

SEPSE V PORODNICTVÍ

Kritické stavy v porodnictví 2016

Pořádá:

- Gynekologicko-porodnická klinika 1. LF UK a VFN v Praze
- Sekce analgezie a intenzivní medicíny v porodnictví při ČGPS ČLS JEP
- Česká společnost porodních asistentek (ČSPA)
- Národní muzeum
- Aesculap Akademie

JAN BLÁHA

Klinika anesteziologie, resuscitace a intenzivní medicíny

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Surviving Sepsis Campaign



The Intensive Connection

Society of
Critical Care Medicine
The Intensive Care Professionals



Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock: 2012

R. Phillip Dellinger, MD¹; Mitchell M. Levy, MD²; Andrew Rhodes, MB BS³; Djillali Annane, MD⁴; Herwig Gerlach, MD, PhD⁵; Steven M. Opal, MD⁶; Jonathan E. Sevransky, MD⁷; Charles L. Sprung, MD⁸; Ivor S. Douglas, MD⁹; Roman Jaeschke, MD¹⁰; Tiffany M. Osborn, MD, MPH¹¹; Mark E. Nunnally, MD¹²; Sean R. Townsend, MD¹³; Konrad Reinhart, MD¹⁴; Ruth M. Kleinpell, PhD, RN-CS¹⁵; Derek C. Angus, MD, MPH¹⁶; Clifford S. Deutschman, MD, MS¹⁷; Flavia R. Machado, MD, PhD¹⁸; Gordon D. Rubenfeld, MD¹⁹; Steven A. Webb, MB BS, PhD²⁰; Richard J. Beale, MB BS²¹; Jean-Louis Vincent, MD, PhD²²; Rui Moreno, MD, PhD²³; and the Surviving Sepsis Campaign Guidelines Committee including the Pediatric Subgroup*

Crit Care Med 2013; 41:580-637
Intensive Care Med. 2013 Feb;39(2):165-228.

Impact of the Surviving Sepsis Campaign protocols on hospital length of stay and mortality in septic shock patients: Results of a three-year follow-up quasi-experimental study*

Álvaro Castellanos-Ortega, MD, PhD; Borja Suberviola, MD; Luis A. García-Astudillo, MD; María S. Holanda, MD; Fernando Ortiz, MD; Javier Llorca, MD, PhD; Miguel Delgado-Rodríguez, MD, MPH, PhD

Crit Care Med 2010; 38:1036 -1043

Table 2. Comparison between the historical and the intervention groups

	Historical Group, n = 96 (20%)	Intervention Group, n = 384 (80%)	<i>p</i>
Time from severe sepsis presentation to ICU admission, hr	11.7 ± 13.5	9.2 ± 14.4	<.001
Compliance with 6-hr resuscitation bundle, n (%)			
Serum lactate measured	15 (15.6)	288 (75.0)	<.001
Blood cultures before antibiotics	36 (37.5)	210 (56.7)	.003
Early broad-spectrum antibiotics	47 (49.0)	220 (57.3)	.168
Intravenous fluids delivered	57 (59.4)	322 (83.9)	.037
Mean arterial pressure ≥65 mm Hg achieved	71 (74.0)	257 (66.9)	.187
Central venous pressure ≥8 mm Hg achieved	68 (70.8)	288 (75.0)	.435
Central venous oxygen saturation ≥70% achieved	53 (55.2)	215 (56.0)	.909
Outcome measurements			
Hospital mortality, n (%)	55 (57.3)	144 (37.5)	.001
Standardized mortality ratio	1.05 ± 0.18	0.75 ± 0.13	.139
ICU mortality, n (%)	51 (53.1)	117 (30.5)	<.001
Hospital LOS for all patients, days	26.5 ± 23.9	30.6 ± 33.2	.435
ICU LOS for all patients, days	9.9 ± 9.3	9.1 ± 10.4	.235
Hospital LOS for survivors, days	41.0 ± 26.3	36.2 ± 34.8	.043
ICU LOS for survivors, days	11.0 ± 9.5	8.4 ± 9.8	.004

Surviving Sepsis Campaign • International Guidelines for Management of Severe Sepsis and Septic Shock

SPONSORING ORGANIZATIONS:

American Association of Critical-Care Nurses
 American College of Chest Physicians
 American College of Emergency Physicians
 American Thoracic Society
 Asia Pacific Association of Critical Care Medicine
 Australian and New Zealand Intensive Care Society
 Brazilian Society of Critical Care
 Canadian Critical Care Society
 Chinese Society of Critical Care Medicine
 Chinese Society of Critical Care Medicine-China Medical Association
 Emirates Intensive Care Society
 European Respiratory Society
 European Society of Clinical Microbiology and Infectious Diseases
 European Society of Intensive Care Medicine
 European Society of Pediatric and Neonatal Intensive Care
 Infectious Diseases Society of America
 Indian Society of Critical Care Medicine
 International Pan Arabian Critical Care Medicine Society
 Japanese Association for Acute Medicine
 Japanese Society of Intensive Care Medicine
 Pediatric Acute Lung Injury and Sepsis Investigators
 Society for Academic Emergency Medicine
 Society of Critical Care Medicine
 Society of Hospital Medicine
 Surgical Infection Society
 World Federation of Critical Care Nurses
 World Federation of Pediatric Intensive and Critical Care Societies
 World Federation of Societies of Intensive and Critical Care Medicine
 Participation and endorsement:
 The German Sepsis Society
 Latin American Sepsis Institute

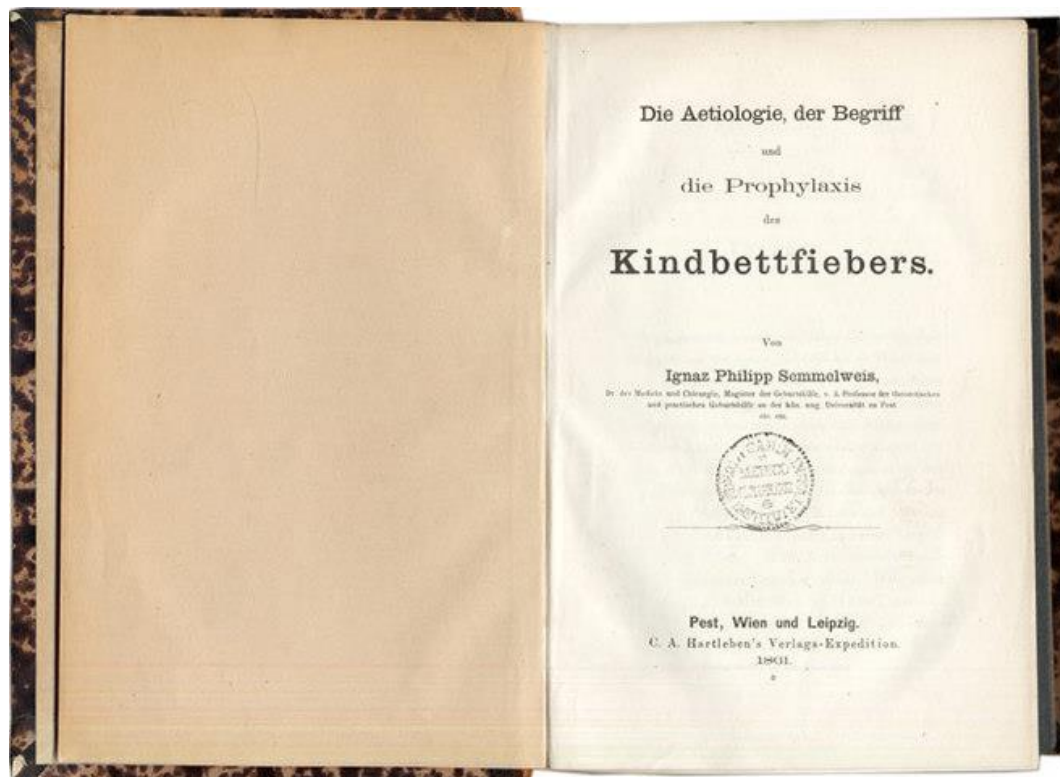
Seps v těhotenství
 Verze: 1.2.

