

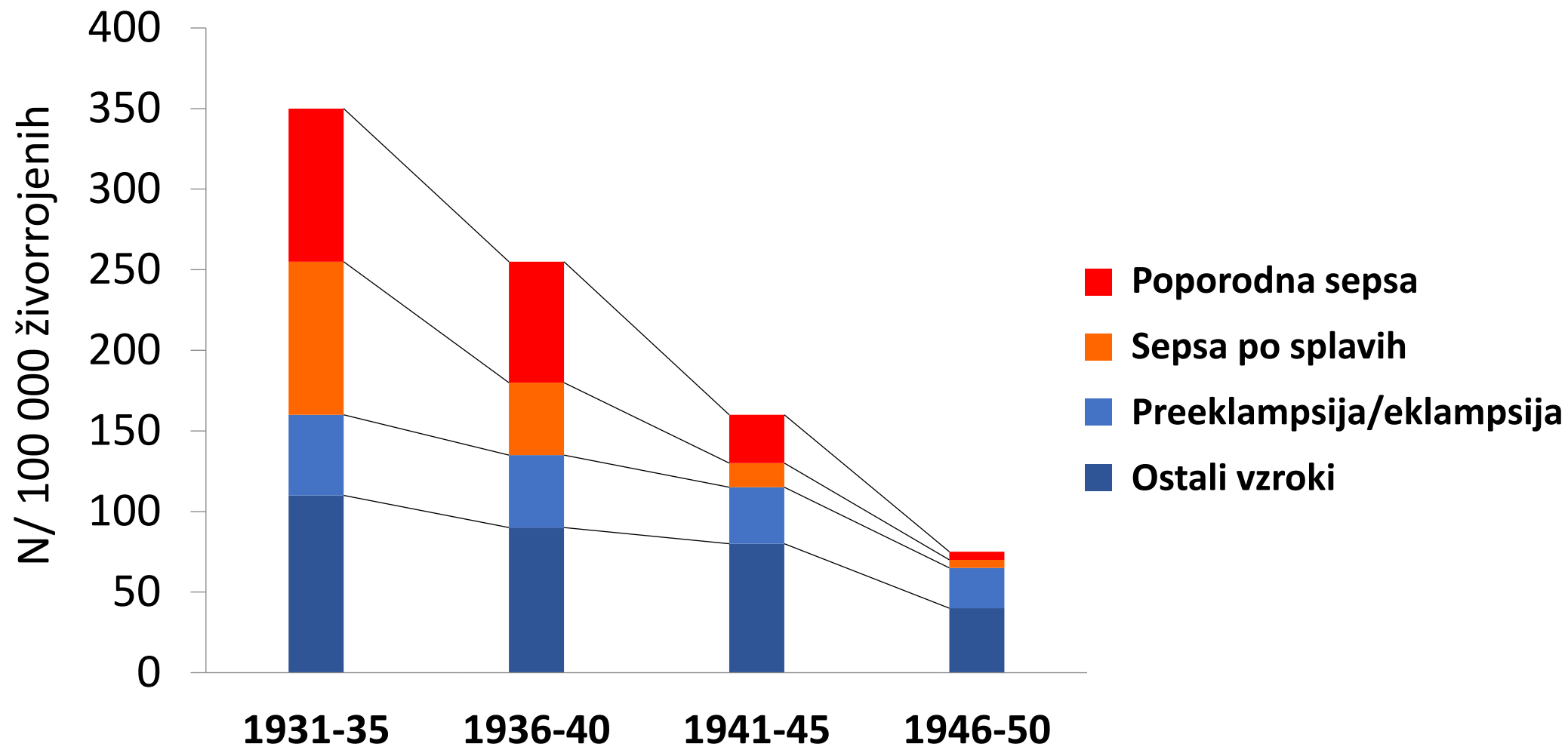


Sepsa v nosečnosti

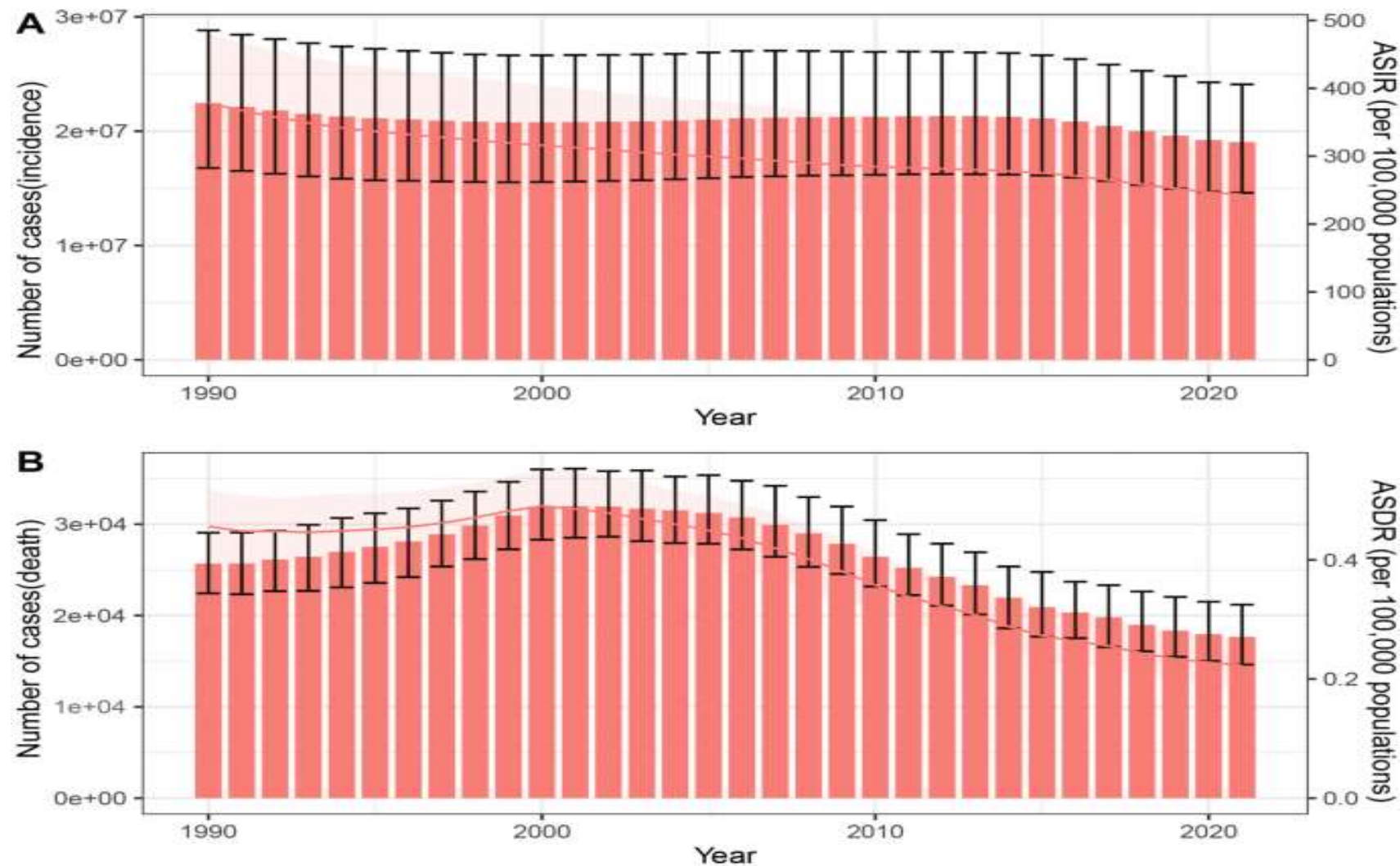
klinične posebnosti in izzivi zdravljenja

prof. Miha Lučovnik, dr. med.

