



European Society of  
Regional Anaesthesia  
& Pain Therapy

**ESRA ITALIA**

**ESRA C'è**

# **XXIX** CONGRESSO NAZIONALE

**ESRA Italian Chapter**

**CESENA, Cesena fiere**

Presidente del congresso

**Vanni Agnoletti**

**Domenico Pietro Santonastaso**

**Andrea Tognù**

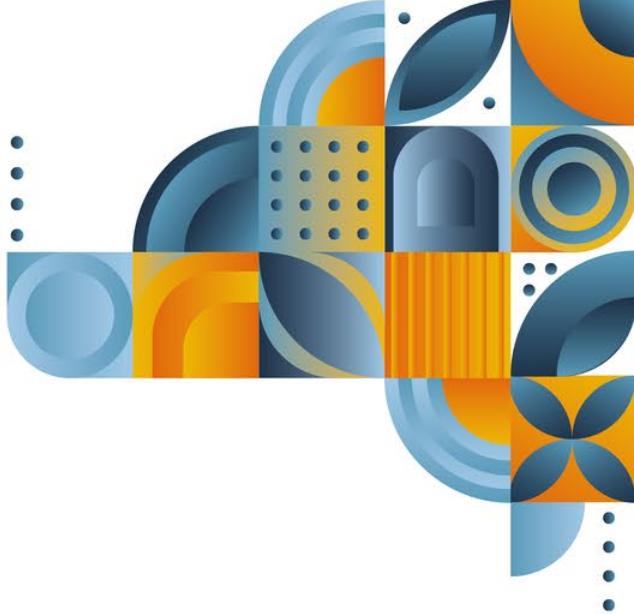
**7-9  
Novembre  
2024**



**MZ**  
**EVENTS**

7-9 Novembre 2024

CESENA, Cesena fiere



# Mantenere la rotta tra le onde del parto: protocolli infusionali in analgesia peridurale

Dottoressa Daniela Recupero