Česká gynekologická a porodnická společnost ČLS JEP
 Česká společnost intenzivní medicíny ČLS JEP
 Česká společnost anesteziologie, resuscitace a intenzivní medicíny ČLS JEP
 Česká společnost nemocniční epidemiologie a hygieny ČLS JEP ?
 Společnost pro epidemiologii a mikrobiologii ČLS JEP ?
 Česká společnost infekčního lékařství ČLS JEP ?
 Česká neonatologická společnost ČLS JEP ?

MEZIOBOROVÝ DOPORUČENÝ POSTUP

DIAGNOSTIKA A LÉČBA SEPSÉ V SOUVISLOSTI S TĚHOTENSTVÍM

Adámková Václava
 Balík Martin
 Bláha Jan
 Černý Vladimír
 Kolář Milan
 Melichar Jan
 Pařízek Antonín
 Plavka Richard



Puerperal sepsis in the 21st century: progress, new challenges and the situation worldwide

Bigna S Buddeberg, Wynne Aveling

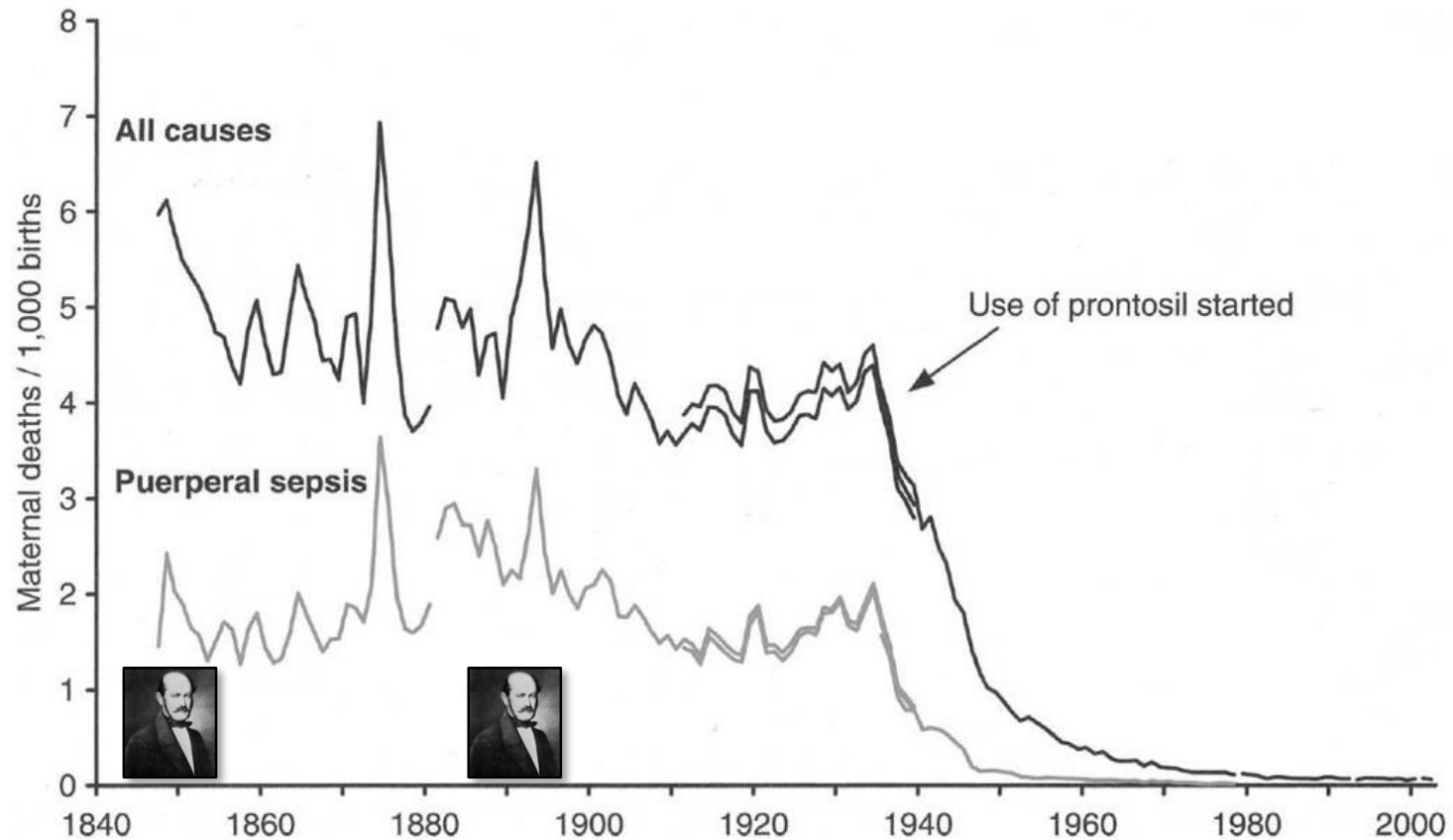


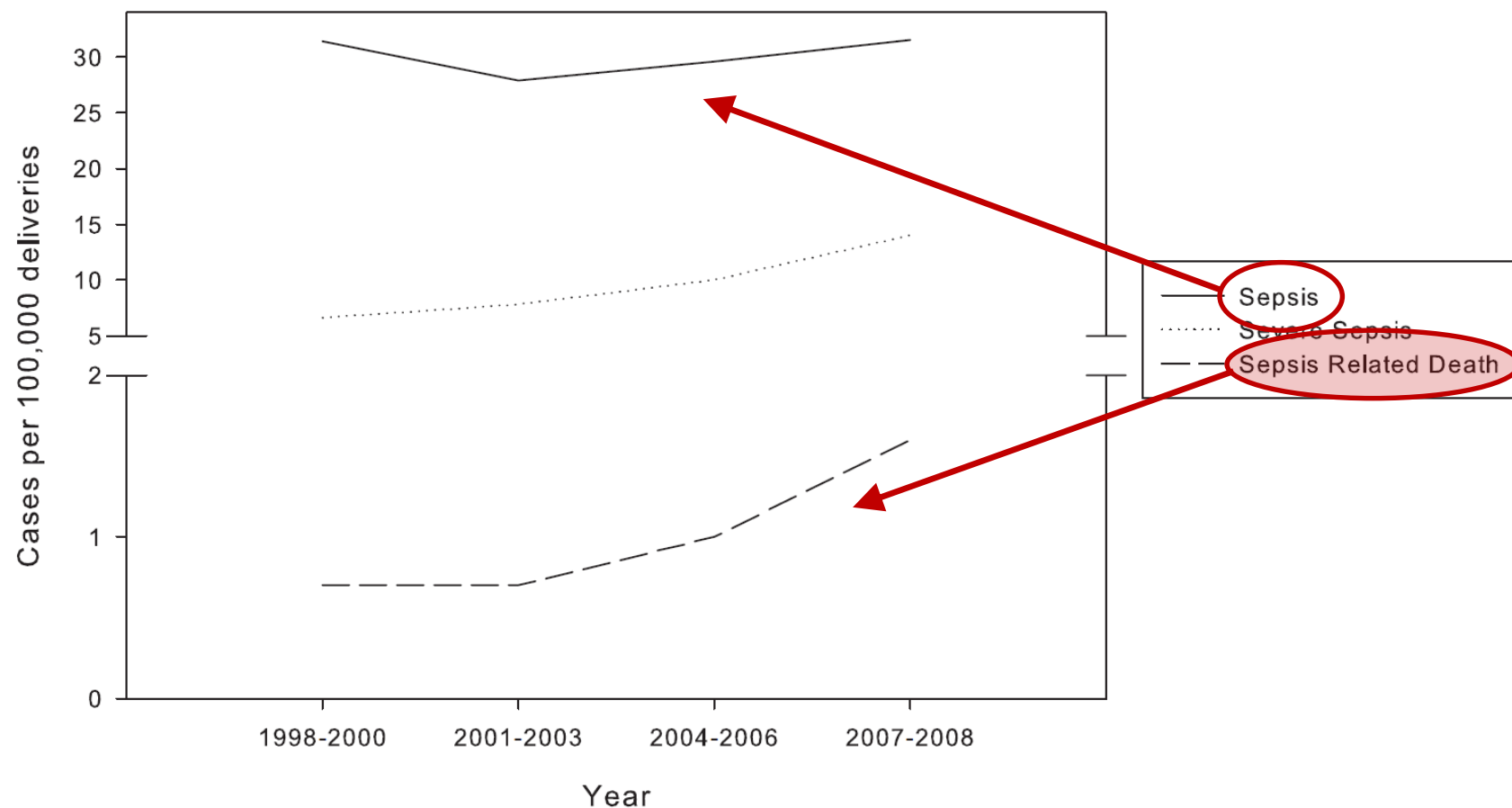
Figure 1 Maternal mortality in England and Wales, 1840–2000. General Register Office, OPCS and ONS mortality statistics.

Table 1.4. Numbers and rates of leading causes of maternal deaths: UK 1985–2008

Cause of death	Rates per 100 000 maternities							
	1985–87	1988–90	1991–93	1994–96	1997–99	2000–02	2003–05	2006–08
Direct deaths								
Sepsis	0.40	0.72	0.65	0.73	0.85	0.65	0.85	1.13
Pre-eclampsia and eclampsia	1.19	1.14	0.86	0.91	0.75	0.70	0.85	0.83
Thrombosis and thromboembolism	1.41	1.40	1.51	2.18	1.65	1.50	1.94	0.79
Amniotic fluid embolism	0.40	0.47	0.43	0.77	0.38	0.25	0.80	0.57
Early pregnancy deaths*	0.71	1.02	0.73	0.68	0.80	0.75	0.66	0.48
