Svensk Förening för Anestesi och Intensivvård

SFOAI Spring Meeting 2026

Failing Epidural Analgesia

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E S A IC

SOCIEDAD ESPAÑOLA DE ANESTESIOLOGÍA, REANIMACIÓN Y TERAPÉUTICA DEL DOLOR
SEDAR

Sección de Obstetricia SEDAR

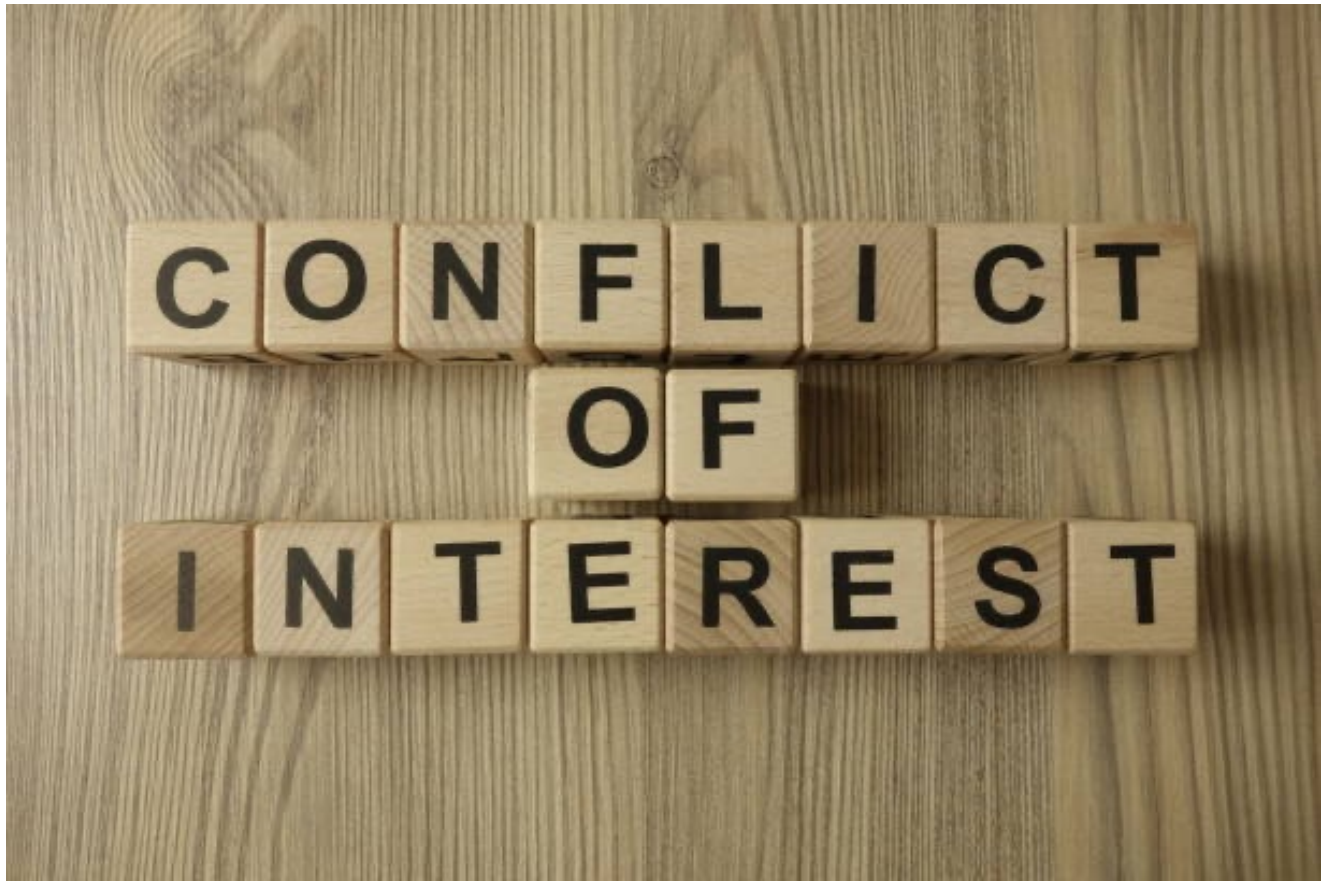
20/05/2026

Hemosims HPP

LFB BIOTERAPIAS HISPANIA, S.L

AGUETTANT ESSENTIAL MEDICINES

ALTAN An Ethypharm Group company



Not related with this conference

Understanding failing epidural analgesia during labour

01 Failure of Epidural Analgesia during Labor: Definitions

02 Prevention of Epidural Failure

03 Management of Epidural Block Failure During Labor

04 Is it just a problem of analgesic quality?
Safety issues for caesarean section during labour

Introduction

Pain during labour epidural analgesia, a complication of childbirth?

Image created by artificial intelligence

Standards of quality in Obstetric Anaesthesia

European minimum standards for obstetric analgesia and anaesthesia departments

An experts' consensus

Emilia Guasch[*,†], Nicolas Brogly[‡], Frederic J. Mercier[†], Alexander Ioscovich[*], Carolyn F. Weiniger[†], Nuala Lucas[†], Dominique Chassard[†], Peter Kranke[†], David Whitaker[*,¶], Goetz Geldner[*], Olegs Sabelnikovs[*] and Edoardo de Robertis[*,§]

10 fields of recommendations
Based on evidence
By European experts
In obstetric anaesthesia:

(1) Human resources
(2) Technical equipment
(3) Pre-operative evaluation
(4) Initiation of labour analgesia
(5) Maintenance of labour analgesia
(6) Conversion of labour epidural analgesia into anaesthesia for CD
(7) Standard management for caesarean delivery
(8) High-risk obstetric patient management
(9) Postoperative care
(10) Maternal cardiac arrest

Eur J Anaesthesiol 2020; **37**:1115–1125

Patient Preferences for Outcomes Associated With Labor Epidural Analgesia

Alison Harding [1], Ronald B. George [2], Allana Munro [3, 4], Jillian Coolen [1, 5], Erna Snelgrove-Clarke [6], Brendan Carvalho [7]

What are the aspirations of parturients?

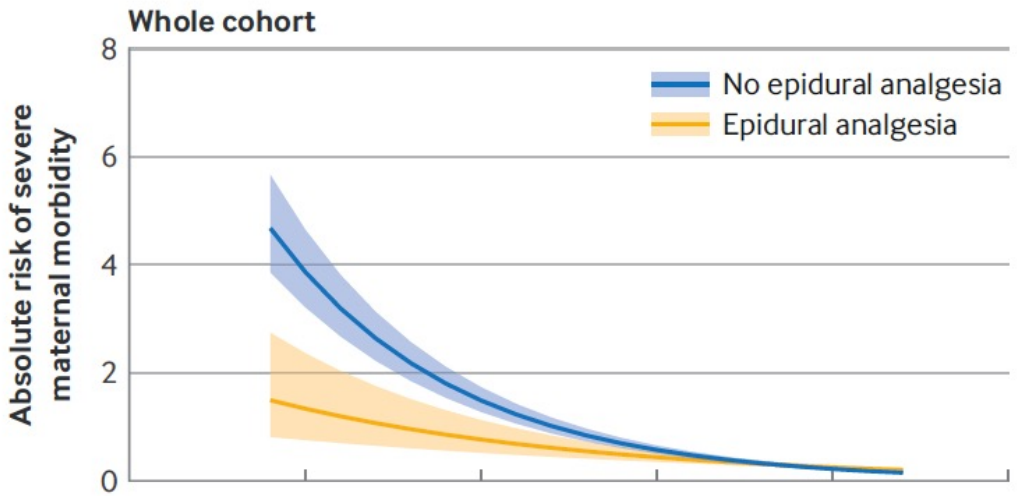
	Priority Ranking (N = 105)
Achieving desired pain relief	1 (1 - 3)
Overall satisfaction with the pain management	4 (2 - 5)
Experiencing a short duration of labor	5 (3 - 7)
Experiencing a short time to achieve pain relief	5 (3 - 7)
Avoiding complications such as low blood pressure	6 (3 - 7)
Avoiding nausea and/or vomiting as a side effect	6 (4 - 8)
Receiving the smallest effective dose of pain medication	6 (3 - 9)
Avoiding anxiety related to labor pain	7 (4 - 9)
Avoiding leg weakness as a side effect	7 (6 - 9)
Avoiding itching as a side effect	9 (8 - 10)

Cureus. 2022 Feb 25;14(2):e22599

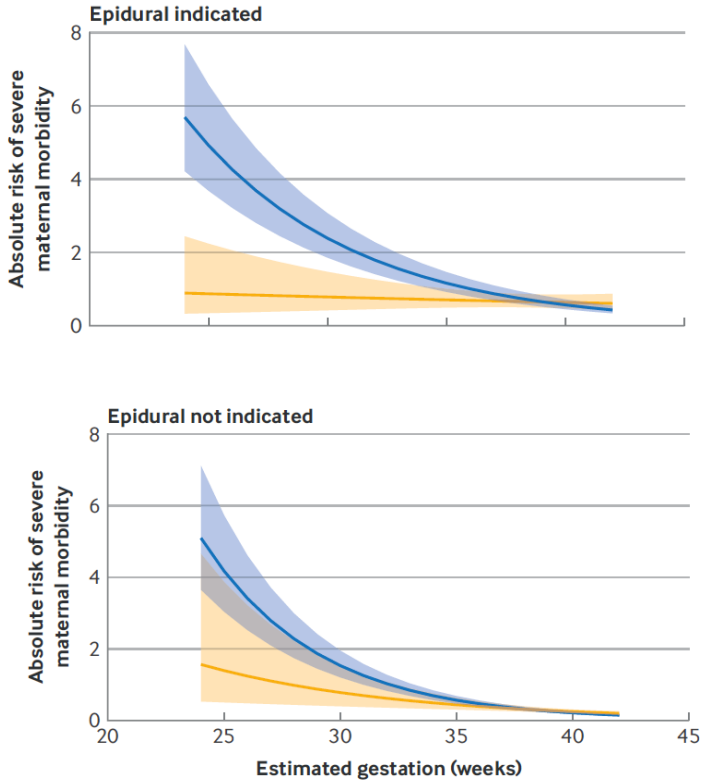
Epidural analgesia during labour and severe maternal morbidity: population based study

