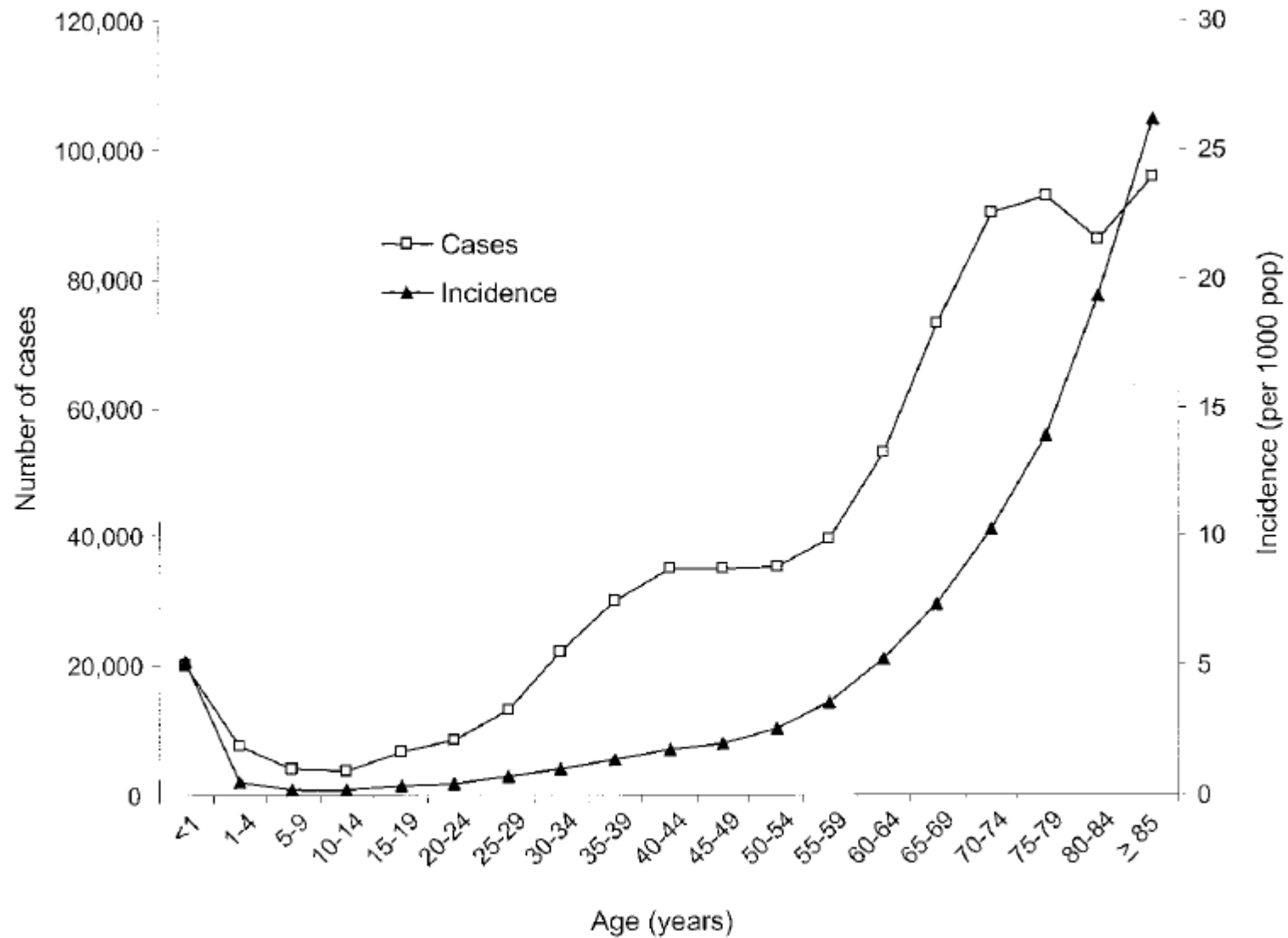


Figure 1. National age-specific number and incidence of cases of severe sepsis. National estimates are