Ectopic	0.48	0.64	0.39	0.55	0.61	0.55	0.47	0.26
Spontaneous miscarriage	0.18	0.25	0.13	0.09	0.09	0.05	0.05	0.22
Legal termination	0.04	0.13	0.22	0.05	0.09	0.15	0.09	0.00
Other	0.00	0.00	0.09	0.00	0.00	0.00	0.05	0.00
Haemorrhage	0.44	0.93	0.65	0.55	0.33	0.85	0.66	0.39
Anaesthesia	0.26	0.17	0.35	0.05	0.14	0.30	0.28	0.31
Other <i>Direct</i>	1.19	0.72	0.60	0.32	0.33	0.40	0.19	0.17
Genital tract trauma	0.26	0.13	0.17	0.23	0.09	0.05	0.14	0.00
Fatty liver	0.26	0.21	0.09	0.09	0.19	0.15	0.05	0.13
Other causes	0.66	0.38	0.35	0.00	0.05	0.20	0.00	0.04
All Direct	6.13	6.14	5.53	6.10	4.99	5.31	6.24	4.67
Indirect								
Cardiac disease	1.01	0.76	1.60	1.77	1.65	2.20	2.27	2.31
Indirect neurological conditions	0.84	1.27	1.08	2.14	1.60	2.00	1.75	1.57
Psychiatric causes	–	–	–	0.41	0.71	0.80	0.85	0.57
Indirect malignancies	–	–	–	–	0.52	0.25	0.47	0.13
Other <i>Indirect</i> causes	1.90	1.91	1.64	1.77	1.93	2.50	2.37	2.14
All Indirect	3.70	3.94	4.32	6.10	6.40	7.76	7.71	6.59
Coincidental	1.15	1.65	1.99	1.64	1.37	1.80	2.60	2.18

Maternal Severe Sepsis in the United States

Figure 1. Temporal trends for maternal sepsis, severe sepsis, and sepsis-related death during hospitalization for delivery during 1998 to 2008 in the United States.



Tab. 8.43 Hlavní příčiny mateřských úmrtí v České republice v průběhu let 1991–2010 (Petr Velebil, ÚPMD, 2012)

hemoragie	cca 23 %
trombózy a embolie	cca 20 %
kardiovaskulární komplikace	cca 16 %
absolutní počet úmrtí	cca 10 za rok
maternal mortality ratio	cca 10