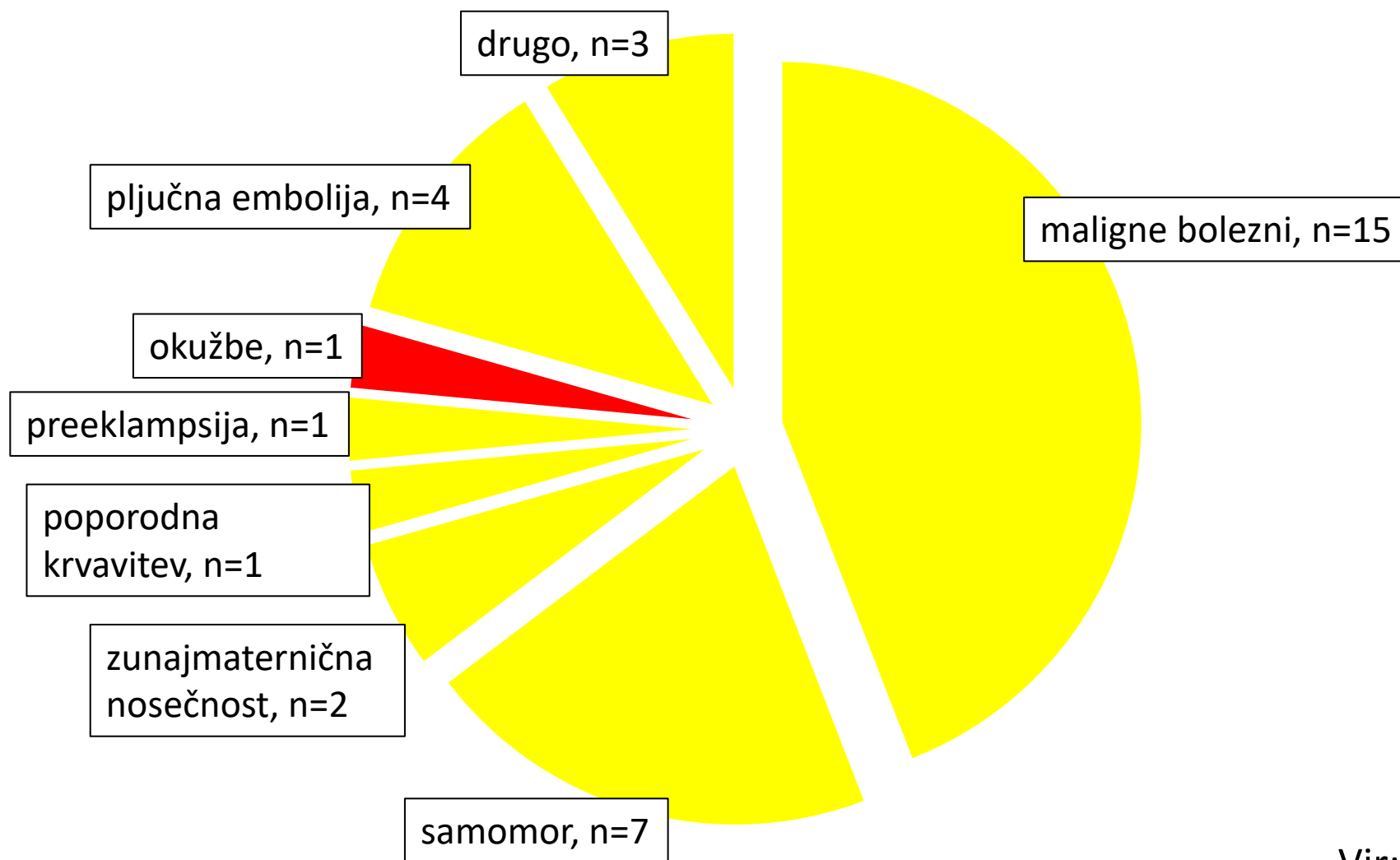
Vzroki za maternalno umrljivost, Švedska 1931-1950