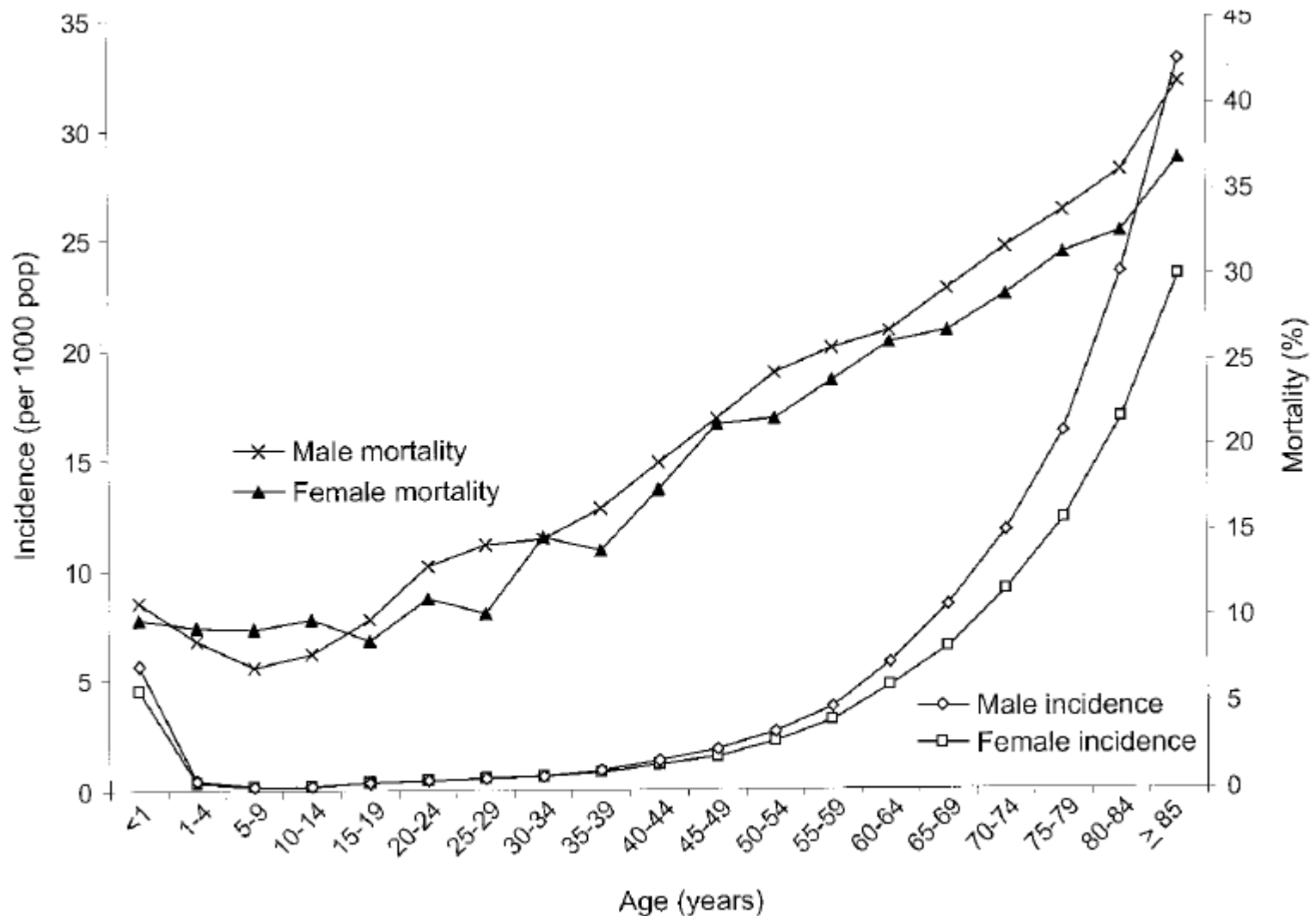


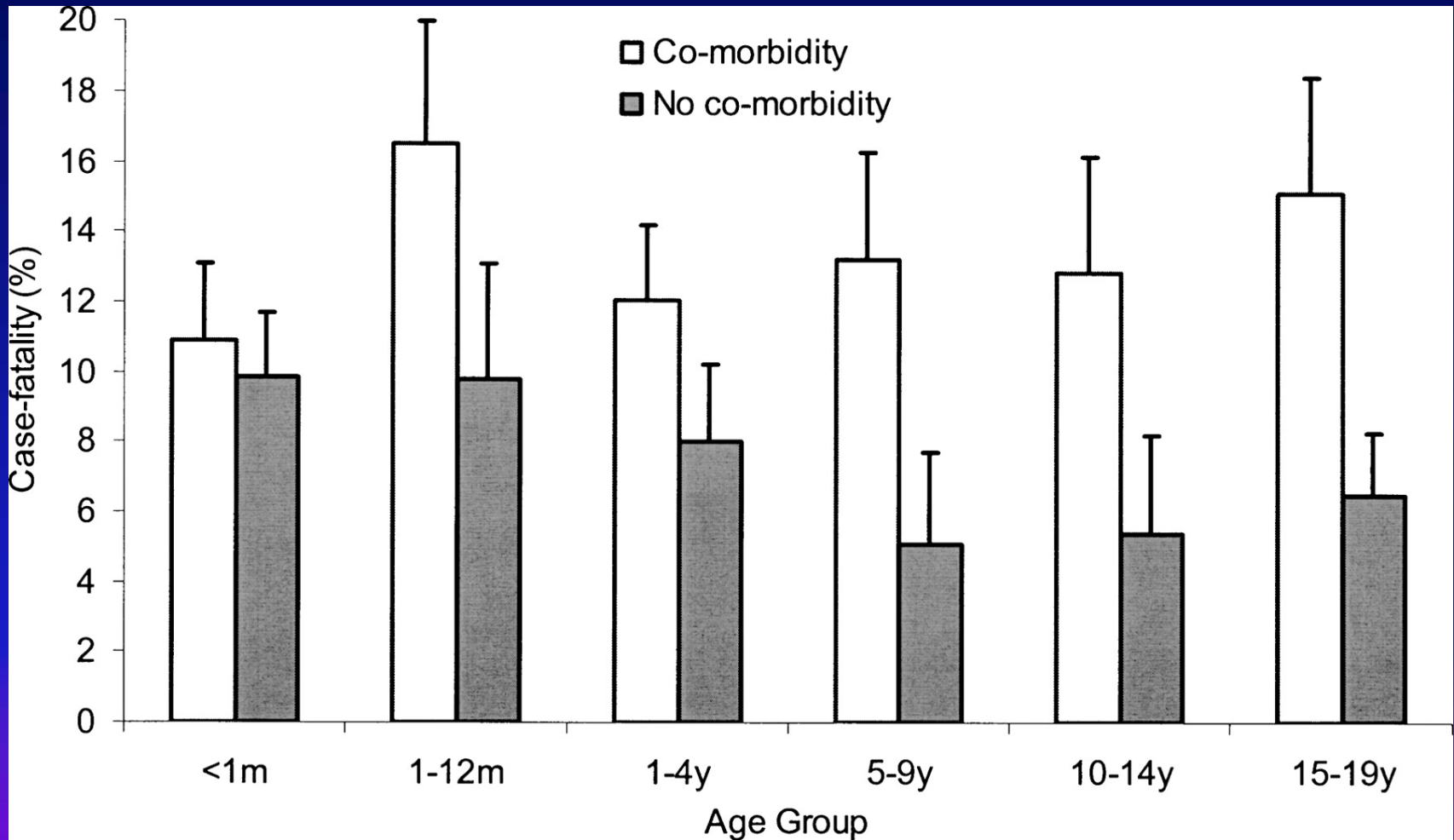
Figure 2. National age-specific incidence and mortality rates for all cases of severe sepsis by gender, excluding those with HIV disease. National estimates are generated from the seven-state cohort using

# Mortality / comorbidity

## Higher mortality:

- underlying disease
- surgical procedures
- Human immunodeficiency virus infection

