

# Postpartum haemorrhage in Estonia

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BaltAnestIC2023



- PPH definition(s)
- Epidemiology
- PPH consequences

# Definition of postpartum haemorrhage (PPH)



**TABLE 2** Summary of postpartum hemorrhage definitions from high-quality guidelines around the world

Guideline	Definition
American College of Obstetricians and Gynecologists (2017) Dutch Society of Obstetrics and Gynecology (2012)	>1000 ml regardless of route of delivery Any blood loss that causes hemodynamic instability
Federation of Obstetric and Gynaecological Societies of India (2015) French College of Gynaecologists and Obstetricians/French Society of Anesthesiology and Intensive Care (2016) The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (2017) World Health Organization (2012)	>500 ml regardless of route of delivery Severe PPH >1000 ml
International Federation of Gynecology and Obstetrics (2012) Society of Obstetricians and Gynaecologists of Canada (2018)	Vaginal delivery >500 ml, cesarean delivery >1000 ml An
Royal College of Obstetricians and Gynaecologists (2016)	>5 PP
German Society of Gynecology and Obstetrics/Austrian Society of Obstetrics and Gynecology/Swiss Society of Gynaecology and Obstetrics (2018)	Vag

**BOX 2** FIGO recommends use of the shock index in the diagnosis and management of PPH.

FIGO considers that the shock index can be a marker of the severity of PPH and can alert teams to hemodynamic instability when its value is greater than 0.9.

# Definition of PPH



- Problems:the lack of consistency in the definition
  - based on volume of blood loss, patophysiological changes or need for intervention
- Volume of blood loss – how to measure?
  - Estimated blood loss
  - Quantitative blood loss (QBL)
    - Gravimetric and volumetric techniques (graduated under buttock drapes)
- Underestimation of blood loss can result in delays in the diagnosis and management ➡ maternal near miss and mortality

# Definition of PPH



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*Best Practice & Research Clinical Anaesthesiology 36 (2022) 325–339*

## *Definition proposal*

A multidisciplinary approach and monitoring of physical status, including vital signs, clinical symptoms, coagulation, and bleeding status, is required in defining PPH. Current definitions of PPH, based both on blood loss and/or vital sign changes, may hinder early identification, particularly of women at a higher risk of adverse outcomes, and thus may cause delays in treatment. We suggest PPH definitions should encompass the entire peripartum period and be defined as “a cumulative blood loss equal to or greater than 1000 ml or any blood loss associated with clinical and/or laboratory signs of shock/tissue hypoperfusion within 24 h after birth”. However, blood loss >500 ml should trigger close patient monitoring and alert midwife, obstetrician, and anesthesiologist care providers [96].

**Diagnostic interventions can only improve maternal outcome when paired with effective and timely management**

**Table 6.** Severe postpartum haemorrhage prevalence (blood loss  $\geq 1000$  mL).

Group/subgroup	% (CI 95%)	No. articles	No. datasets	No. women	% Min	% Max	I <sup>2</sup>
By continent/region							
Africa	2.21 (2.01–2.41)	8	18	20 692	0.00	16.92	98.21
Eastern Africa	2.80 (1.36–4.25)	1	2	499	1.95	3.70	34.00
Middle Africa	3.07 (2.38–3.76)	2	3	2 410	0.98	7.42	97.88
Northern Africa	0.26 (0.09–0.43)	1	2	3 411	0.18	0.35	9.63
Southern Africa	3.80 (3.09–4.51)	1	2	2 814	3.62	3.98	0.00
Western Africa	2.20 (1.93–2.46)	5	9	11 558	0.00	16.92	97.31
Asia	1.78 (1.62–1.95)	10	26	25 345	0.25	6.33	94.80
Eastern Asia	1.01 (0.74–1.28)	3	6	5 240	0.39	2.02	76.97
South-Central Asia	0.68 (0.48–0.88)	2	3	6 501	0.25	1.24	75.95
South-Eastern Asia	2.67 (2.33–3.00)	3	7	8 776	0.51	6.33	98.12
Western Asia	2.51 (2.06–2.95)	3	10	4 828	0.72	4.29	83.51
Europe	1.75 (1.71–1.79)	7	18	432 616	1.60	12.80	96.84
Northern Europe	1.69 (1.65–1.72)	4	9	425 553	1.60	12.80	97.43
Western Europe	5.49 (4.96–6.02)	4	9	7 063	4.18	9.83	76.74
Latin America and the Caribbean	5.33 (4.49–6.18)	1	2	2 719	3.60	7.07	94.44
South America	5.33 (4.49–6.18)	1	2	2 719	3.60	7.07	94.44
Northern America	—	—	—	—	—	—	—
Northern America	—	—	—	—	—	—	—
Oceania	4.33 (3.66–5.01)	1	2	3 483	3.93	4.73	26.86
Australia/New Zealand	4.33 (3.66–5.01)	1	2	3 483	3.93	4.73	26.86
Multicountry	3.12 (2.88–3.36)	2	4	20 524	0.38	3.97	99.00