ASST Spedali Civili di Brescia

Responsabile Anestesia Ostetrica

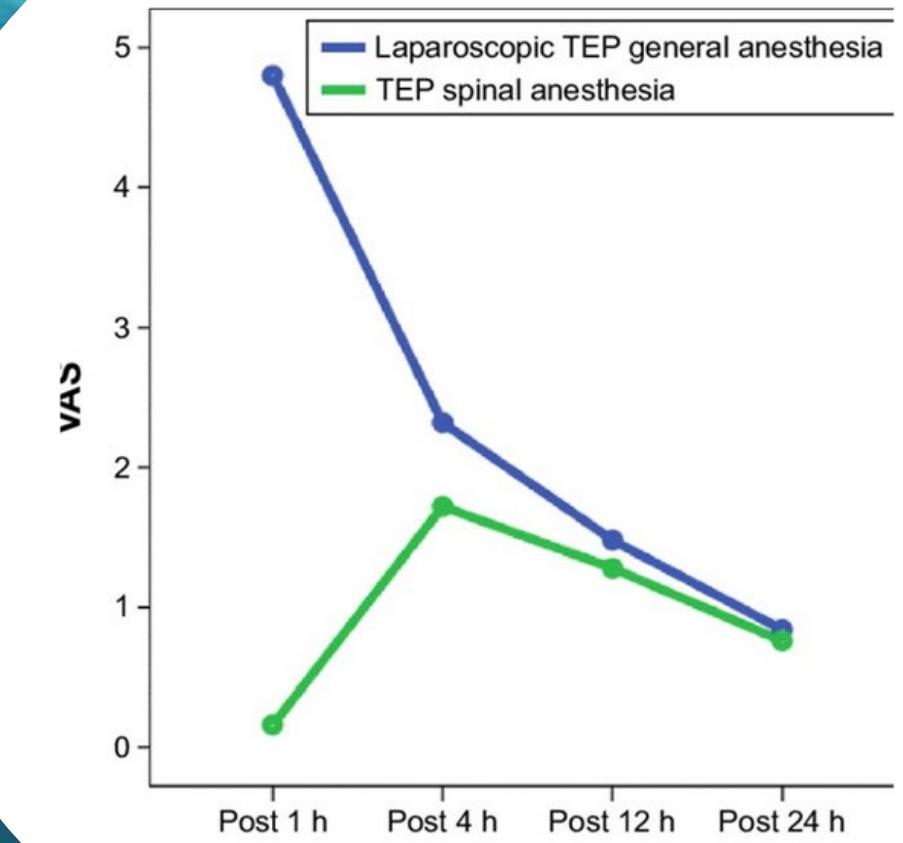
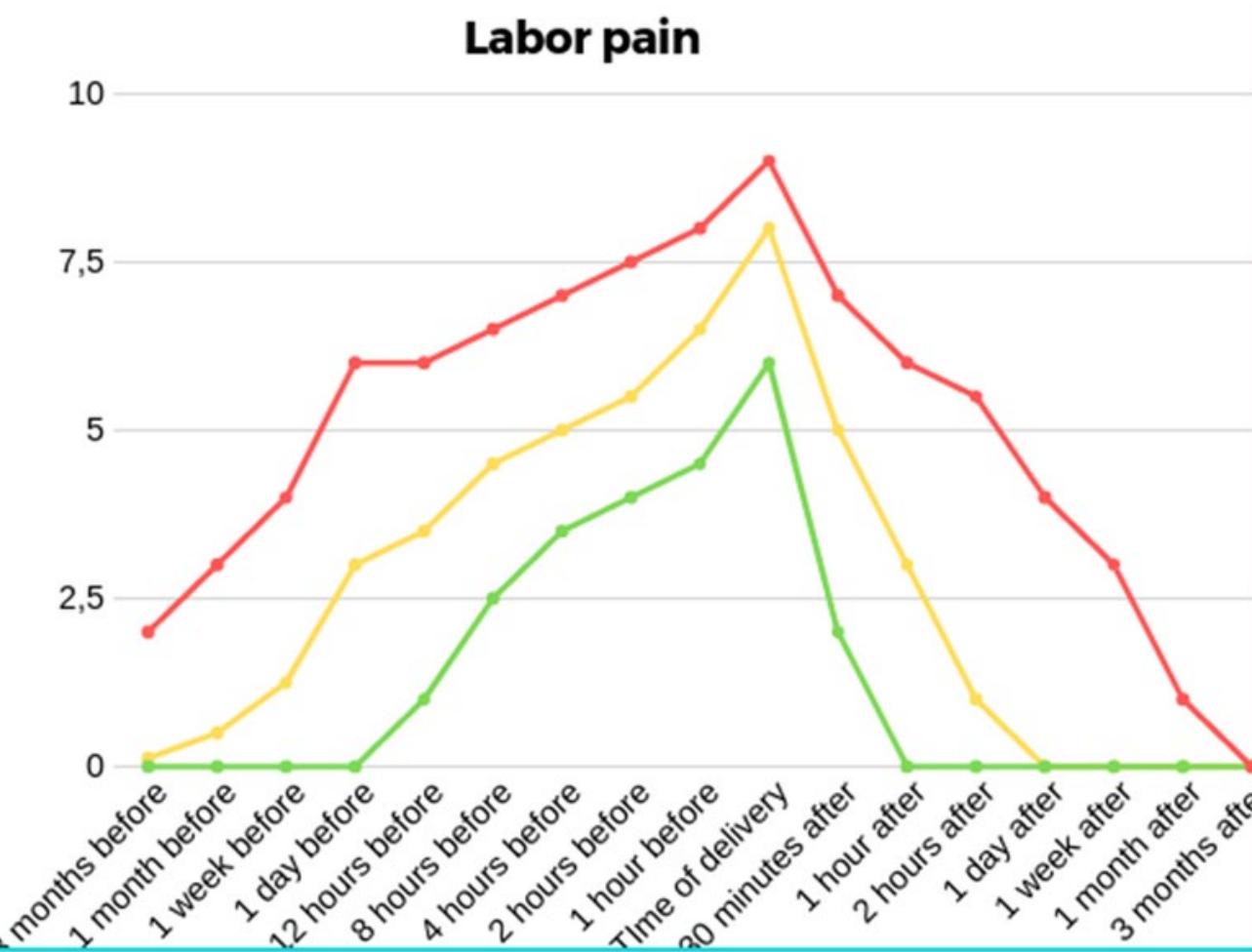


Focalizziamo bene  
l'obiettivo

# Controllare il dolore del parto



# Il dolore del parto



# Il dolore postoperatorio

3, 2... 1!

Here we go!

## Benessere materno fetale

La *soddisfazione* materna in termini di *equilibrio* fra la *percezione* delle contrazioni, la capacità di *muoversi* ed benessere psicologico.