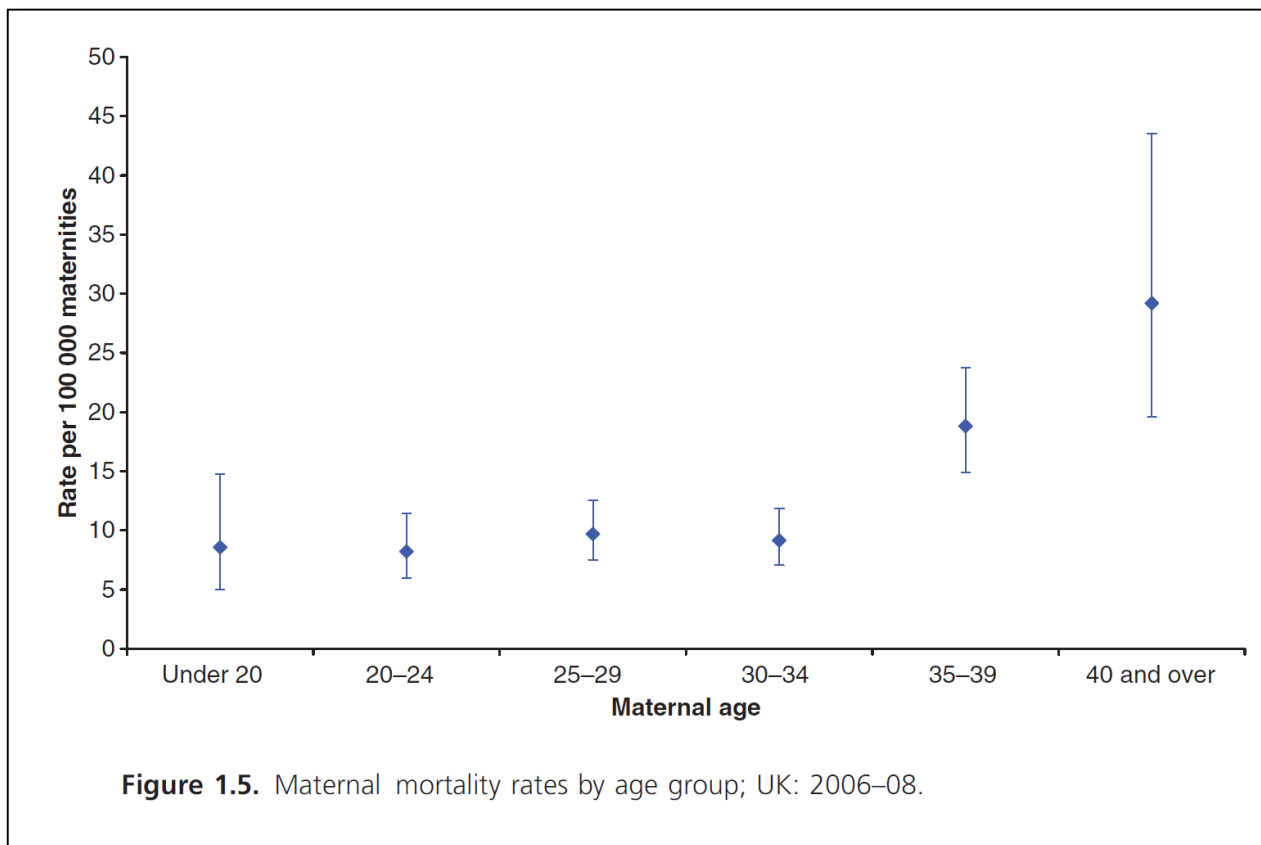
Hájek et al. Porodnictví: 3., zcela přepracované a doplněné vydání (2014)

PROČ RIZIKO SEPSE V PORODNICTVÍ ROSTE, když úroveň medicíny stále stoupá?

Protože porodnictví se mění!

- demografické změny těhotných žen
 - rodičky jsou starší, častěji obézní a s DM, ...
 - častěji komplikace těhotenství (poruchy placentace, ...)
- změny v porodnické praxi
 - invazivní diagnostické a terapeutické techniky, ...

Cormack. Anaesthesia Tutorial of The Week 235, 8th August 2011



The Eighth Report of the Confidential Enquiries into Maternal Deaths in the United Kingdom, 2011.

FYZIOLOGICKÉ ZMĚNY V TĚHOTENSTVÍ



- **hyperdynamická cirkulace** - zvýšení srdečního výdeje (+40%)
- redukovaná SVR
= již bazálně zvýšená zátěž myokardu



- **zvýšená ventilace** = mírná respirační alkalóza kompenzovaná mírnou metabolickou acidózou
- snížení kompenzačních možností při rozvoji acidózy při sepsi



- **dilatace ureterů** (relaxace hladkého svalstva) + tlak dělohy
= vysoké riziko pyurie a vzniku pyelonefritidy



- snížený sérový albumin - ovlivnění koloidně-osmotického tlaku (náchylnost k plicnímu edému)

PŘÍZNAKY A SYMPTOMY SEPSE

- **Horečka** $>38^{\circ}\text{C}$
 - **Hypotermie** $<36^{\circ}\text{C}$
 - **Perzistující tachykardie** $>90/\text{min}$
 - **Tachypnoe** $>20/\text{min}$
 - **Leukocytóza** $>12 \cdot 10^9/\text{l}$ nebo $<4 \cdot 10^9/\text{l}$
-
- **Oligurie**
 - **Průjem** a/nebo **zvracení**
 - **Bolesti v podbřišku**
 - **Abnormální ozvy plodu**

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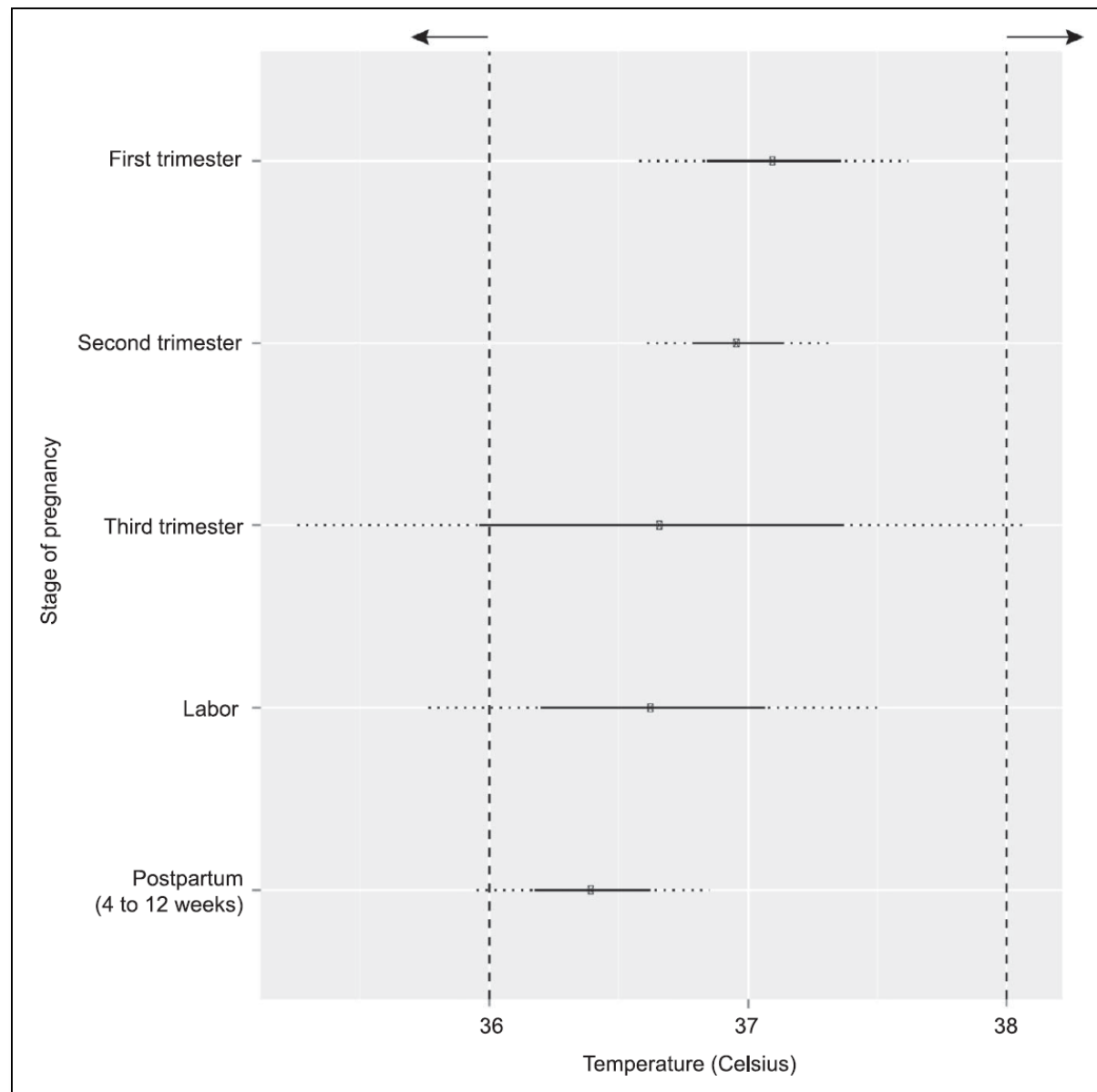
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Fig. 2. Normal temperature variation during pregnancy and postpartum. Mean is indicated by the center of each forest plot, 1 standard deviation (SD) is indicated by a solid line, and a dotted line indicates 2 SDs from the mean. Vertical dotted lines indicate systemic inflammatory response syndrome criteria for each parameter.