## Epidemiology of postpartum haemorrhage: a systematic review

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Best Practice & Research Clinical Obstetrics and Gynaecology  
Vol. 22, No. 6, pp. 999–1012, 2008  
doi:10.1016/j.bpobgyn.2008.08.004

# Epidemiology of PPH worldwide



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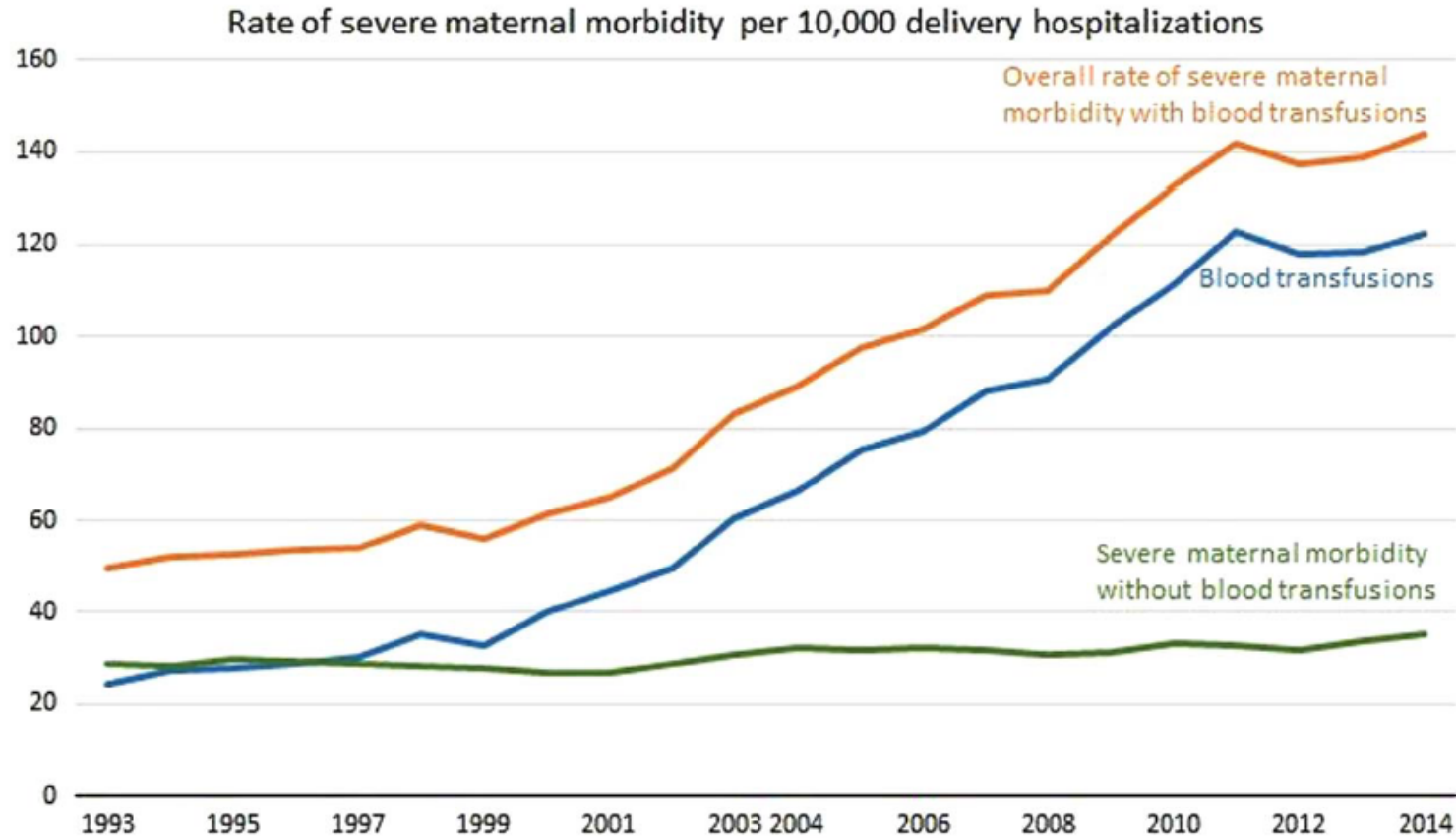