Rachel J Kearns,[1,2] Aizhan Kyzayeva,[2] Lucy O E Halliday,[2] Deborah A Lawlor,[3,4] Martin Shaw,[2,5] Scott M Nelson[2]

567,216 parturients in Scotland



ARR 0.65 (0.50 to 0.85); p= 0.001



ARR 0.50 (0.34 to 0.72); p<0.001

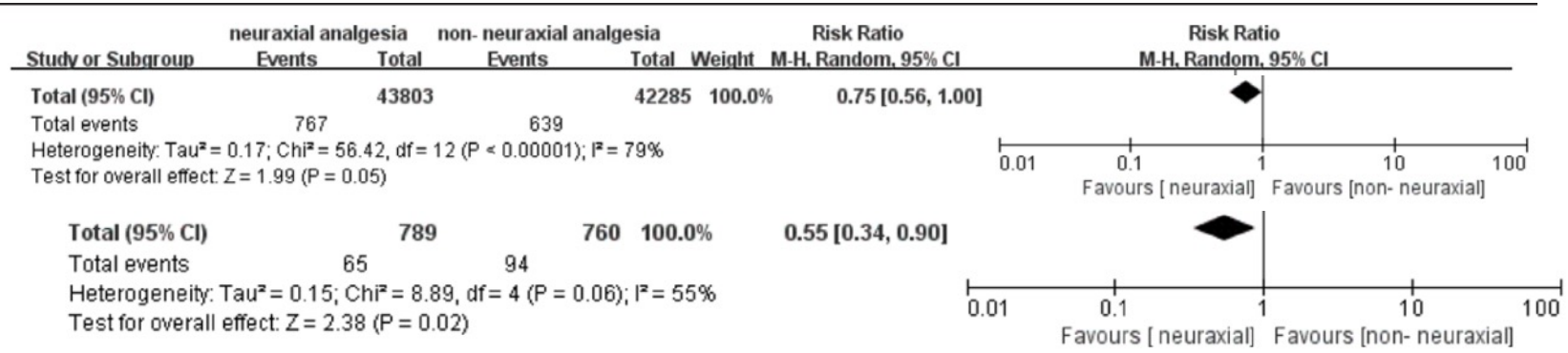
ARR 0.67 (0.43 to 1.03); p=0.07

BMJ . 2024 May 22:385:e077190.

Neuraxial analgesia during labor and postpartum depression

Systematic review and meta-analysis

Bin Li, MD[a], Xiaohui Tang, MD[a], Tingting Wang, PhD[a,*]



4 semaines postpartum

1 semaine Postpartum

Medicine (Baltimore). 2023 Feb 22;102(8):e33039.

CASE REPORT

The Contribution of Anesthesia Management to Childbirth-Related Posttraumatic Stress Disorder: A Case of Trauma After Denied Neuraxial Analgesia, Unmet Expectations and Remifentanil Labor Analgesia

Francesca Migliavacca, MD,[1] Raquel Cadlini,[2] Vanessa Ostini Galli, MA,[3] and Alessandra Lauretta, MD[4]

A A Pract. 2025 Sep 10;19(9):e02055.

Factors influencing the choice of lumbar epidural analgesia and its association with postpartum depression risk

Sana Asif, Natasa Kollia, Andrea Kollmann, Birgitta Birgisdottir, Richard Aubrey White, Miklós Lipcsey and Alkistis Skalkidou

All women ($n = 4436$)	Crude OR (95% CI)	Adjusted OR (95% CI)
Use of LEA		1.22 (0.96 to 1.54)
BMI ≥35 (kg m^{-2})		1.20 (0.67 to 2.15)
Intimate partner violence		**1.33 (1.04 to 1.69)**
Low resilience		**5.18 (3.82 to 7.03)**
History of PMS (ACOG)		**1.95 (1.49 to 2.55)**
History of depression		**3.24 (2.62 to 4.01)**
Primiparity		0.95 (0.77 to 1.16)
Fear of childbirth		**1.30 (1.07 to 1.59)**
Labour duration (h)		1.01 (0.99 to 1.04)
Mode of delivery		
Vaginal		
Vacuum extraction		0.87 (0.62 to 1.22)
Emergency caesarean section		0.98 (0.73 to 1.32)
Subjective postpartum complications		1.22 (0.75 to 2.00)
Severe perineal lacerations		0.60 (0.29 to 1.26)
Haemorrhage ≥1000 ml		0.85 (0.52 to 1.38)
Newborn to neonatal unit		1.04 (0.60 to 1.80)
Not breastfeeding		**2.20 (1.60 to 3.02)**
Negative delivery experience		**2.00 (1.44 to 2.78)**

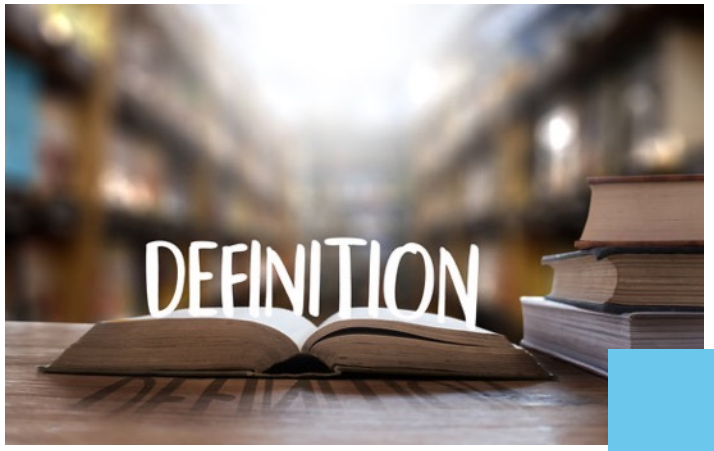
4436 parturients from Uppsala University Hospital

Longitudinal Observational study between 2010 and 2019

38% demanded a labour epidural analgesia

In a multivariate model, LEA is not associated with increase risk of PPD

Eur J Anaesthesiol 2025; 42:626–636



Failure of Epidural Analgesia during Labor: Definitions

1.0

Epidural analagesia failure, an old problem?

Predictors of Breakthrough Pain During Labor Epidural Analgesia

Philip E. Hess, MD, Stephen D. Pratt, MD, Tanya P. Lucas, MD, Carolyn G. Miller, MD, Tanya Corbett, BA, Nancy Oriol, MD, and Mukesh C. Sarna, MD, FRCA

Department of Anesthesiology and Critical Care, Beth Israel Deaconess Medical Center, Boston, Massachusetts

Episodes of **breakthrough pain** have been defined as a maternal **complaint of pain or pressure** that requires and is effectively **treated with one or more doses of epidural analgesic top ups**.

Factor	*P* value	Odds ratio (95% confidence interval)
Without technique as factor		
Nulliparity	<0.001	3.10 (2.26–4.24)
Fetal weight	<0.001	2.47 (1.83–3.32)
Dilation at epidural placement	<0.001	0.66 (0.59–0.73)
With technique as factor		
Nulliparity	<0.001	2.89 (2.10–3.98)
Fetal weight	<0.001	2.42 (1.80–3.26)
Dilation at epidural placement	<0.001	0.67 (0.61–0.75)
LEA	0.03	1.53 (1.04–2.24)

LEA = labor epidural analgesia (compared with combined spinal epidural).

Anesth Analg 2001;93:414 –8

Inadequate pain relief with labor epidurals: a multivariate analysis of associated factors

R. Agaram, M. J. Douglas, R. A. McTaggart, V. Gunka
Department of Anesthesia, B C Women's Hospital, Vancouver B C, Canada

Inadequate analgesia: EVA > 10/100
30 minutes after initiation of epidural analgesia

Incidence of inadequate block: 16,9%

Table 2 Factor associated with inadequate epidural analgesia

Variable	*P* value (Pearson's)	*P* value (continuity corrected)
Multiparity vs. primipairty	0.028	0.045*
Previous failed epidural	0.009	0.045*
Air for loss of resistance	0.035	0.072
Cervical dilatation >7 cm	0.016	0.033*
Oxytocin usage	0.78	0.93
Induction of labor	0.42	0.55
Opioid tolerance	0.07	0.26
Back abnormality	044	0.621
Anesthesiologist	0.089	0.12
Paresthesia	0.626	0.88
Difficult insertion	0.158	0.256
Usage of fentanyl in the initial bolus	0.23	0.407
Bupivacaine volume <12 mL**	0.065	0.095
Obesity	0.848	0.993

* Significant at $P < 0.05$; ** Bupivacaine volume analyzed by ROC curve.

Table 3 Logistic regression: factors and odds ratios

Variable	Odds ratio*	95% Confidence interval
Cervical dilatation >7 cm	3.18	1.239–8.19
Opioid tolerance	7.24	0.95–5.55
History of previous failed epidural	5.55	0.825–3.703
Less experienced operator	2.03	1.003–4.093

* Odds calculated favoring occurrence of inadequate epidurals.

International Journal of Obstetric Anesthesia (2009) 18, 10–14

Failed epidural: causes and management

J. Hermanides, M. W. Hollmann*, M. F. Stevens and P. Lirk
Department of Anaesthesiology, Academic Medical Center, University of Amsterdam, Meibergdreef 9, 1105AZ Amsterdam, The Netherlands
* Corresponding author. E-mail: m.w.hollmann@amc.uva.nl

Wide variability in different indications of epidural analgesia

British Journal of Anaesthesia 109 (2): 144–54 (2012)

Epidural failure rate using a standardised definition

A. Thangamuthu, I.F. Russell, M. Purva
Department of Anaesthesia, Hull Royal Infirmary, Hull and East Yorkshire NHS Trust, Hull, UK

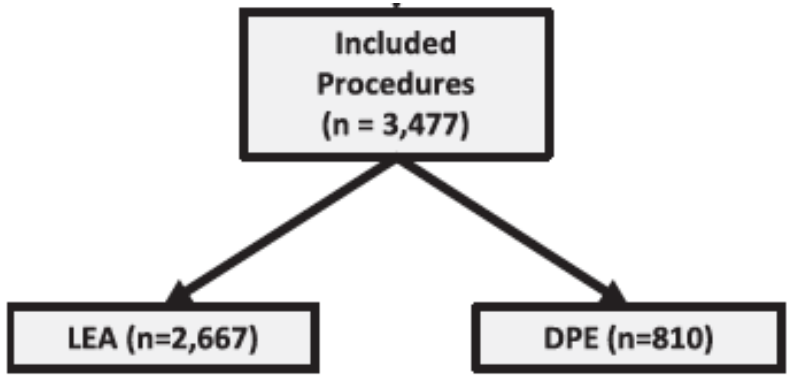
Criteria that include factors at the initiation of the block and during labour
Failure rate of 23%.