Bauer. SIRS Criteria in Pregnancy. Obstet Gynecol 2014.



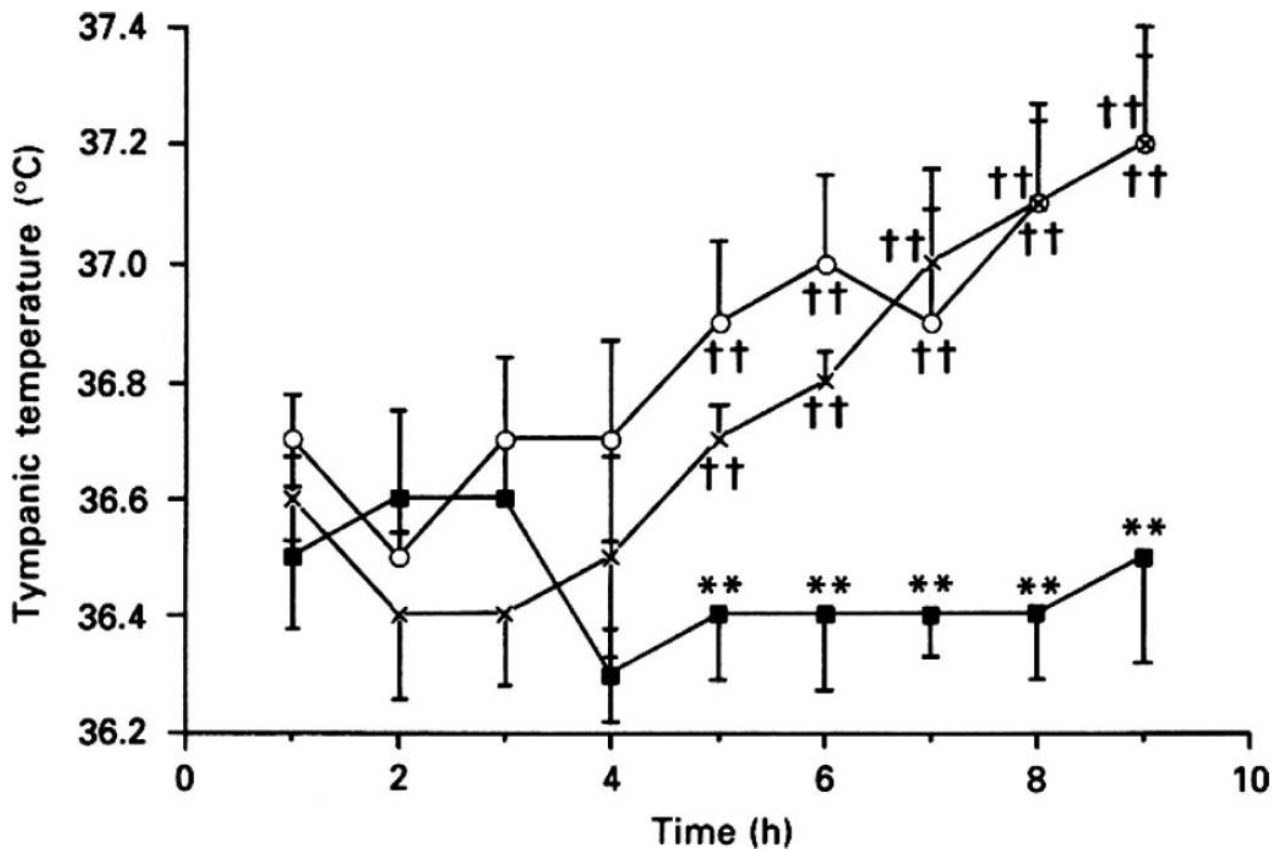


Figure 1. Tympanic membrane temperature in laboring women self-selecting different types of analgesia. Patients receiving epidural bupivacaine with fentanyl (open circles) or epidural bupivacaine only (crosses) experienced a gradual increase in temperature averaging $0.07^{\circ}\text{C}/\text{hour}$ with no difference between groups. Patients receiving IV nalbuphine (■) had no temperature change during labor. $**P < 0.01$ for difference between opioid and epidural groups. $\dagger\dagger P < 0.01$ for difference between baseline (pre-epidural) temperature. Reprinted with permission from Camann et al.⁴

Maternal Deaths Due to Sepsis in the State of Michigan, 1999–2006

Melissa E. Bauer, DO, Robert P. Lorenz, MD, Samuel T. Bauer, MD, Krishna Rao, MD, MS, and Frank W.J. Anderson, MD, MPH

(Obstet Gynecol 2015;126:747–52)

Table 2. Specific Maternal Early Warning Criteria and Temperature Findings of Patients Who Presented to the Hospital With Sepsis

Patient No.	Maternal Early Warning Criteria* Triggered	Heart Rate Higher Than 120 bpm	Respiratory Rate Higher Than 30 Breaths/Min	Systolic Blood Pressure Lower Than 90 mm Hg	Spo ₂ Less Than 95% on Room Air	Temperature Higher Than 38°C
1	+	NA	NA	NA	+	—
2	+	+	—	—	NA	—
3	+	—	+	—	NA	—
4	+	—	—	+	+	+
5	+	+	—	+	—	—
6	—	—	—	—	—	—
7	—	—	—	—	NA	—
8	+	+	+	—	+	—
9	+	+	—	—	+	+
10	—	—	—	—	—	—
11	+	+	+	—	—	—
12	+	—	—	—	+	—

bpm, beats per minute; NA, not available.

* Maternal Early Warning Criteria are the following: systolic blood pressure lower than 90 or higher than 160 mm Hg, diastolic blood pressure higher than 100 mm Hg, heart rate lower than 50 or higher than 120 bpm, respiratory rate lower than 10 or higher than 30 breaths per minute, oxygen saturation on room air, at sea level, less than 95%, oliguria less than 35 mL per hour for 2 hours or longer, maternal agitation, confusion, or unresponsiveness; patient with preeclampsia reporting a nonremitting headache or shortness of breath.¹¹