- **PPH is complicating 1-10% of deliveries** Say,2014;Borovac-Pinheiro,2018
- The prevalence of PPH Caroli,2008;Calvert,2012
  - >500 ml: 11-26%
  - >1000 ml: 2-5%
- A Swedish register-based study, PPH $\geq$ 1000ml: in 2005, 13.5% and in 2015, 13.7%  
Thies-Lagergren,2021
- The prevalence of PPH differs widely according to
  - the definition and criteria used,
  - methods of measuring blood loss
  - the population being studied
- High-income countries continue to report an increase in PPH>1000ml; risk of fatal outcomes is low Dahlke,2015

# Postpartum Hemorrhage— Epidemiology, Risk Factors, and Causes

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CLINICAL OBSTETRICS AND GYNECOLOGY  
Volume 66, Number 2, 344–356



**FIGURE 1.** CDC Severe Maternal Morbidity in the United States. [Cdc.gov/reproductivehealth/maternalinfanthealth/severematernalmorbidity.html#rates](https://www.cdc.gov/reproductivehealth/maternalinfanthealth/severematernalmorbidity.html#rates). Accessed 9/10/2022. 



# Consequensis of PPH



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- **PPH is a leading cause of maternal morbidity (maternal near miss) and mortality worldwide**
- **Among women with PPH, 17% will have either a maternal near miss or death**  
Sheldon,2014
- **29,3% maternal deaths and 26,7% of severe adverse outcomes globally are due to PPH** Kassebaum,2016; Say,2014;Souza,2013
- **Increased risk for**
  - reproductive ill-health, hysterectomy and infertility
  - blood transfusion, renal failure, coagulation deficiencies etc
  - long-term morbidity, incl psychological morbidity due to traumatic experience
  - delay of bonding and initiation of breastfeeding
  - prolonged hospital stay and increasing costs of healthcare