Globalna pojavnost maternalne seapse in maternalnih smrti zaradi seapse

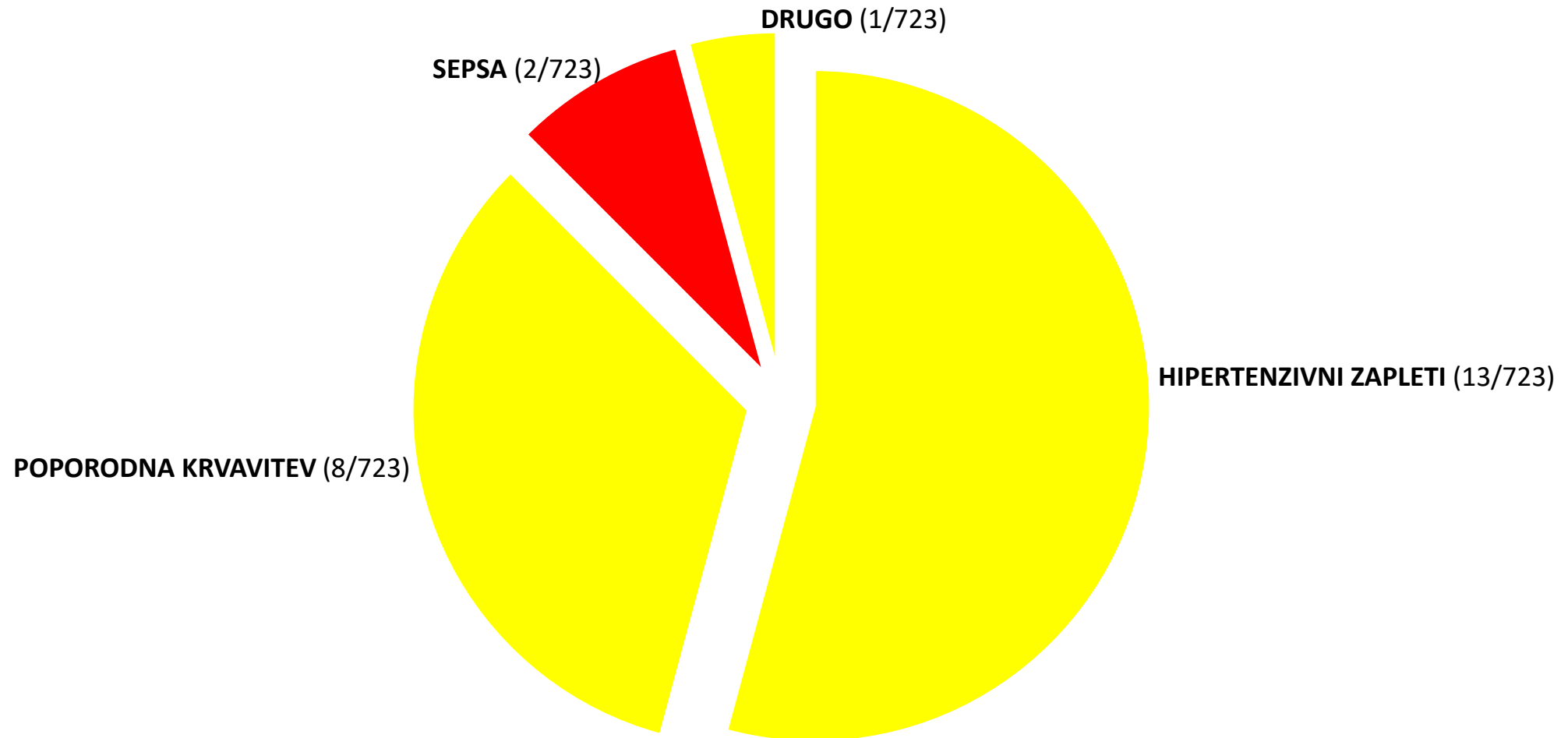


Vzroki za maternalno umrljivost, Slovenija, 2015-2022



Vzroki za hudo maternalno obolevnost

Porodnišnica Ljubljana, 2021



Težava zgodnje prepoznavse sepse v nosečnosti

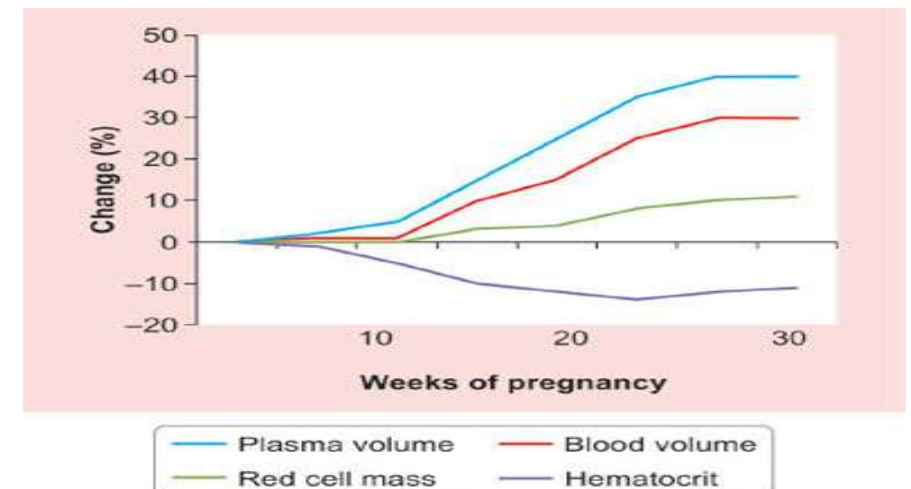
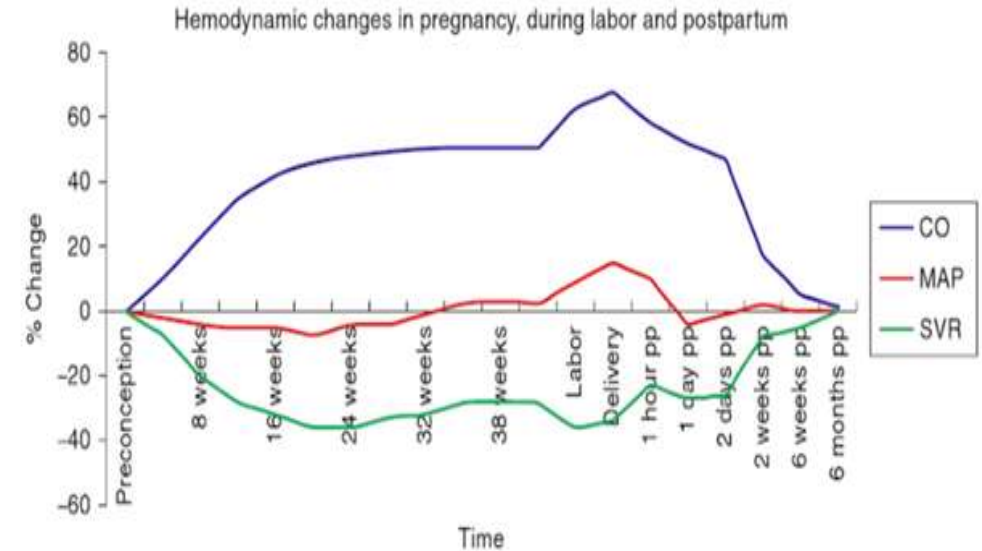
TABLE 1
Sequential Organ Failure Assessment score¹⁸