International Journal of Obstetric Anesthesia (2013) 22, 310–315

Original Article

Epidural catheter replacement rates with dural puncture epidural labor analgesia compared with epidural analgesia without dural puncture: a retrospective cohort study

A.A. Berger *, J. Jordan, Y. Li, J.J. Kowalczyk †, P.E. Hess †



Catheter replacement and failure rates

	LEA (n = 759)	DPE (n = 759)	RD[2] (95% CI)[3]	*P*-value[a]
Catheter replacement	68 (9.0%)	45 (5.9%)	3.0% (0.4% to 5.7%)	0.025
Catheter failure	74 (9.8%)	49 (6.5%)	3.3% (0.6% to 6.0%)	0.019
Initiation failure	6 (0.8%)	3 (0.4%)	0.4% (−0.4% to 1.2%)	0.51
Maintenance failure	68 (9.0%)	46 (6.1%)	2.9% (0.3% to 5.6%)	0.032

A new concept:
Epidural failure during labour in a previously working analgesia
"Failing Epidural"

Working epidural/ adequate onset

Working Epidural Top Up (PCEA/Manual)

Breakthrough pain/ Adequate Maintenance

Inefficient Epidural Top Up

Failing Epidural

Prevention of Epidural failure During labour

02

Prediction of breakthrough pain during labour neuraxial analgesia: comparison of machine learning and multivariable regression approaches

H.S. Tan,[a,1] N. Liu,[b,c,1] R. Sultana,[b] N-L.R. Han,[d] C.W. Tan,[a] J. Zhang,[b] A.T.H. Sia,[a,b] B.L. Sng[a,b]

20 716 parturients

14,2 % Breakthrough pain during labour

Logistic regression		
Variables	Odds ratio (99% CI)	*P*-value
Unintended dural puncture*	10.74 (3.25 to 35.51)	<0.001
Inability to thread epidural catheter*	2.17 (0.88 to 5.35)	0.027
Unintended venous puncture**	1.45 (1.05 to 1.99)	0.003
Post-neuraxial analgesia highest pain score**	1.39 (1.36 to 1.42)	<0.001
Number of Prostin suppositories used[a] **		
- 3 or more	1.36 (0.98 to 1.89)	0.015
- 2	1.15 (0.91 to 1.46)	0.124
- 1	1.13 (0.95 to 1.33)	0.069
- 0 (reference)		
Failure to obtain CSF during CSE*	1.34 (0.87 to 2.07)	0.084
Neuraxial technique**		0.042
- Epidural	1.21 (0.95 to 1.55)	
- CSE (reference)		
Number of neuraxial attempts**	1.07 (0.97 to 1.17)	0.093
Depth to epidural space[a] **	1.10 (1.03 to 1.18)	0.001
Body mass index[b] **	1.01 (1.00 to 1.02)	0.001
Pre-neuraxial analgesia oxytocin infusion rate**	0.99 (0.99 to 1.00)	0.024
Maternal age[c] **	0.99 (0.98 to 1.01)	0.133
Pre-neuraxial analgesia cervical dilation**	0.83 (0.78 to 0.89)	<0.001
Anaesthesiologist rank**		
- Medical Officer	0.82 (0.70 to 0.97)	0.003
- Registrar	0.80 (0.68 to 0.94)	<0.001
- Fellow	0.74 (0.50 to 1.10)	0.051
- Consultant (reference)		
Multiparity**	0.76 (0.66 to 0.87)	<0.001
- Nulliparity (reference)		

International Journal of Obstetric Anesthesia (2021) 45, 99–110

Variable	Variable value	Points
Post-epidural highest pain score (0: no pain, 10: worst pain imaginable)	<3	0
	3 to 7	35
	8 to 10	63
Parturient age (years)	<22	8
	22 to 26	8
	26 to 34	6
	34 to 38	3
	>38	0
Pre-epidural cervical dilation (cm)	<2	17
	2 to 3	18
	3 to 4	14
	4 to 5	6
	>5	0
Anesthesiologist rank	Consultant	6
	Fellow	2
	Medical Officer	3
	Registrar	0
Oxytocin infusion rate at time of epidural procedure (units.h^{-1})	<0.36	5
	0.36 or greater	0
Total points	**Breakthrough pain risk**	
0 to 10	2.41%	
10 to 20	6.04%	
20 to 30	8.32%	
30 to 40	10.12%	
40 to 50	25.33%	
50 to 60	27.59%	
60 to 70	34.60%	
70 to 80	42.50%	
80 to 90	54.39%	
90 to 100	62.50%	

Developing the BreakThrough Pain Risk Score: an interpretable machine-learning-based risk score to predict breakthrough pain with labour epidural analgesia

Hon Sen Tan, MMed (Anaes) · Nan Liu, PhD · Chin Wen Tan, PhD · Alex Tiong Heng Sia, MMed (Anaes) · Ban Leong Sng, MMed (Anaes), FANZCA

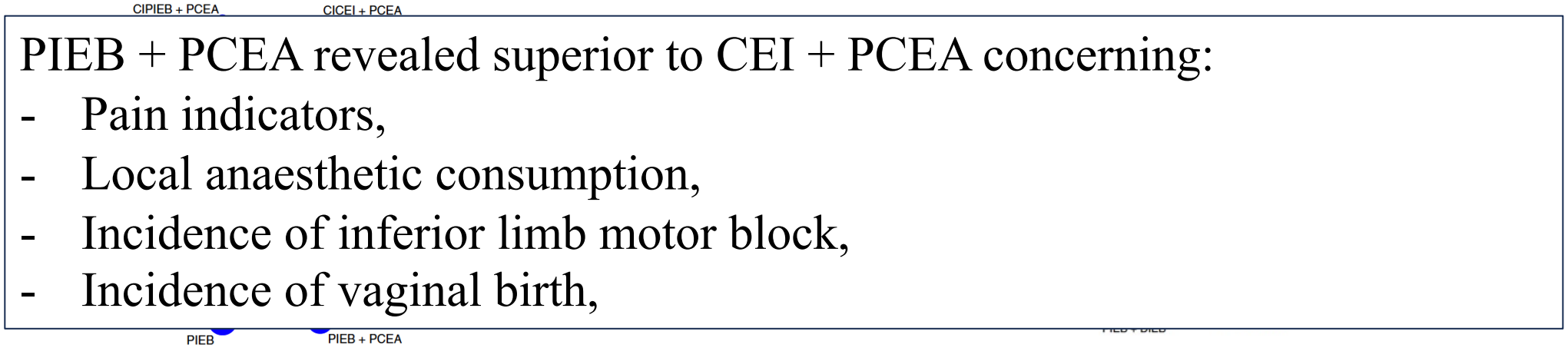
Can J Anesth/J Can Anesth (2022) 69:1315–1317

Comparison of different delivery modalities of epidural analgesia and intravenous analgesia in labour: a systematic review and network meta-analysis

Comparaison des différentes modalités d'administration de l'analgésie péridurale et de l'analgésie intraveineuse pendant le travail obstétrical : revue systématique et méta-analyse en réseau

Simon Wydall, FRCA · Danaja Zolger, FRCA · Adetokunbo Owolabi, FRCA · Bernadette Nzekwu, FRCA · Desire Onwochei, FRCA · Neel Desai, FRCA

73 studies



PIEB + PCEA revealed superior to CEI + PCEA concerning:

- Pain indicators,
- Local anaesthetic consumption,
- Incidence of inferior limb motor block,
- Incidence of vaginal birth,

Analgesic top up:

CEI < PIEB et PIEB + PCEA

PIEB + PCEA > PCEA

CEI + PCEA = PIEB + PCEA

Maternal satisfaction:

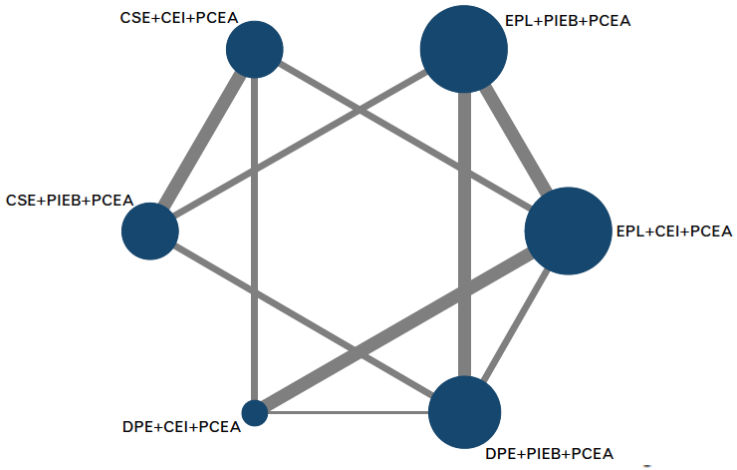
PIEB + PCEA > CEI + PCEA > PCEA

Can J Anesth/J Can Anesth (2023) 70:406–442

Effects of different neuraxial analgesia modalities on the need for physician interventions in labour