## Common etiologies (four Ts)



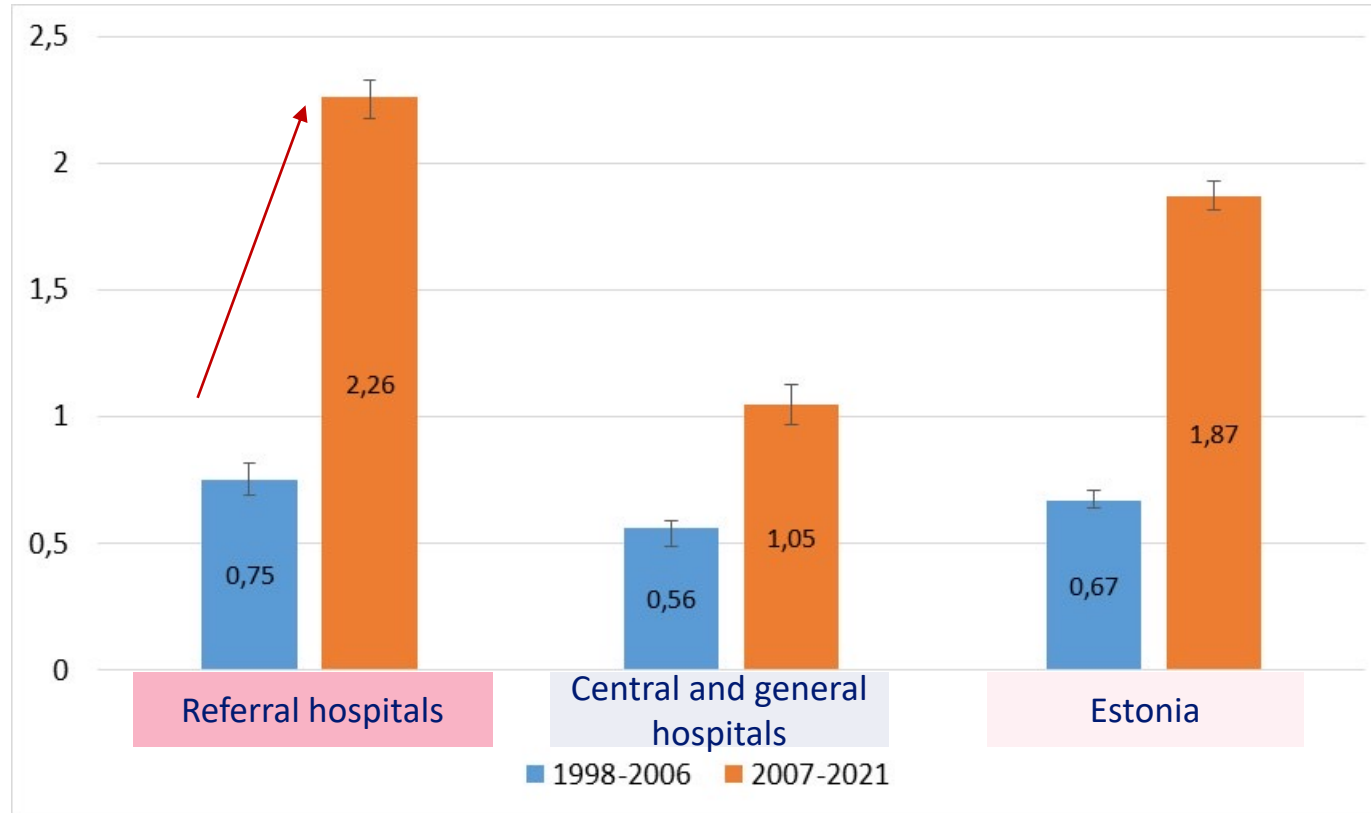
- *Tone*
  - Uterine atony, (70% of PPH cases)
- *Trauma*
  - Genital tract trauma (15-20% of PPH cases)
- *Tissue*
  - Retained products of conception
- *Thrombin*
  - Coagulopathy