Organ system	Score	0	1	2	3	4
Respiratory						
PaO ₂ /F _i O ₂		≥400 mm Hg (53.3 kPa)	<400 mm Hg (53.3 kPa)	<300 mm Hg (40 kPa)	<200 mm Hg (26.7 kPa) with respiratory support	<100 mm Hg (13.3 kPa) with respiratory support
Coagulation						
Platelets		≥150 × 10 ³ /μL	<150	<100	<50	<20
Hepatic						
Bilirubin		<1.2 mg/dL (20 μmol/L)	1.2–1.9 mg/dL (20–32 μmol/L)	2.0–5.9 mg/dL (33–101 μmol/L)	6.0–11.9 mg/dL (102–204 μmol/L)	>12 mg/dL (204 μmol/L)
Cardiovascular						
MAP		≥70 mm Hg	<70	Dopamine <5 μg/kg/min, or any dose of dobutamine	Dopamine 5.1–15 μg/kg/min, or epinephrine ≤0.1 μg/kg/min, or norepinephrine ≤0.1 μg/kg/min	Dopamine >15, or epinephrine >0.1, or norepinephrine >0.1
Central nervous system: Glasgow Coma Scale score		15	13–14	10–12	6–9	<6
Renal						
	Serum creatinine	<1.2 mg/dL (110 μmol/L)	1.2–1.9 mg/dL (110–170 μmol/L)	2.0–3.4 mg/dL (171–299 μmol/L)	3.5–4.9 mg/dL (300–440 μmol/L) OR Urine output <500 mL/d	Serum creatinine >5.0 mg/dL (440 μmol/L) OR Urine output <200 mL/d

F_iO₂, fraction of inspired oxygen; MAP, mean arterial pressure; PaO₂, partial pressure of oxygen.

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Society for Maternal-Fetal Medicine. Maternal sepsis. Am J Obstet Gynecol 2023.



Uporaba za nosečnost specifičnih zgodnjih opozorilnih skal

[illegible]

Table 4. Predictive values of different MEOWS groups and EWS groups for prediction of severe maternal morbidity in postpartum women