A network meta-analysis

Lizhong Wang, Jiayue Huang, Xiangyang Chang and Feng Xia



Onset of the block:
DPE / CSE > EPL

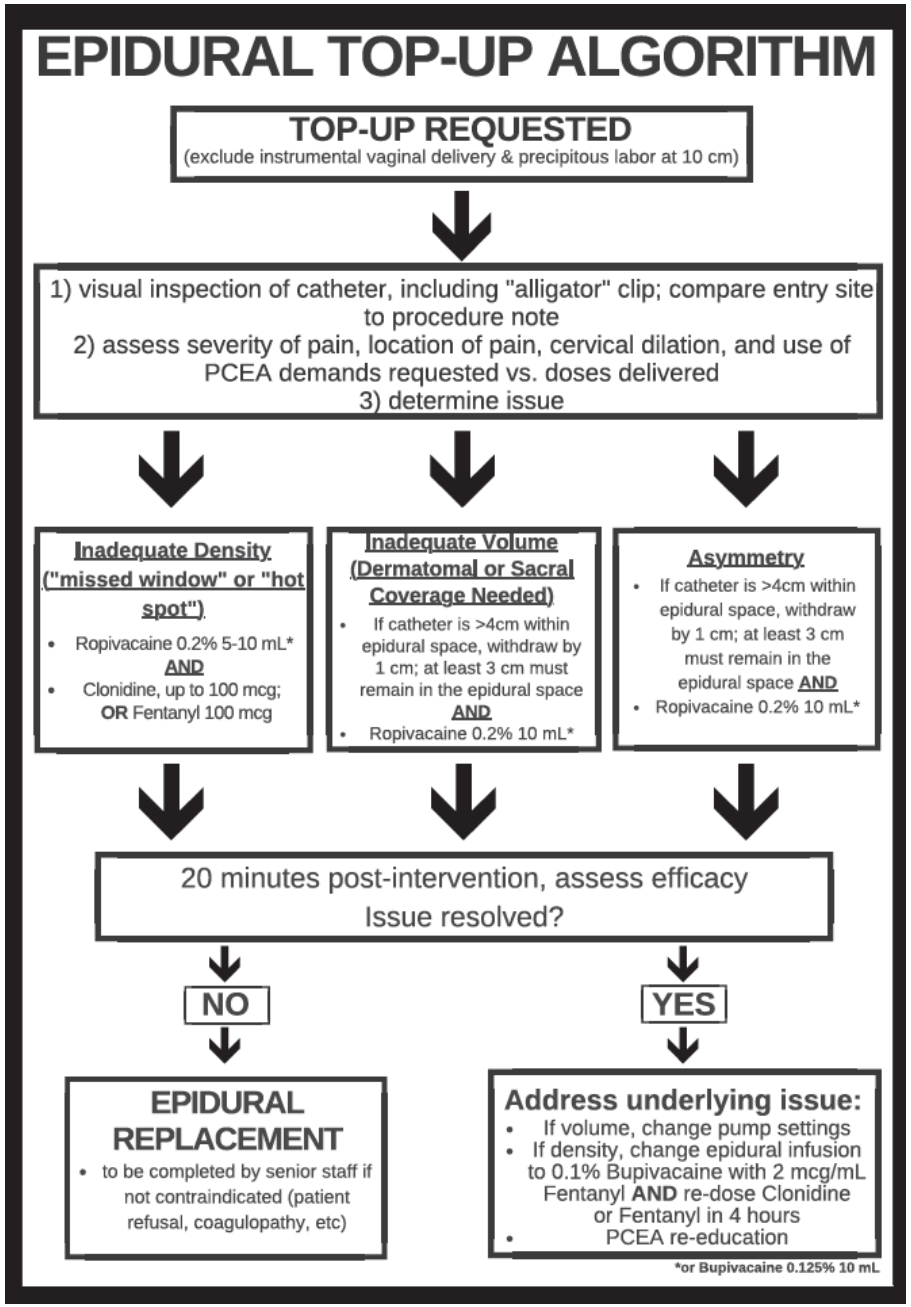
Maintenance:
PIEB-PCEA > CEI-PCEA,

	EPL+CEI+PCEA	EPL+PIEB+PCEA	CSE+CEI+PCEA	CSE+PIEB+PCEA	DPE+CEI+PCEA	DPE+PIEB+PCEA
EPL+CEI+PCEA		0.44 (0.22 to 0.86)	0.65 (0.29 to 1.40)	0.29 (0.12 to 0.71)	0.64 (0.31 to 1.37)	0.19 (0.08 to 0.42)
EPL+PIEB+PCEA	0.41 (0.14 to 1.23)		1.48 (0.59 to 3.56)	0.67 (0.28 to 1.61)	1.47 (0.57 to 3.79)	0.43 (0.21 to 0.85)
CSE+CEI+PCEA	0.60 (0.44 to 0.81)	NA		0.46 (0.21 to 0.98)	1.0 (0.39 to 2.59)	0.29 (0.11 to 0.77)
CSE+PIEB+PCEA	NA	0.48 (0.15 to 1.61)	0.53 (0.31 to 0.91)		2.18 (0.77 to 6.51)	0.63 (0.25 to 1.62)
DPE+CEI+PCEA	NA	NA	0.62 (0.14 to 2.70)	NA		0.29 (0.10 to 0.79)
DPE+PIEB+PCEA	0.18 (0.09 to 0.36)	0.45 (0.32 to 0.65)	NA	0.58 (0.32 to 1.02)	0.35 (0.10 to 1.25)	

Eur J Anaesthesiol 2024; 41:411–420

Correspondence

Standardization of epidural top-ups for breakthrough labor pain results in a higher proportion of catheter replacements within 30 min of the first bolus dose



No increase of overall rate of catheter replacement

Increase of replacement rate in the first 30 minutes after Bolus

No decrease of median time until catheter replacement

International Journal of Obstetric Anesthesia 47 (2021) 103161

Management of Epidural Block Failure During Labor

03

Summary of existing evidence:

MOST OF CURRENT EVIDENCE BASED RECOMMENDATIONS AFFECT :

- The prevention of failure

  (¿How to avoir or decrease the incidence of failure?)

- The failure in the onset of the epidural block

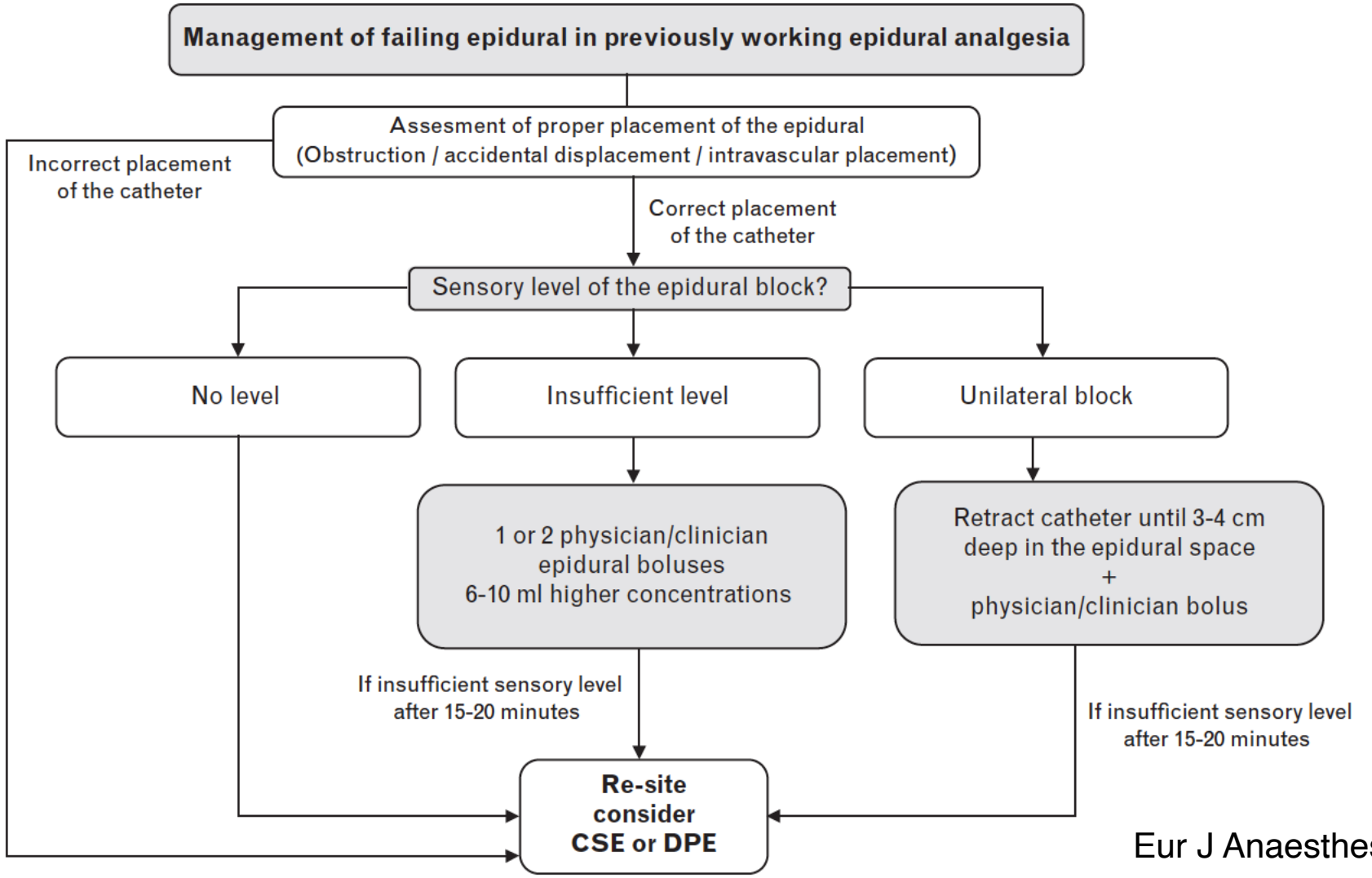
  (¿How to detect/treat a failing block since its initiation?)

- BUT NO GLOBAL RECOMMENDATIONS

  On how to manage a failing block during labour

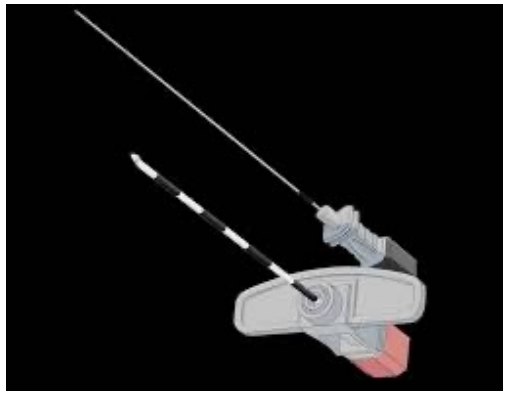
GUIDELINES

ESAIC focused guidelines for the management of the failing epidural during labour epidural analgesia

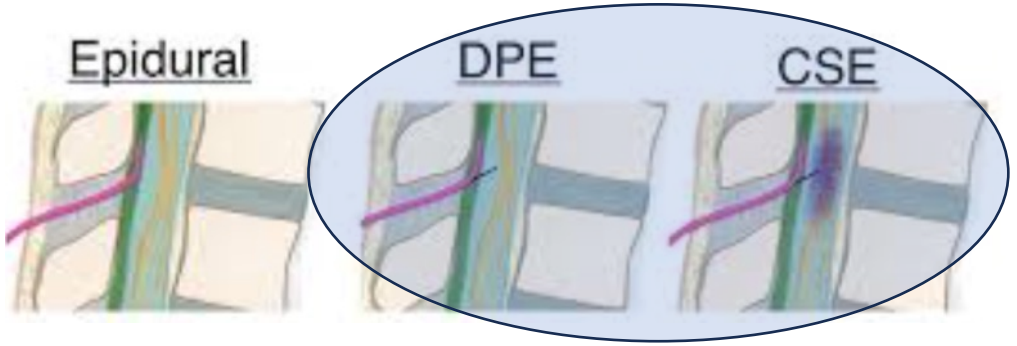


Eur J Anaesthesiol 2025; 42:96–112

¿How to treat a failing epidural?
¿What technique to use to replace the catheter?