PPH prevalence in Estonia



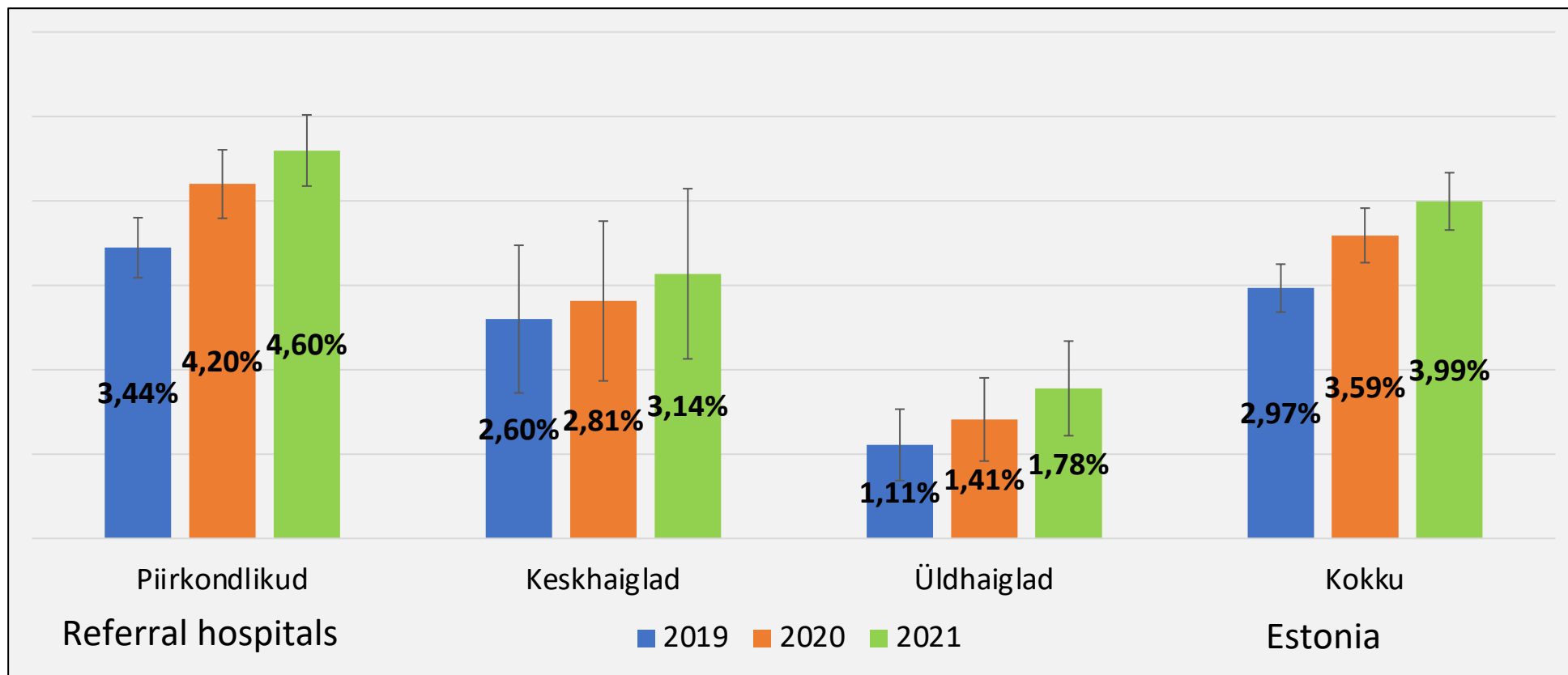
- Estonian Medical Birth Registry
  - Collects data on all births in Estonia since 1992
  - Institutions offering obstetric services (and midwives during home deliveries) have to fill in the Birth Card for every live and stillbirth
  - <https://en.tai.ee/en/r-and-d/registers/estonian-medical-birth-registry-and-estonian-abortion-registry>
- Estonian Gynaecologists' Society
  - Annually collects and analyses perinatal care quality indicators and maternal near miss cases
- Clinical indicators for monitoring quality of care by Estonian Health Insurance Fund (EHIF)
  - 5 indicators for obstetric care, including PPH >1000 ml blood loss

# Postpartum hemorrhage (>1000 ml) in Estonia, 1998–2006 and 2007–2021



	Referral hospitals			Central and general hospitals			Estonia		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
1998-2006	503	0,75	(0,69-0,82)	287	0,56	(0,49-0,62)	790	0,67	(0,62-0,71)
2007-2021	3301	2,26	(2,18-2,33)	703	1,05	(0,97-1,13)	4004	1,87	(1,82-1,93)

## PPH > 1000 ml by type of hospitals, 2019. – 2021.



Haiglaliik	Referral hospitals			Central hospitals			General hospitals			Estonia		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
2019	347	3.44%	(3.09-3.8)	33	2.60%	(1.72-3.47)	26	1.11%	(0.68-1.53)	406	2.97%	(2.68-3.25)
2020	394	4.20%	(3.79-4.6)	33	2.81%	(1.87-3.76)	31	1.41%	(0.92-1.9)	458	3.59%	(3.27-3.91)
2021	436	4.60%	(4.18-5.02)	36	3.14%	(2.13-4.14)	38	1.78%	(1.22-2.34)	510	3.99%	(3.65-4.33)



## Maternal near miss (MNM) and PPH

**Maternal near-miss (MNM)** refers to a woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy.

- MNM criteria are cardiovascular, respiratory, renal, coagulation/hematological, hepatic, neurological, uterine dysfunction WHO
- In Estonia, there are ~2% MNM cases, 70% of cases are due to coagulation/hematological dysfunction (severe PPH and transfusion of blood or red cells  $\geq 4$  units)

## Take home message



- PPH prevalence is increasing and it is the leading cause of maternal morbidity and maternal near miss
- Early and correct diagnosis: blood loss > 500 ml should trigger close monitoring and alert care providers
- Implementation of stage-based protocols and intervention packages (bundles)
- Team work and simulation training
- Monitoring and Auditing of PPH cases





Varasem PPH diagnoos ja kiirem sekkumine

Parem tulemus