	Sensitivity	Specificity	Positive predictive value	Negative predictive value	Positive likelihood ratio	Negative likelihood ratio
MEOWS red or yellow	92% (73%–99%)	62% (58%–66%)	8% (7%–9%)	100% (98%–100%)	2.4 (2.1–2.8)	0.1 (0.04–0.5)
MEOWS red	58% (37%–78%)	99% (98%–100%)	70% (50%–85%)	99% (98%–99%)	68.0 (28.6–161.5)	0.4 (0.3–0.7)
MEOWS yellow	33% (16%–55%)	63% (59%–67%)	3% (2%–5%)	96% (95%–97%)	0.9 (0.5–1.6)	1.1 (0.8–1.4)
MEOWS green	8% (1%–27%)	58% (54%–62%)	0.7% (0.2%–2.5%)	95% (94%–95%)	0.2 (0.1–0.8)	1.6 (1.4–1.8)
EWS $\geq$ 2 points	63% (41%–81%)	66% (62%–69%)	6% (4%–8%)	98% (97%–99%)	1.8 (1.3–2.5)	0.6 (0.3–1.0)
EWS $\geq$ 4 points	8% (1%–27%)	99% (98%–100%)	25% (7%–61%)	97% (97%–97%)	9.7 (2.1–45.6)	0.9 (0.8–1.0)

Najpogostejši viri okužbe in povzročitelji maternalne sepsse

TABLE 3

Common sources of infection in sepsis

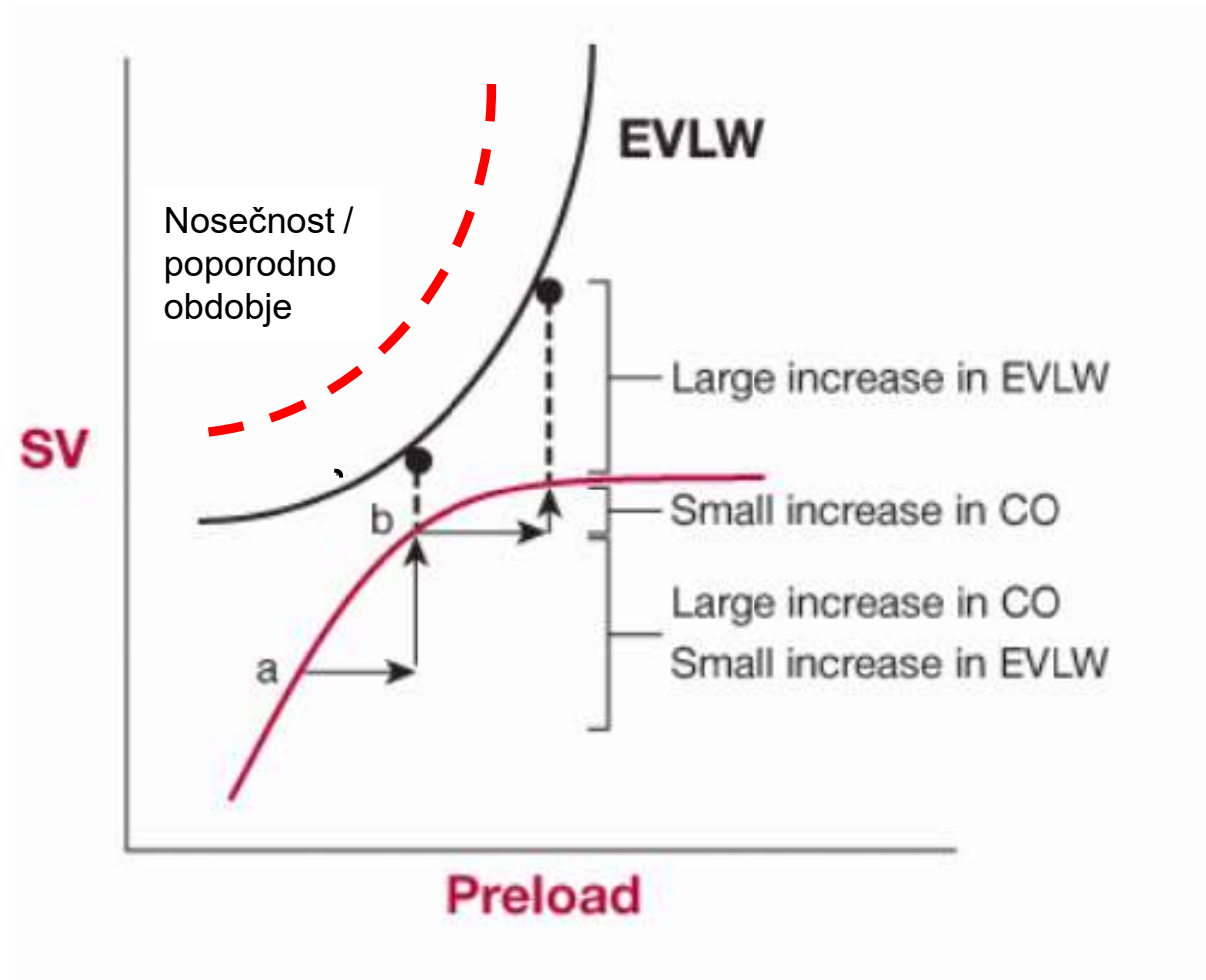
Sources	Antepartum	Postpartum
Obstetrical	Septic abortion	Endometritis
	Chorioamnionitis	Wound infection
Nonobstetrical	Urinary tract infection	Urinary tract infection
	Pneumonia	Pneumonia
	Appendicitis	Gastrointestinal