No direct evidence
to make recommendations.



Experts Consensus: (Clinical Practice Statement - CPS)

The technique of choice:

Combined Spinal-Epidural (CSE)

Possible alternative technique:

Dural Puncture Epidural (DPE)

Eur J Anaesthesiol 2025; 42:96–112

Monitoring and follow up of a failing epidural

No existing evidence to make recommendations.

Consensus of experts: (Clinical Practice Statement - CPS)

Sensitive and motor block, Pain level and clinical status
monitored with objective scales and recorded periodically

- every 1-2 hours i**n high-risk parturients**

- more liberally **in healthy parturients**

Eur J Anaesthesiol 2025; 42:96–112

Monitoring and follow-up of epidural failure

Table 3 Recommendations of epidural block assessment for a failing epidural analgesia

H.E.L.P.:
H – How was LEA working so far? (analgesic level and VAPS)
Good analgesia: Block suitable for augmentation for CD
Insufficient/Poor/Patchy analgesia: Possible failing block
E – Epidural top-ups received from a clinician? (indication of failing block)
0 to 2 top-ups: Block suitable for augmentation for CD
> 2 top-ups: Possible failing block
L – Legs raising is possible? (indication of potential spinal catheter)
Yes: Minimal/no motor block (Bromage score). Block suitable for augmentation for CD
No: Legs heavy, motor block, high Bromage score. Possible spinal catheter
P – Place hands on parturient's legs to assess bilateral similar temperature
Similar warm – Block suitable for augmentation for CD
Similar cold – Possible failing block
Different: Possible unilateral block; possible failing block

Eur J Anaesthesiol 2025; 42:96–112

Human Resources
Should we delegate the monitoring of epidural analgesia?

No existing evidence to make recommendations.

- **Limited Human resource:**

  Direct supervision by anaesthesiologist not always possible

- **Written protocols and training:**

  Determine which functions to delegate to midwives/nurses

- **Risks:**
  - Inadequate evaluation and rescue treatments for failing block
  - Delay in providing rescue techniques
  - Prolonged pain during labour

Eur J Anaesthesiol 2025; 42:96–112

Human Resources:
Should we delegate supervision of failing epidural analgesia?

No existing evidence to make recommendations.

Consensus of experts:
(Recomendation)

The anaesthesiologist: responsible for initiating and executing suitable corrective strategies for addressing failing epidural analgesia.

(High recommendation, very low quality evidence)

(Clinical Practice Statement - CPS)

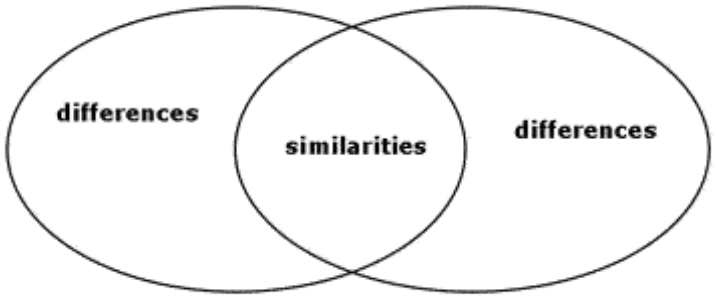
Healthcare provider responsible for the provision of LEA:
An anaesthesiologist (trainee or specialist). LEA management under their direct authority.
Supervision can be delegated to other healthcare providers.

Appropriate training for management of the failing epidural if maintenance of LEA is delegated to other healthcare personnel

Eur J Anaesthesiol 2025; 42:96–112

Training and Institutional protocols to manage failing epidural

No existing evidence to make recommendations.

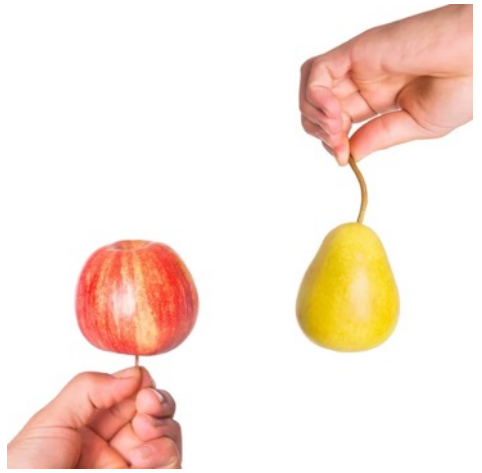


Management of critical situations:

Teamwork and Communication

Multi-disciplinary training

Quality and Safety Culture



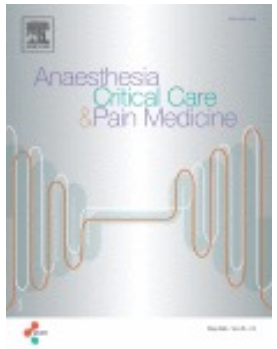
Consensus of experts: (Clinical Practice Statement - CPS)
Local multi disciplinary protocols for detection and treatment of epidural failure

Periodic Training and simulation programs to

improve adherence to protocols

promote awareness and communication with other healthcare providers and parturients

Eur J Anaesthesiol 2025; 42:96–112



Pain management in childbirth: neuraxial analgesia and drug alternatives

Hawa Keita [1], Estelle Morau [2], Marie-Pierre Bonnet [3], Lucie Adalid [4], Anne-So-Phie Baptiste [5], Thibaut Belveyre [6], Martine Bonnin [7], Lionel Bouvet [8], Sébastien Campion [9], Pierre-Yves Dewandre [10], Anne Evrard [11], Valentina Faitot [12], Catherine Fischer [13], Sandra Fournier [14], Anne Godier [15], David Gouraud [16], Max Gonzalez Estevez [17], Benjamin Julliac [18], Diane Korb [19], Agnès Le Gouez [20], Thibaut Rackelboom [21], Lucie Pérès Rigollet [22], Sandrine Roger-Christoph [23], Jean-Philippe Salaun [24], Valérie Souyri [14], Sophie Susen [25], Dahlia Tharwat [26], Anne Hélène Vantalon [27], Florence Vial [28], Éric Verspyck [29], Matthieu Dumont [30], Daphné Michelet [31]

HAS HAUTE AUTORITÉ DE SANTÉ · SFAR · Caro · CNSF · SF2H · cia ne! · SFTH · GIHP · CNGOF · afpbn

RECOMMANDER
LES BONNES PRATIQUES

ARGUMENTAIRE

Prise en charge de la douleur de l'accouchement : analgésie périmédullaire et alternatives médicamenteuses

Validé par le Collège le 30 avril 2025

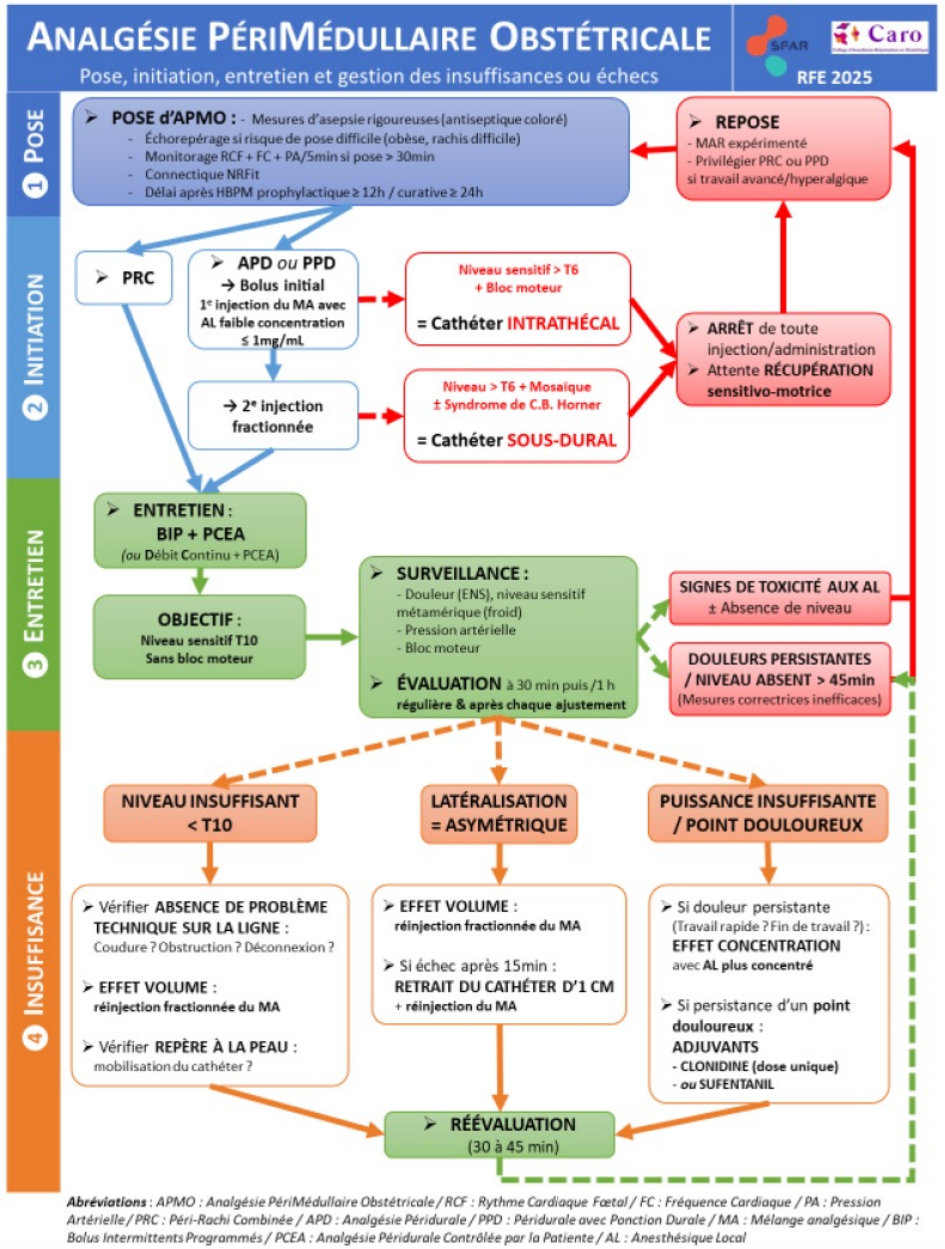


Figure 4. Algorithme de synthèse de la gestion de l'analgésie périmédullaire, avis d'experts. Réalisé par le Dr Rackelboom.