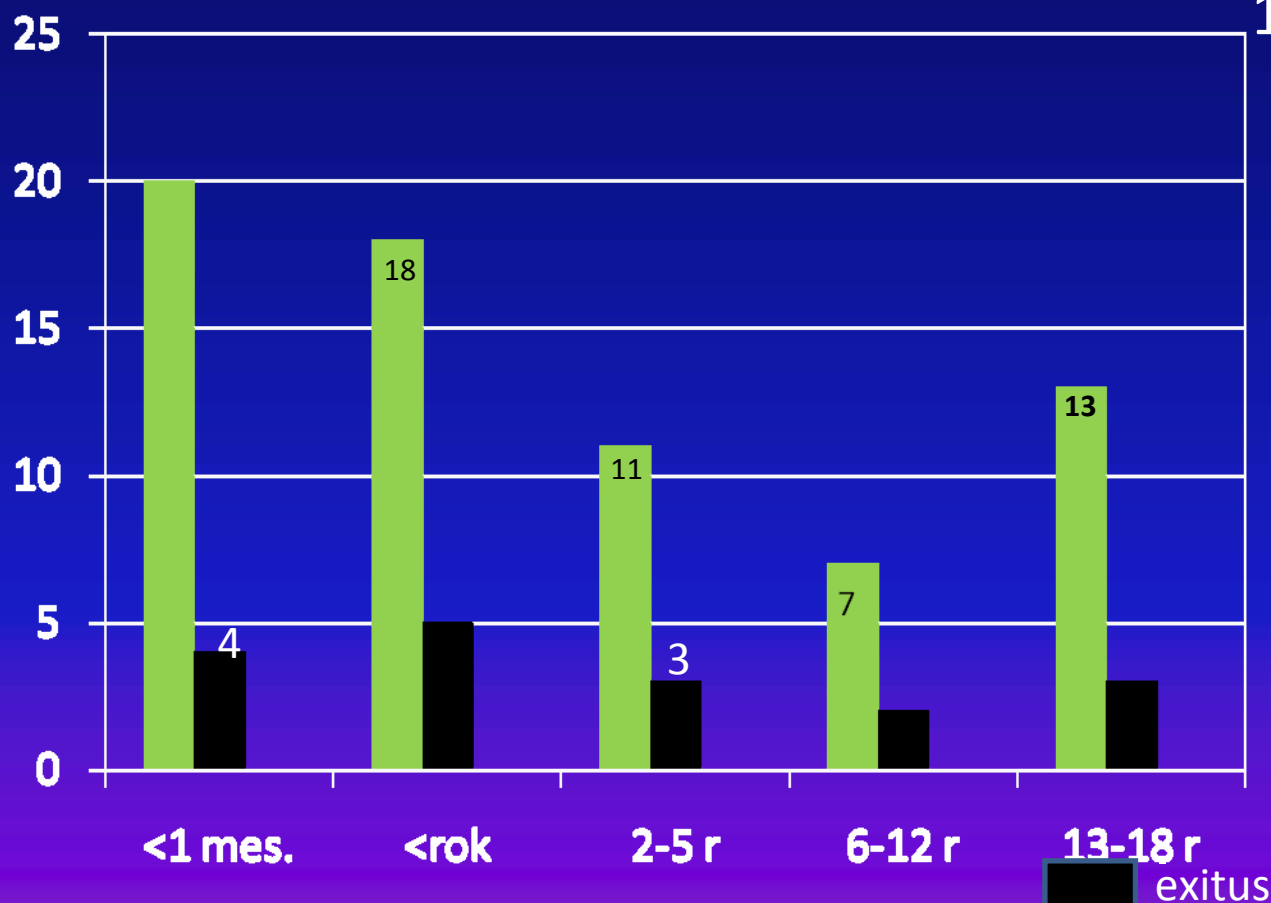
# Case fatality of children with severe sepsis by age and comorbidity