Society for Maternal-Fetal Medicine. Maternal sepsis. Am J Obstet Gynecol 2023.

Povzročitelji

- 30% ni znanega povzročitelja
- Polimikrobna okužba 15% maternalnih seps
- E. coli
- Strep A
- Staph aureus

Povečano tveganje za pljučni edem v obporodnem obdobju



Zmanjšana debelina glikokaliksa žilnega endotelija omentuma pri zdravih nosečnicah in bolnicah s težko preeklampsijo

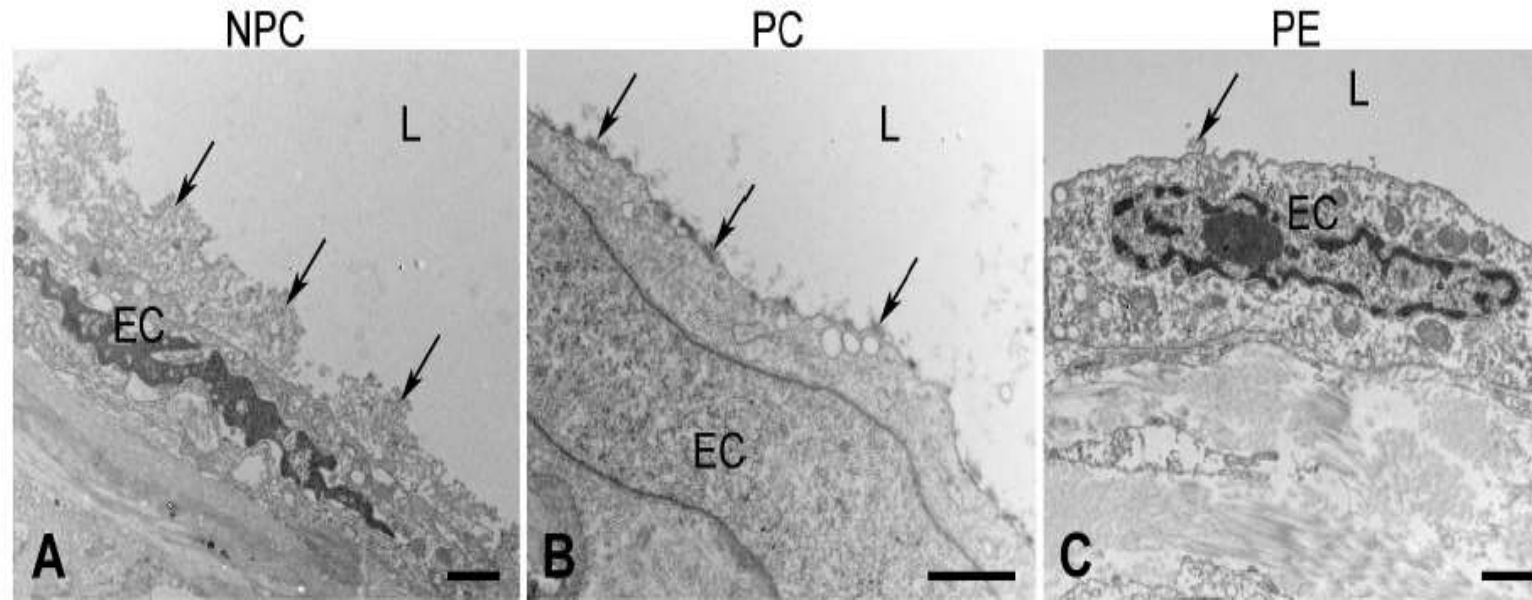
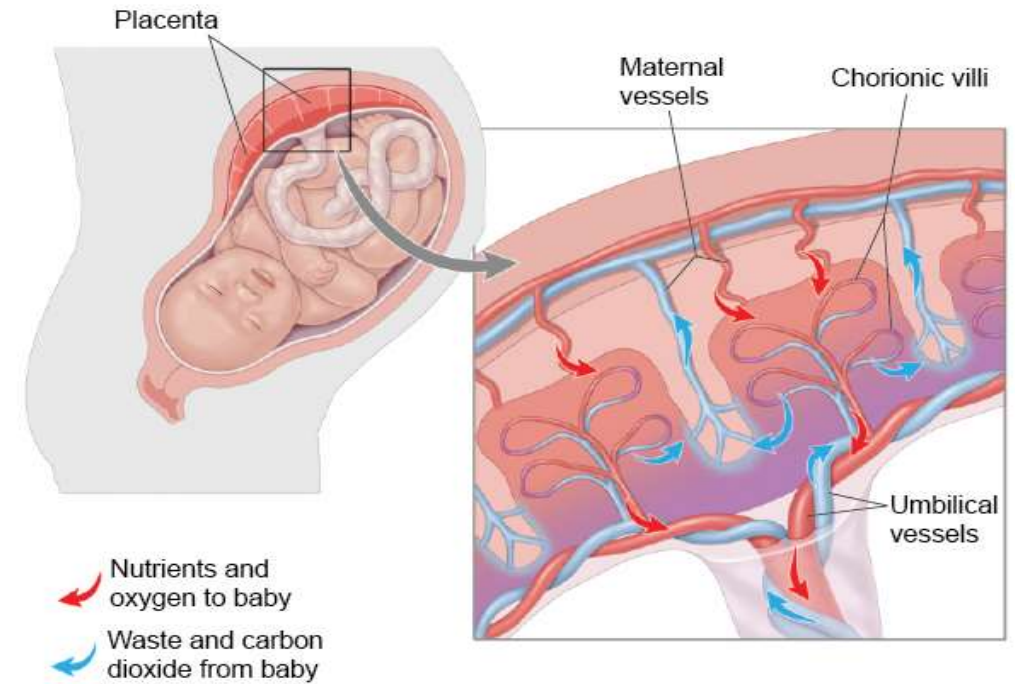