Is it just a question of quality?
What's going on
in the event of
Intrapartum caesarean
section?

04

Conversion of epidural labour analgesia to epidural anesthesia for intrapartum Cesarean delivery

David C. Campbell, MD · Tony Tran, MD

Conversion success rate: 86.6%

	Effective ESA	Inadequate ESA	*P* value
Number	775/895 (86.6%)	120/895 (13.4%)	
Age (years)	28.1 ± 6.8	26.7 ± 6.2	0.026
Height (cm)	162.8 ± 6.8	163.9 ± 6.6	0.10
Weight (kg)	87.8 ± 17.5	88.7 ± 19.9	0.65
BMI > 40 (kg m^{-2})	99/743 (13.3%)	19/116 (16.4%)	0.37
Gestational age (weeks)	39.8 ± 1.6	39.6 ± 1.9	0.50
Birth weight (g)[a]	3621 ± 552	3711 ± 549	0.10
Nulliparous (%)	636/775 (82.1%)	97/120 (80.8%)	0.89
Twins (%)	22/775 (2.8%)	3/120 (2.5%)	0.86^
AA unscheduled "top ups" during ELA	0.56 ± 0.96	0.98 ± 1.2	<0.0001
No AA unscheduled "top ups" during ELA	545/775 (70.3%)	60/120 (50%)	0.009
Epidural to Cesarean delivery (min)	496 ± 264	504 ± 244	0.75

Can J Anesth/J Can Anesth (2009) 56:19–26

Intraoperative Pain during Cesarean Delivery under Neuraxial Anesthesia: A Systematic Review and Meta-analysis

Elinor A. Charles, M.B.B.S., Hester Carter, Mb.Ch.B.
Susanna Stanford, B.Sc., Lindsay Blake, Ed.D.,
Victoria Eley, Ph.D., Brendan Carvalho, M.B.Bc.H.,
Pervez Sultan, Mb.Ch.B., Justin Kua, M.B.B.S.,
James E. O'Carroll, M.B.B.S.

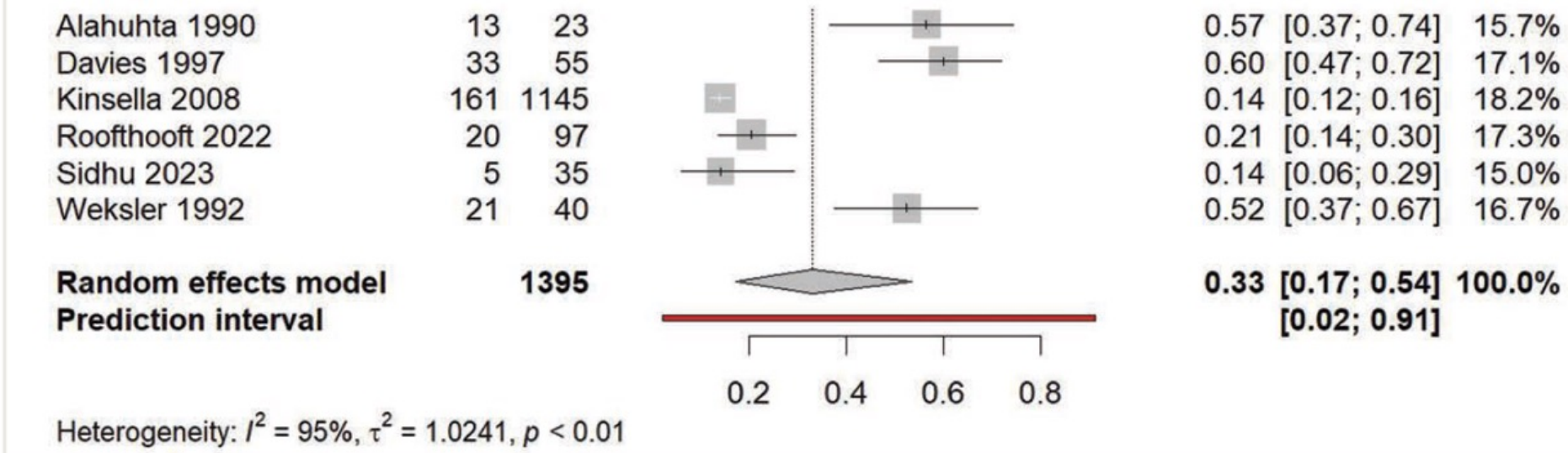


Fig. 4. Forest plot of incidence of pain during cesarean delivery under epidural anesthesia.

Anesthesiology 2025; 143:156–67.

Risk factors for failure of conversion from epidural labor analgesia to cesarean section anesthesia and general anesthesia incidence: an updated meta-analysis

Pan Li, Xiaoting Ma, Shuang Han, Izumi Kawagoe, Kurt Ruetzler, Amos Lal, Longlu Cao, Ran Duan & Jianli Li

Risk Factors	Study Number	Pregnant patients(N)	Heterogeneity I^2	Heterogeneity P	ES (95% CI)	P
Demographic characteristics						
Age[a#]	6[(11, 12, 16, 18, 23, 27)]	2,703	0%	>0.05	−1.571 (−2.166, −0.975)	<0.05
Height[a#]	6[(11, 12, 20, 23, 25, 27)]	2,596	31.7%	0.198	0.893 (0.018, 1.767)	0.045
Weight[b#]	7[(11, 12, 18, 20, 23, 24, 27)]	3,621	55.5%	<0.05	1.330 (−1.1624, 4.284)	>0.05
BMI[a#]	3 [(12, 18, 23)]	1,230	0.0%	>0.05	−0.150(−1.116, 0.816)	>0.05
Risk factors related to clinical surgery						
Epidural indwelling catheter length[a#]	3 [(18, 24, 47)]	983	18.5%	0.293	0.035 (−0.070, −0.140)	>0.05
Catheter depth into the skin[a#]	3 [(11, 18, 47)]	1,246	3.5%	0.355	0.067 (−0.151, 0.286)	>0.05
Duration of epidural analgesia[b#]	7[(11, 12, 16, 22, 24, 25, 47)]	3,286	78.9%	0.00	−0.582 (−1.761, 0.597)	>0.05
Infusion speed of epidural analgesia[a#]	3[(22,29,32)]	941	0.0%	0.409	0.314 (−0.080, 0.7070)	>0.05
Epidural Block Effect[b$]	3 [(20,26,31)]	1,678	89.9%	0.000	8.364 (1.897, 36.875)	0.005
Additional epidural administration dosage [b$]	4[(15,16,20,24)]	2,751	19.9%	0.290	2.672 (2.025, 3.527)	0.000
Emergency cesarean Section [b$]	4[(12, 16, 22, 24)]	2,125	78.1%	0.0003	2.444 (1.104, 5.410)	0.028
Non-obstetric Anesthesiologists [b#]	3[(11, 24, 28)]	1,240	0.0%	0.638	0.264 (0.124, 0.563)	0.001
Parturition related factors						
Cervical Dilatation Size[b#]	3 [(12, 20, 23)]	2,947	75.6%	0.017	−0.470 (−0.440, 1.379)	>0.05
Gestational Age [b#]	3 [(12, 20, 23)]	2,947	85.3%	0.001	0.253 (−0.351, 0.858)	>0.05
First Delivery [a$]	4[(15,16,20,24)]	2,751	0.0%	0.290	1.011 (0.728, 1.406)	0.946

Risk Factors for failed epidural analgesia

J Matern Fetal Neonatal Med . 2023 Dec;36(2):2278020.

Pain during cesarean delivery: risk factors, mitigation, and current approaches

Emily E. Sharpe[a] and Ruth Landau[b]

Table 1. Risk factors for failed neuraxial anesthesia and pain during cesarean delivery

Patient-specific factors	Anesthesia-specific factors	Obstetric or surgical-specific factors
Younger maternal age [28,37]	Use of indwelling epidural catheter [20,33▪▪]	Lower gestational age [26,28]
Lower BMI or weight [26,28])	Nonobstetric anesthesiologist [37,44]	Lower birth weight [26]
Increased height [37]	Increased number of boluses during labor [44]	Longer duration of surgery [20,25,26,28,30,33▪▪]
ASA III [26]	Lower spinal bupivacaine dose [25]	Urgent cesarean delivery [25,37,44]
Black race [20]	Spinal needle type Sprotte [26] and needle gauge (27G) [26]	Repeat cesarean delivery [26]
Anxiety or psychiatric illness [20,26]	Lateral position for neuraxial placement [26]	Tubal ligation [26]
Substance use disorder [33▪▪]	Difficult neuraxial placement [26]	Classical incision [26]
		Adherent placenta [25]
		Postpartum hemorrhage [25]

Curr Opin Anaesthesiol. 2025 Jun 1;38(3):169-178.