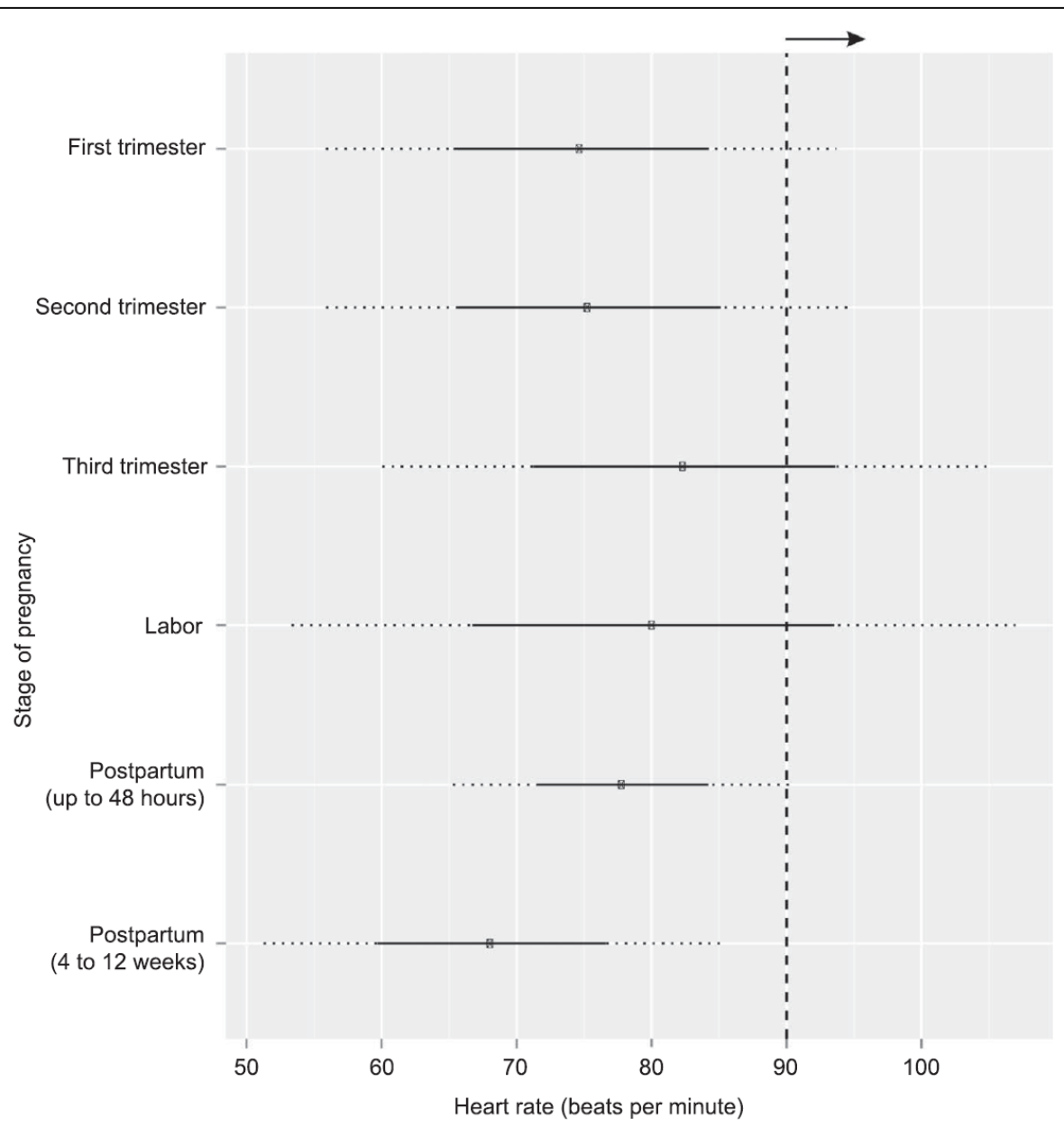
† Not part of the Maternal Early Warning Criteria.

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Fig. 4. Normal heart rate variation during pregnancy and postpartum. Mean is indicated by the *center* of each forest plot, 1 standard deviation (SD) is indicated by a *solid line*, and a *dotted line* indicates 2 SDs from the mean. *Vertical dotted lines* indicate systemic inflammatory response syndrome criteria for each parameter.

Bauer. SIRS Criteria in Pregnancy. *Obstet Gynecol* 2014.



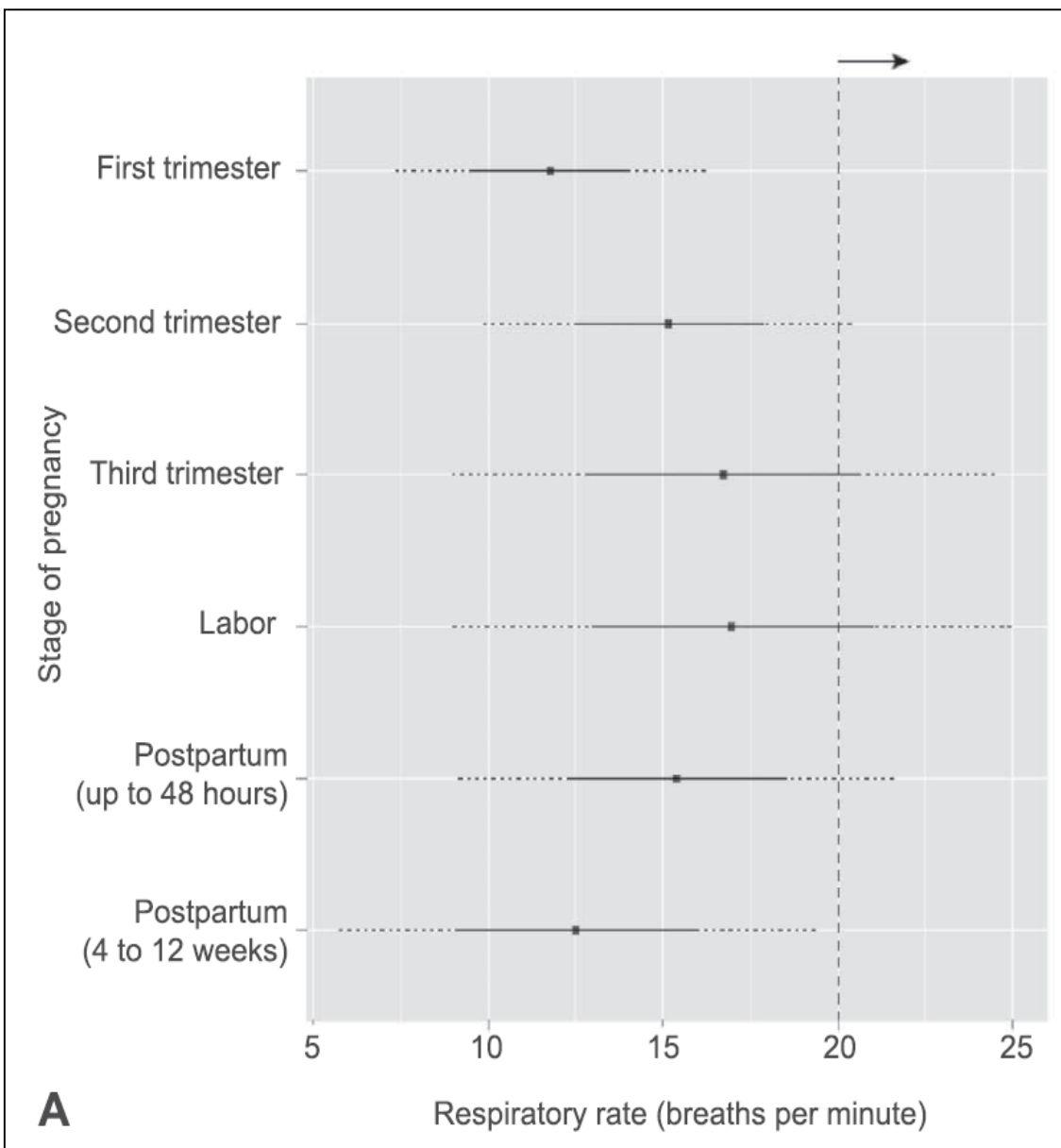
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Fig. 3. Normal respiratory rate variation during pregnancy and postpartum. Mean is indicated by the center of each forest plot, 1 standard deviation (SD) is indicated by a solid line, and a dotted line indicates 2 SDs from the mean.