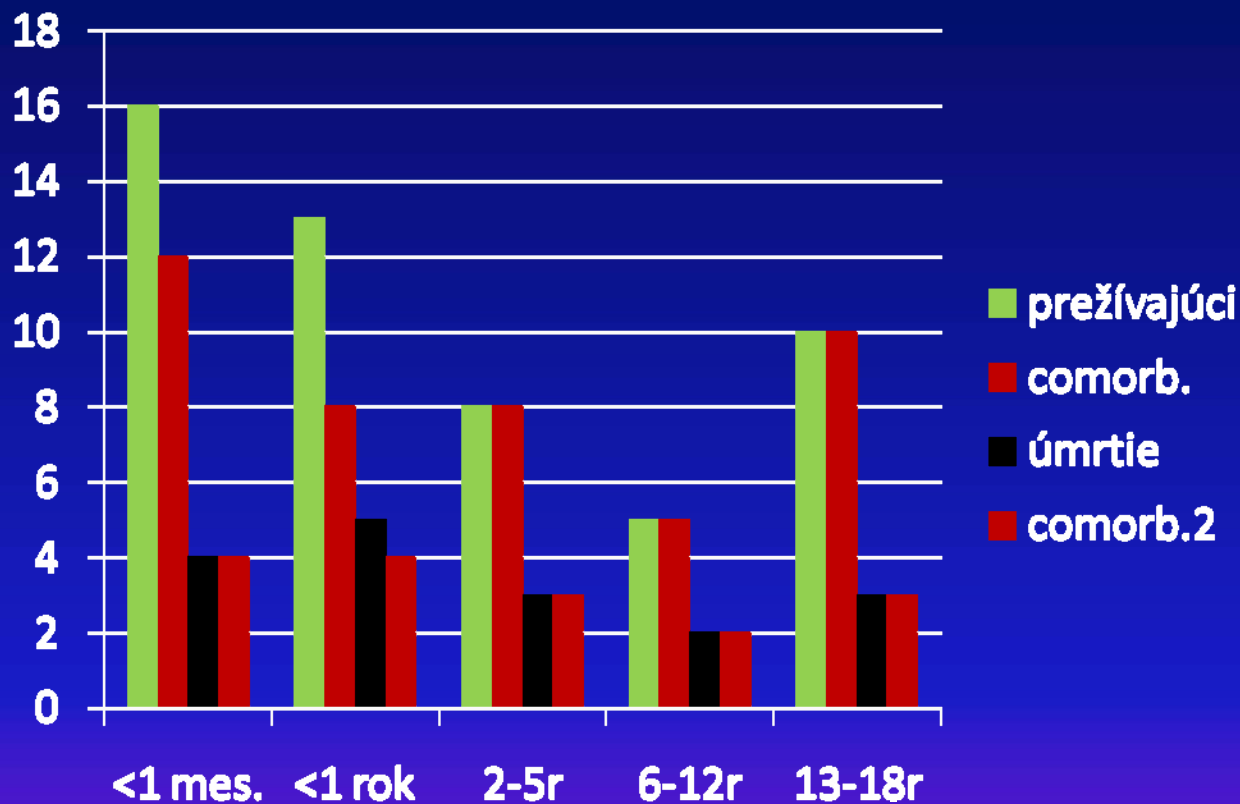
# Incidenca a mortalita závažnej sepsy 1.10.2008 – 1.10.2011

67 = 38♂ 27♀

17 † 25%



# Incidencia komorbidity u prežívajúcich a exitovaných detí so sepsou



67 = 38♂ 27♀  
17 † 25%

## Age Group

< 1 Year (n=4,643)    1–10 Years (n=2,724)    11–19 Years

(n=2,308)

Organism	< 1 Year (n=4,643)		1–10 Years (n=2,724)		11–19 Years	
	Cases (%)	C F (%)	Cases (%)	C F (%)	Cases (%)	C F (%)
Meningococcus	0.3	20.0	8	10.4	2.3	15.1
H. influenza	1.6	4.2	2.4	1.6	1.9	6.8
Pseudomonas	3.6	14.6	7.7	12.4	6.9	9.4
<b>Staphylococcus</b> (all types)	22.7	8.6	11.2	7.9	14.4	7.8
Staphyloc. aureus	2.3	5.7	2.9	0	3.5	3.8
<b>Streptococcus</b> (all types)	12.1	10.2	9.8	13.9	6.9	8.8
Pneumococcus	1.7	12.8	4.0	19.1	2.0	6.4
Group A strept.	0.3	0	0.7	5.0	0.2	0
Group B strept.	3.1	7.6	0.1	50.0	0.8	5.6
<b>Fungus</b>	10.0	10.8	13.3	16.8	10.4	11.6

Watson, Carcillo et al. Am J Respir Crit Care Med 2003;167:695-701

CF case fatality

# Závažná sepsa - etiológia

<b>Pseudomonas aeruginosa</b>	<b>20</b>
E. coli	6
Enterococcus faecalis	6
Staphylococcus aureus	6
Klebsiella pneumonie	5
Neisseria meningitidis	2
Streptococcus pyogenes	2
Streptococcus pneumoniae	1
Streptococcus lugduunansis	1
Vláknité huby	1
neznámy	14