Factors that influence the decision of a rescue anaesthetic technique and its success:

1. Level of emergency of caesarean
2. Efficacy of epidural block during labour
3. Time elapsed since the last epidural TopUp
4. Maternal condition:
    1. Risk pregnancy, PPH
    2. Maternal cardiopathy
    3. Contra-indication for a spinal anaesthesia
    4. Risk for a difficult airway
    5. Level of collaboration of patient / Consent for a new neuroaxial block

Yoon et al. Korean J Anesthesiol 2017

Failure To convert epidural analgesia to surgical anaesthesia for intrapartum caesarean section

Recommandations pour:

- Le renfort péridural Avant la césarienne intrapartum:

Injection dans le cathéter après test aspiratif

Evaluation du bloc sensitif avec un niveau >T5

- Diagnostic de l'échec péridural initial:

Absence de bloc sensitif

Niveau du bloc < T5

Bloc incomplet

Douleur lors du test de la pince malgré un niveau correct

- Diagnostic de l'échec péridural pendant la césarienne:

Douleur ≥ 30 mm sur l'ENS pendant la césarienne

Besoin d'un renfort avec des opioïdes par voie systémique

Renfort qui ne permet pas un soulagement adéquat de la douleur

Eur J Anaesthesiol 2025; 42:96–112

Neuraxial anesthesia and pain management for cesarean delivery

Ruth Landau, MD; Pervez Sultan, MBChB, FRCA, MD (Res)

Supplemental intravenous medication

For pain

- 1st line – opioids
- 2nd line- ketamine, dexmedetomidine

For anxiety

- Midazolam, dexmedetomidine

Supplemental inhalational medication

- Nitrous oxide (not particularly effective)
- Sevoflurane is **usually restricted to patients with a secured airway**

Sedation

- Not a pain treatment or a substitute for general anesthesia

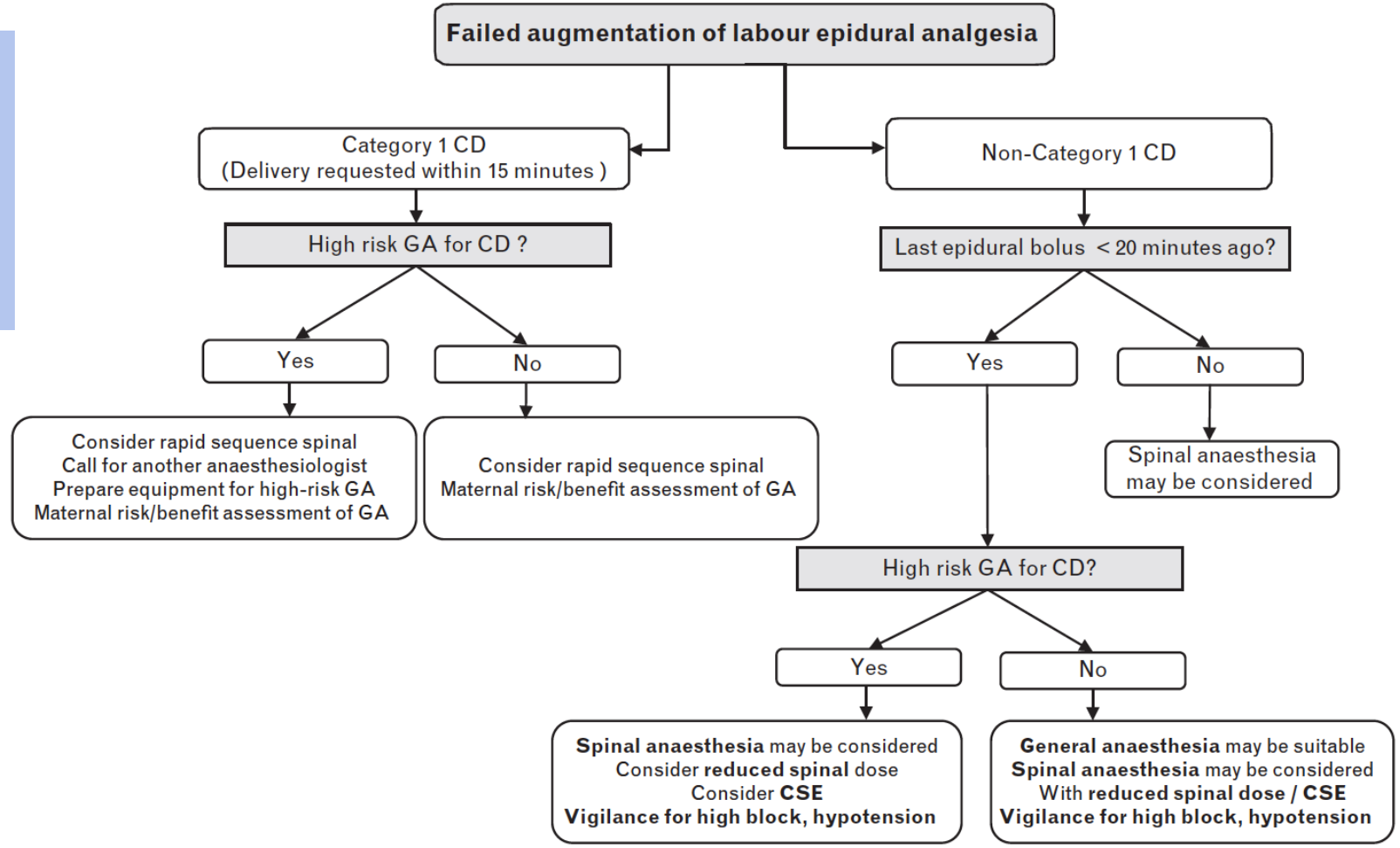
General anesthesia

- Should be avoided when possible and initiated when indicated

Am J Obstet Gynecol. 2026 Jan;233(6S):S135-S152.

Failure to Convert epidural analgesia to surgical anaesthesia for intrapartum caesarean section

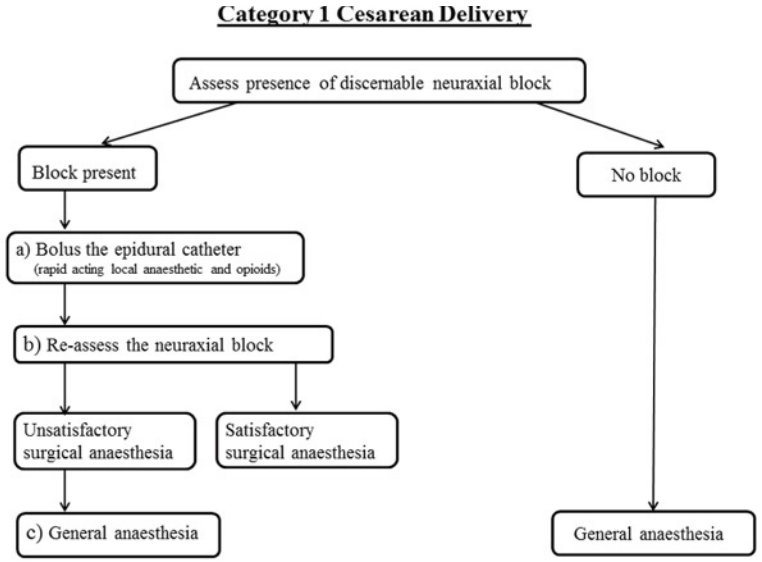
Early and proactive management of failing epidural block will facilitate a successful conversion of analgesia to anaesthesia for an intrapartum caesarean delivery.

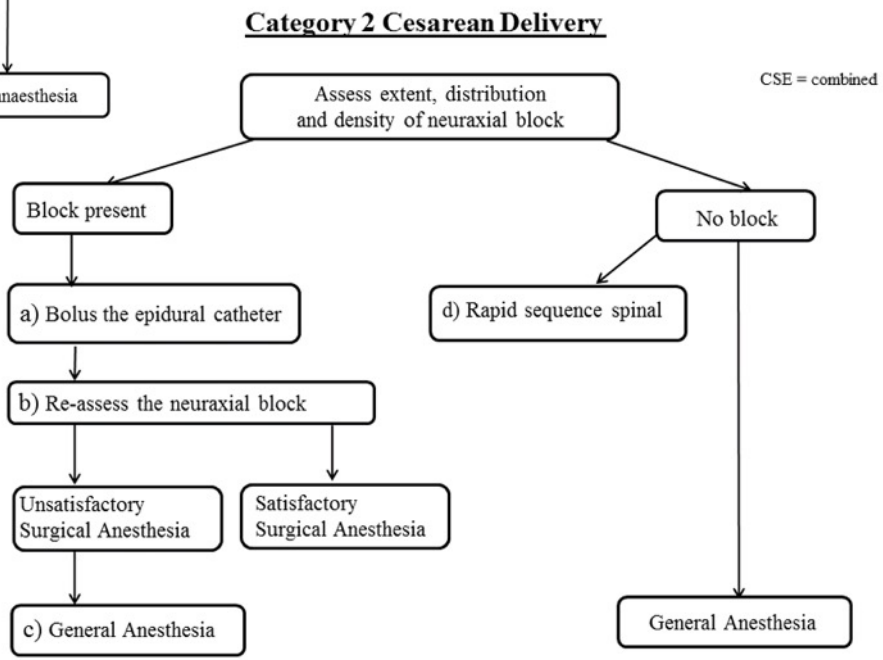


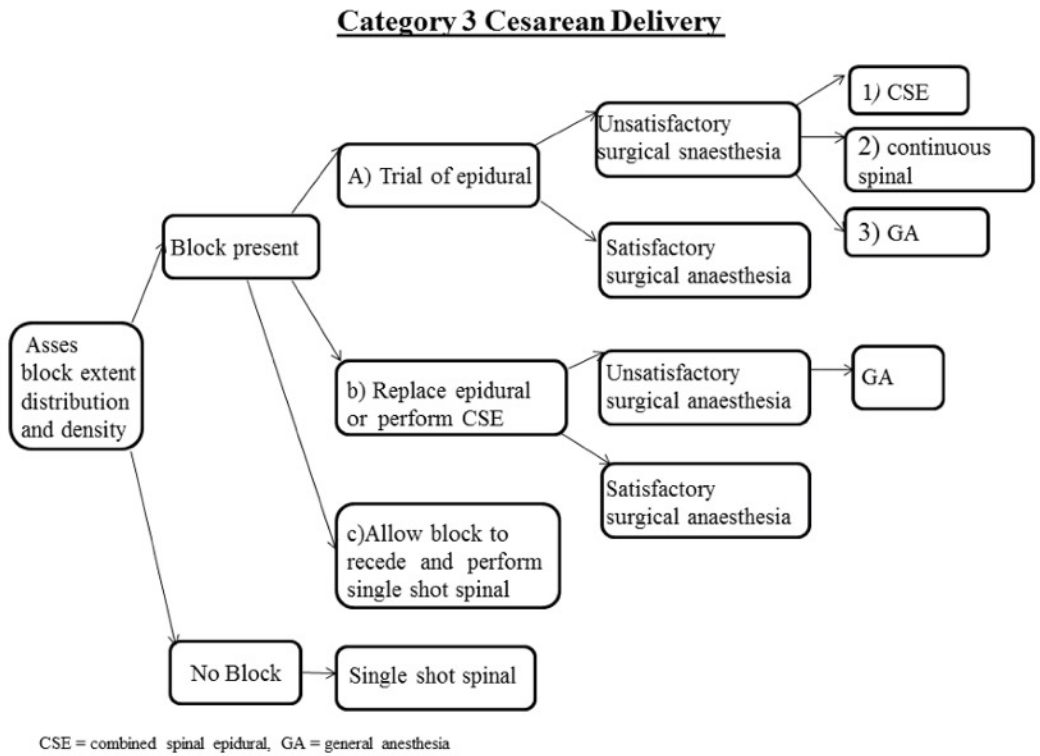
Eur J Anaesthesiol 2025; 42:96–112

Algorithm for the anesthetic management of cesarean delivery in patients with unsatisfactory labor epidural analgesia [v1; ref status: indexed, http://f1000r.es/5a3]