Vertical dotted lines indicate systemic inflammatory response syndrome criteria for each parameter.

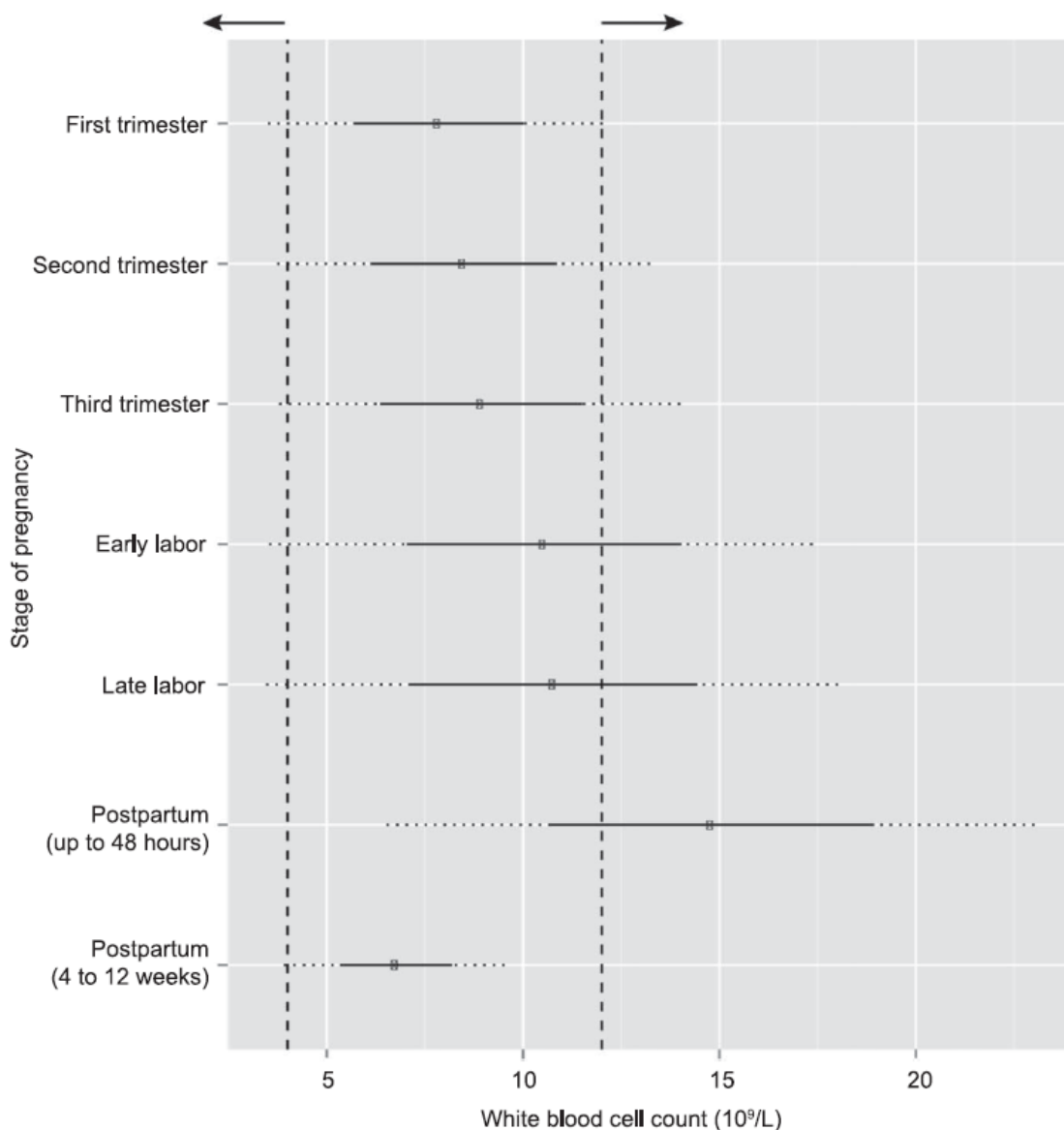
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Fig. 5. Normal white blood cell count variation during pregnancy and postpartum. Mean is indicated by the *center* of each forest plot, 1 standard deviation (SD) is indicated by a *solid line*, and a *dotted line* indicates 2 SDs from the mean. *Vertical dotted lines* indicate systemic inflammatory response syndrome criteria for each parameter.
Bauer. SIRS Criteria in Pregnancy. Obstet Gynecol 2014.



Objective measures used in the diagnosis of sepsis in pregnancy

- **Temperature** $<36^{\circ}\text{C}$ or $>38.3^{\circ}\text{C}$
- **Heart rate** > 100 bpm
- **Respiratory rate** $>24/\text{minute}$
- **Acutely altered mental state**
- **Wbc** >20 or $<4 \times 10^9/\text{l}$
- **Hyperglycaemia in the absence of (known) diabetes**

These parameters probably apply to pregnancy AFTER the first 20 weeks and up until the immediate postnatal period. **Under 20 weeks and more than 48 hours after delivery, it is probably safer to use the non-pregnant values, especially if the woman reports feeling unwell.**

Original Research

Maternal Deaths Due to Sepsis in the State of Michigan, 1999–2006

Melissa E. Bauer, DO, Robert P. Lorenz, MD, Samuel T. Bauer, MD, Krishna Rao, MD, MS, and Frank W.J. Anderson, MD, MPH

(Obstet Gynecol 2015;126:747–52)

Only 2 of 15 (13%) patients received appropriate initial antibiotics.

Delays of care were found in the majority of patients.



Royal College of
Obstetricians &
Gynaecologists

Bacterial Sepsis following Pregnancy

Green-top Guideline No. 64b
April 2012



Seps v těhotenství
Verze: 1.2.

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3.1.1.

Doporučujeme vypracování vlastního formalizovaného protokolu / standardu pro včasný záchyt pacientek se známkami sepse a definování procesu péče po aktivaci systému včasného varování na konkrétním pracovišti(1)[§]

Poznámka: Důležité je zavedení tzv. rapid response system (RRS, systém časného varování), kdy k aktivaci systému může dojít už na podnět středního zdravotnického personálu. Smyslem systému „časného varování“ je zabránit u pacientů časové prodlevě zahájení léčby. Časová prodleva zhoršuje klinický výsledek exponenciálně.

3.2.1.

Doporučení: Jakákoliv významná změna zdravotního stavu / fyziologických funkcí nevysvětlitelná jinou příčinou by měla být považována za známku možného rozvoje sepse do doby jejího vyloučení. (1)[§]

Obstetric Sepsis / Severe Sepsis Screening Tool

Does the woman have 2 Signs and Symptoms of Infection?

Temperature <36 or >38 °C	Respiratory rate > 20 bpm
Heart rate >100 bpm (AN & Intrapartum) > 90 bpm (PN)	Acutely altered mental state
WCC >12 or $<4 \times 10^9/l$ (higher threshold in labour)	Hyperglycaemia (Blood sugar >7.7) in the absence of diabetes

If YES

Does the woman have a history or signs of a new infection or infective source ?