Fig. 3. Transmission electron micrographs of endothelial glycocalyx in the omentum blood vessels from non-pregnant control (A; NPC), pregnant control (B; PC), and severe preeclampsia (C; PE) group of patients. Endothelial glycocalyx (arrows) is visualized by ruthenium red at the apical plasma membrane of the endothelial cells in the lumen of the vessels. Endothelial glycocalyx is most prominent in a non-pregnant control, reduced in a pregnant control and minimal in a patient with severe preeclampsia. EC – endothelial cell; L – lumen. Scale bars: 1 μ m.

Tveganja za plod

- Hipotenzija
- Respiracijska insuficienca
- Povišana telesna temperatura
- Zdravila
 - Benzodiazepini, propofol, mišični relaksansi, vazopresorji,...
- Radiološke preiskave
 - 20-50 mGy – povečano tveganje za levkemijo
 - 50-100 mGy – potencialni teratogeni učinki
 - Potencialni teratogeni in embriotoksični učinki gadolinija



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Pregnancy and Lactation Labeling Resources

[12/3/14] The FDA published the *Content and Format of Labeling for Human Prescription Drug and Biological Products; Requirements for Pregnancy and Lactation Labeling*, referred to as the "[Pregnancy and Lactation Labeling Rule](#)" (PLLR or final rule).

The PLLR requires changes to the content and format for information presented in prescription drug labeling in the Physician Labeling Rule (PLR) format to assist health care providers in assessing benefit versus risk and in subsequent counseling of pregnant women and nursing mothers who need to take medication, thus allowing them to make informed and educated decisions for themselves and their children. The PLLR removes pregnancy letter categories – A, B, C, D and X. The PLLR also requires the label to be updated when information becomes outdated.

Tveganja za plod

- Sepsa (ki ni posledica intrauterine okužbe) ni indikacija za prekinitev nosečnosti
- Povečano tveganje za spontani prezgodnji porod (17% vs 7%)
- Povečano tveganje za placentarno insuficienco in smrt ploda v maternici



Zaključki

- Sepsa ostaja pomemben vzrok za maternalno obolevnost in umrljivost
- Sodi med lažje preprečljive vzroke maternalne umrljivosti – problem zgodnje prepoznavе
- Načela zdravljenja sepse v nosečnosti enaka kot pri ostalih bolnikih
- Čas in način poroda sta odvisna od porodniških indikacij

Hvala za pozornost