Sonia Vaida[1], Davide Cattano[2], Debra Hurwitz[1], Berend Mets[1]

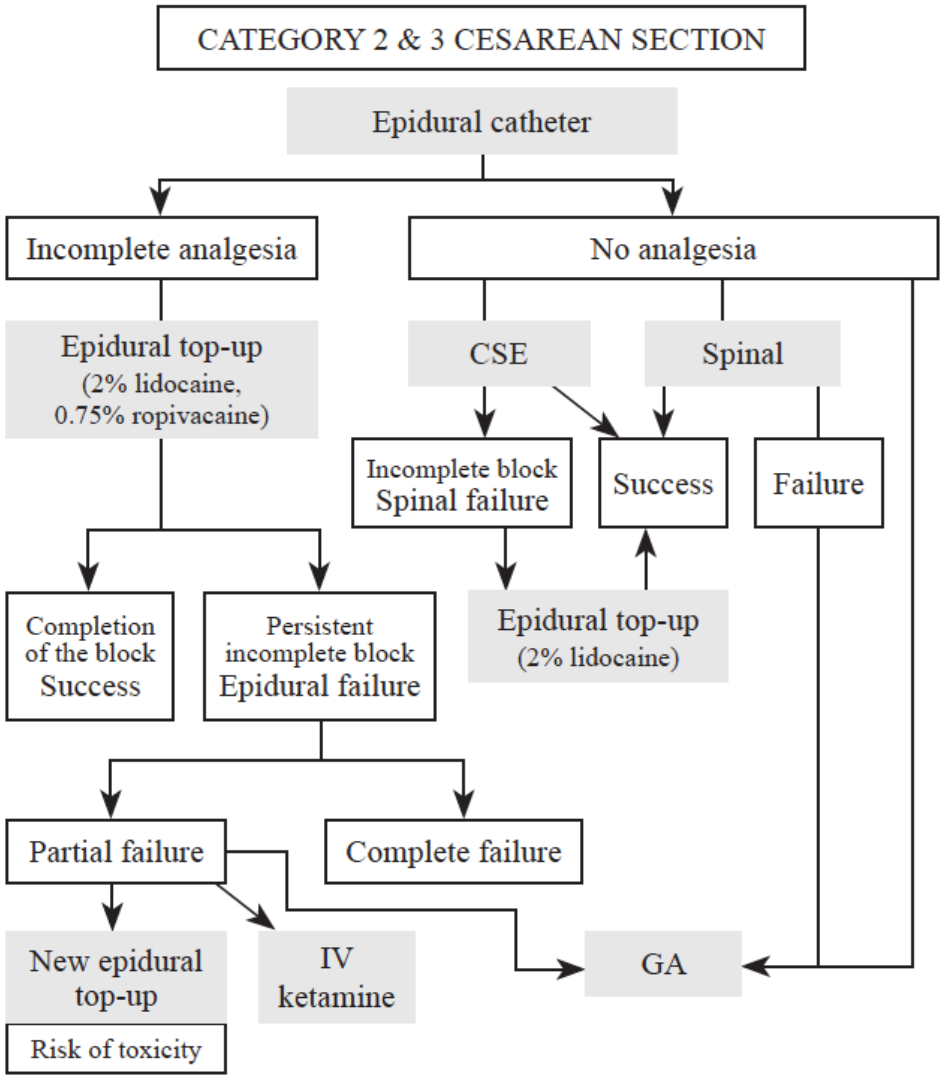






Failed epidural for labor: what now?

Emilia GUASCH *, Fabrizio IANNUCCELLI, Nicolas BROGLY, Fernando GILSANZ



Minerva Anestesiologica 2017 November;83(11):1207-13

Raising awareness to prevent, recognise and manage acute pain during caesarean delivery: The French Practice Bulletin

Hawa Keita [a,b,*], Philippe Deruelle [c], Lionel Bouvet [d], Martine Bonnin [e], Dominique Chassard [d], Anne-Sophie Bouthors [f], Eric Lopard [g], Dan Benhamou [h], the French Practice Bulletin Taskforce: "Préconisations - insuffisance d'analgésie au cours de la césarienne sous anesthésie périmédullaire: prévention - prise en charge immédiate et différée"[1]

1. **Recognising insufficient analgesia or failed anaesthesia -** any circumstance when, under neuraxial anaesthesia, the patient requests additional medication.
2. **Paying attention to patients' level of comfort -** discomfort expressed by the patient is as important as the analgesic/anaesthetic block assessed by the anaesthesia team, and needs to be addressed.
3. **Identifying insufficient labour epidural analgesia –** failure to convert epidural analgesia for intrapartum caesarean delivery anaesthesia can be prevented.
4. **Testing appropriately the surgical block before skin incision -** confirmation of adequate surgical block should use sensory test to light touch or cold.
5. **Communicating the degree of urgency** - suspected fetal acidosis should be clearly communicated by the obstetricians to all stakeholders.
6. **Recognising when neuraxial anaesthesia is insufficient** – general anaesthesia may be recommended prior to or during skin incision in cases of emergent caesarean section.
7. **Raising situational awareness in response to acute pain during caesarean section** - a huddle ("time out") between teams is recommended for context-specific approach.
8. **Managing intraoperative pain** - if pain persists despite neuraxial or intravenous supplementation, general anaesthesia is recommended, even before delivery.
9. **Documenting insufficient analgesia or failed anaesthesia and debriefing each case** – documentation and debriefs will inform quality improvement processes.
10. **Auditing clinical practices and patient outcomes** – rates of emergent caesarean section and conversion to general anaesthesia following neuraxial anaesthesia failure and trends for these indicators are important to assess the effect of interventions.

Anaesth Crit Care Pain Med 40 (2021) 100934

Take home message (1)

- Labour epidural failure is not a myth
- It must be managed with attention
- Prevention and early detection allow to minimise its consequences
- The anaesthesiologist: THE healthcare profesional responsable for epidural analgesia
- The anaesthesiologist: Can delegate in other professionals after an adequate training
- Labour can end up in an emergency caesarean: a failing epidural can occur at that stage

An adequate management limits potential complications

Take home message (2)

WFSA
WORLD FEDERATION OF SOCIETIES OF ANAESTHESIOLOGISTS

Uniting and empowering anaesthesiologists around the world to improve patient care

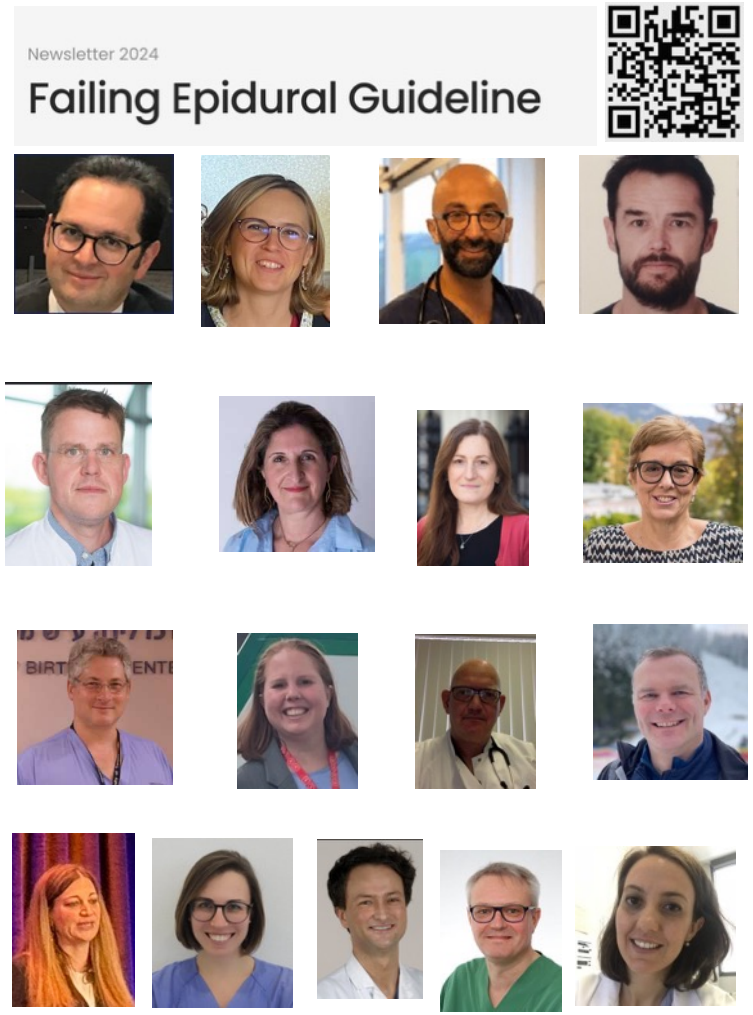
DECLARATION ON PATIENTS' RIGHTS TO LABOUR ANALGESIA

« Availability and accessibility of labour analgesia is disproportionately lacking in LMICs.

This inequity underscores an urgent need to democratize pain management solutions, ensuring that every pregnant patient, irrespective of their geographical or economic position, has the right to opt for pain relief during labour, if they so desire. »

Proposing labour epidural analgesia to most of parturients is not enough
We need to ensure that it works all along labour until delivery

Tack för er uppmärksamhet!



Dr. Nicolas Brogly

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