Prolonged ruptured membranes or offensive liquor	Breast redness and / or tenderness / mastitis
Unexplained fetal tachycardia in the absence of a maternal tachycardia	Fetal demise
Recent delivery / offensive lochia	Cough / sputum / chest pain
Catheter or Dysuria	Abdominal pain distension/diarrhoea
Line infection	Cellulitis/wound infection/septic arthritis
Headache with neck stiffness	Other
Endocarditis	

If Yes the woman has **SEPSIS**

Does the woman have any signs of organ dysfunction ?

SBP < 90 or MAP <70 mmHg	Lactate > 2 mmols/l
Urine output <0.5 ml/kg/hr for 2 hours	New need for Oxygen to keep $SpO_2 >90\%$
Platelets $< 100 \times 10^9/l$	INR > 1.5 or aPTT > 60 s
Creatinine rise of > 44.2 mmol/l or level of >177 mmol/l	Bilirubin $> 70\mu$ mol/l

NO

YES

If NO, treat for SEPSIS:

Start Sepsis Six**Plus Two

- Oxygen
- Blood cultures
- Lactate
- IV antibiotics
- Fluid therapy
- Fluid balance and catheter
- **Consideration of delivery & VTE prophylaxis

If YES, the woman has SEVERE SEPSIS:

Start Sepsis Six**Plus Two

- Start the clock.....
- Refer the woman to Critical Care.
- Give IV Antibiotics within 1 hour
- Start with Stat Dose

Modified Early Obstetric Warning Score Call-Out-Cascade

MEOWS ≤ 2

Continue current treatment plan

MEOWS = 3

Inform Coordinator or Senior Midwife
Repeat observations
Senior midwife to review
Consider medical review

MEOWS ≥ 4 (Or 3 in any parameter)

Inform Coordinator or Senior Midwife
Contact Obstetric SHO to review
If SHO unable to attend within 30 minutes:
 Contact Obstetric Registrar, or
 Contact Obstetric Senior Registrar

MEOWS ≥ 6

Inform Coordinator or Senior Midwife
Urgent medical review needed
Contact Obstetric Registrar and Senior Registrar
Contact Anaesthetic Registrar
If doctors unavailable contact:
 Consultant Obstetrician on call
 4th On Anaesthetist
Consider Critical Care Outreach referral

Bleep Numbers:

Obstetric SHO – 0901
Obstetric Registrar – 0902
Obstetric Senior Registrar – 0903
Obstetric Anaesthetist – 0011
4th On Anaesthetist – Switchboard
Critical Care Outreach Team - 0805

Think:

Airway
Breathing
Circulation
Left lateral tilt if pregnant
Increase frequency of observations
Record Oxygen saturations
Urinalysis
Fetal monitoring

Consider:

Signs of SIRS or suspected sepsis?

→ Refer to Sepsis Bundle

O₂ therapy
IV access
Fluid resuscitation
Urinary catheter
Analgesia
Bloods: FBC, U&E, LFT
 X-match
 Blood glucose
 ABG
 Septic screen
12 lead ECG
Transfer to CDS or Critical Care

If patient deteriorates, fails to respond to treatment or
MEOWS increases by 2 points or more:

Do not delay, seek expert help

Contact Consultant Obstetrician on call
Contact duty Consultant Anaesthetist

In an emergency call 2222 and state “Obstetric Emergency”

Norfolk and Norwich University Hospitals **NHS**
NHS Foundation Trust

Date of issue: August 2014
Guideline Ref No: MID33 v.4/AO13 v.4

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Maternal Deaths Due to Sepsis in the State of Michigan, 1999–2006

Melissa E. Bauer, DO, Robert P. Lorenz, MD, Samuel T. Bauer, MD, Krishna Rao, MD, MS, and Frank W.J. Anderson, MD, MPH

(Obstet Gynecol 2015;126:747–52)

Table 2. Specific Maternal Early Warning Criteria and Temperature Findings of Patients Who Presented to the Hospital With Sepsis

Patient No.	Maternal Early Warning Criteria* Triggered	Heart Rate Higher Than 120 bpm	Respiratory Rate Higher Than 30 Breaths/Min	Systolic Blood Pressure Lower Than 90 mm Hg	Spo ₂ Less Than 95% on Room Air	Temperature Higher Than 38°C
1	+	NA	NA	NA	+	—
2	+	+	—	—	NA	—
3	+	—	+	—	NA	—
4	+	—	—	+	+	+
5	+	+	—	+	—	—
6	—	—	—	—	—	—
7	—	—	—	—	NA	—
8	+	+	+	—	+	—
9	+	+	—	—	+	+
10	—	—	—	—	—	—
11	+	+	+	—	—	—
12	+	—	—	—	+	—

bpm, beats per minute; NA, not available.

* Maternal Early Warning Criteria are the following: systolic blood pressure lower than 90 or higher than 160 mm Hg, diastolic blood pressure higher than 100 mm Hg, heart rate lower than 50 or higher than 120 bpm, respiratory rate lower than 10 or higher than 30 breaths per minute, oxygen saturation on room air, at sea level, less than 95%, oliguria less than 35 mL per hour for 2 hours or longer, maternal agitation, confusion, or unresponsiveness; patient with preeclampsia reporting a nonremitting headache or shortness of breath.¹¹

† Not part of the Maternal Early Warning Criteria.

A validation study of the CEMACH recommended modified early obstetric warning system (MEOWS)*

S. Singh,¹ A. McGlennan,² A. England² and R. Simons²

1 Consultant Anaesthetist, Barnet Hospital, Herts, UK. 2 Consultant Anaesthetist, Royal Free Hospital, London, UK

The MEOWS was 89% sensitive, 79% specific,
with a positive predictive value 39% and a negative predictive value of 98%.

Singh S et al. Anaesthesia 2012; 67: 12-8

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2	+	+	–	–	NA	–
3	+	–	+	–	NA	–
4	+	–	–	+	+	+
5	+	+	–	+	–	–
6	–	–	–	–	–	–
7	–	–	–	–	NA	–
8	+	+	+	–	+	–
9	+	+	–	–	+	+
10	–	–	–	–	–	–
11	+	+	+	–	–	–
12	+	–	–	–	+	–

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OBSTETRIC PROMPT **1000** LIVES  O FYWYDAU

Could this woman have sepsis?
Signs and Symptoms of Sepsis

- Temperature $< 36^{\circ}\text{C}$ or $> 38^{\circ}\text{C}$
- Heart rate > 100 bpm (AN & Intrapartum) > 90 bpm (PN)
- Respiratory rate > 20 /min
- WCC > 12 or $< 4 \times 10^9/\text{l}$ (higher threshold in labour)
- Acutely altered mental state
- Hyperglycaemia (> 7.7 mmol/l)

Two or more of the above plus a history or signs of new infection:
Start Sepsis SixPlus Two**

MEDICAL CERTIFICATE OF DEATH

16 DATE OF DEATH July 22, 1912
(Month) (Day) (Year)

17 I HEREBY CERTIFY that I attended deceased from July 15, 1912, to July 22, 1912,
that I last saw her alive on July 22, 1912,
and that death occurred, on the date stated above, at m.

The CAUSE OF DEATH* was as follows:
Periparturient Peritonitis

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