# Závažná sepsa - etiológia

## Najčastejšie G-

- *Pseudomonas aeruginosa* 20x
- *E. coli* 6x
- *Klebsiella pneumoniae* 5x

## Najčastejšie G+

- *Staphylococcus aureus* 6x
- *Enterococcus faecalis* 6x

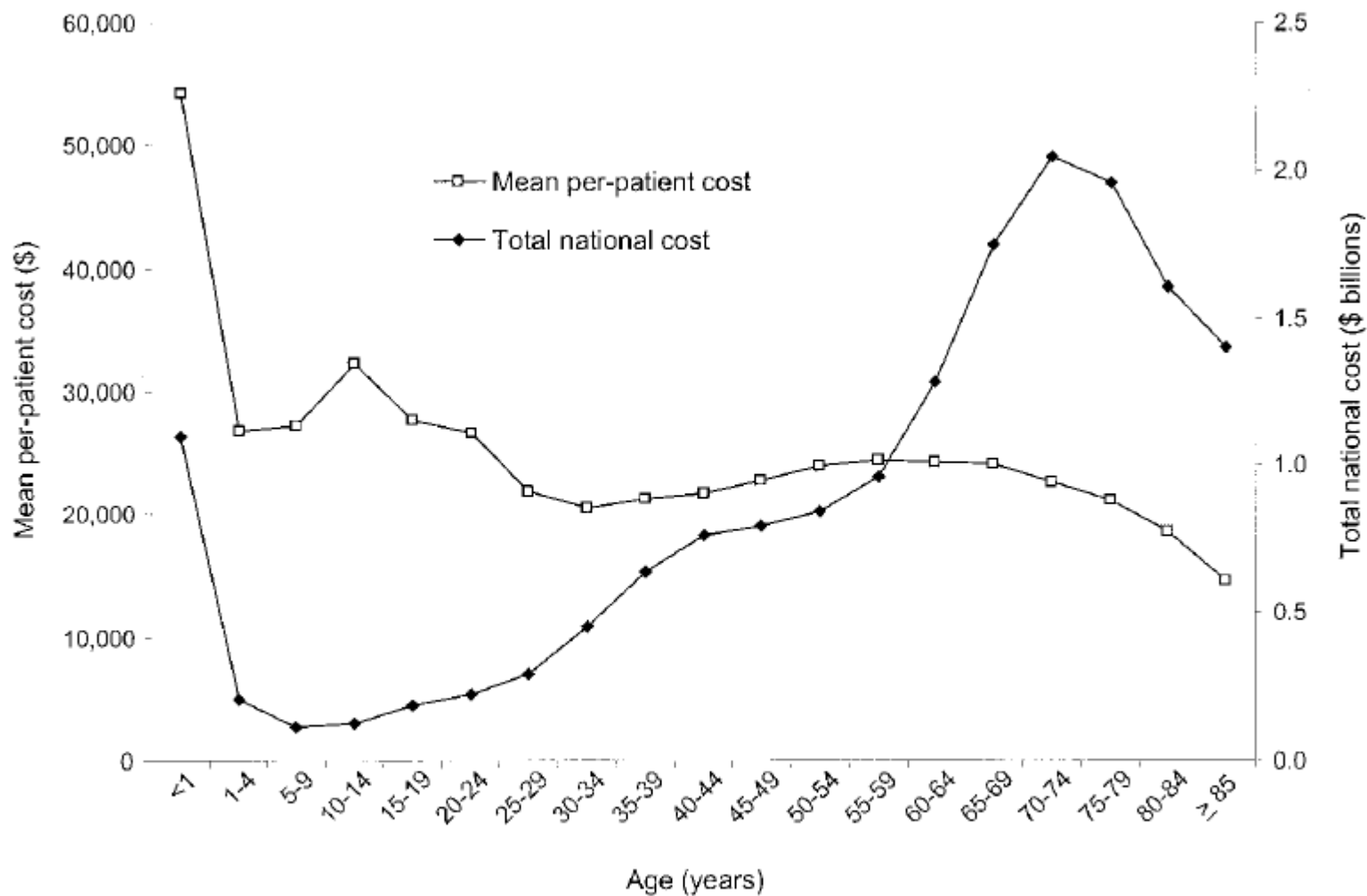


Figure 4. National age-specific average and total hospital costs for severe sepsis. Costs are calculated by

# Zmeny v epidemiológii sepsy: minulosť - budúcnosť

- Demografia: LBW/geriatria
- Terapeutické a diagnostické postupy
- Prevencia – očkovanie..
- Systémy zdravotnej starostlivosti – monitorovacie programy..
- Edukácia
- Genetické a imunologické faktory

# Epidemiology of sepsis – conclusion

Severe sepsis:

- Common
- Frequently fatal
- Expensive

**- continual attention ..**