## Benessere psicofisico?



- Ottenere un *piano analgesico*
- Gestire *il dolore lungo tutto il travaglio di parto*
- Non interferire con la *capacità motoria*

Siamo in grado di adattarci a tutti  
e le evoluzioni durante il travaglio di parto?

*i cambiamenti*





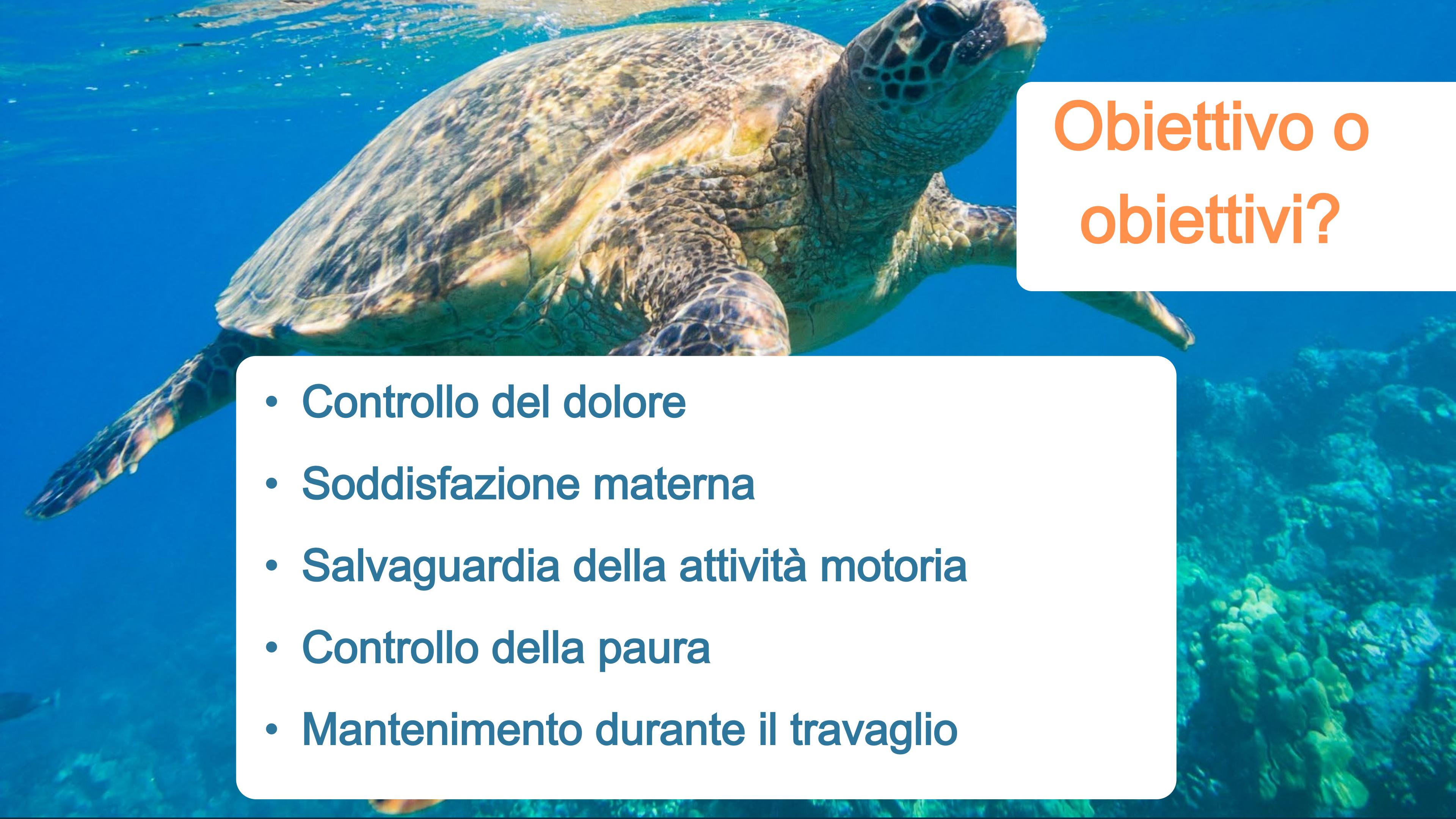
Dosaggi farmacologici (ossitocina )



Variabili procedurali (rex , tocolisi )



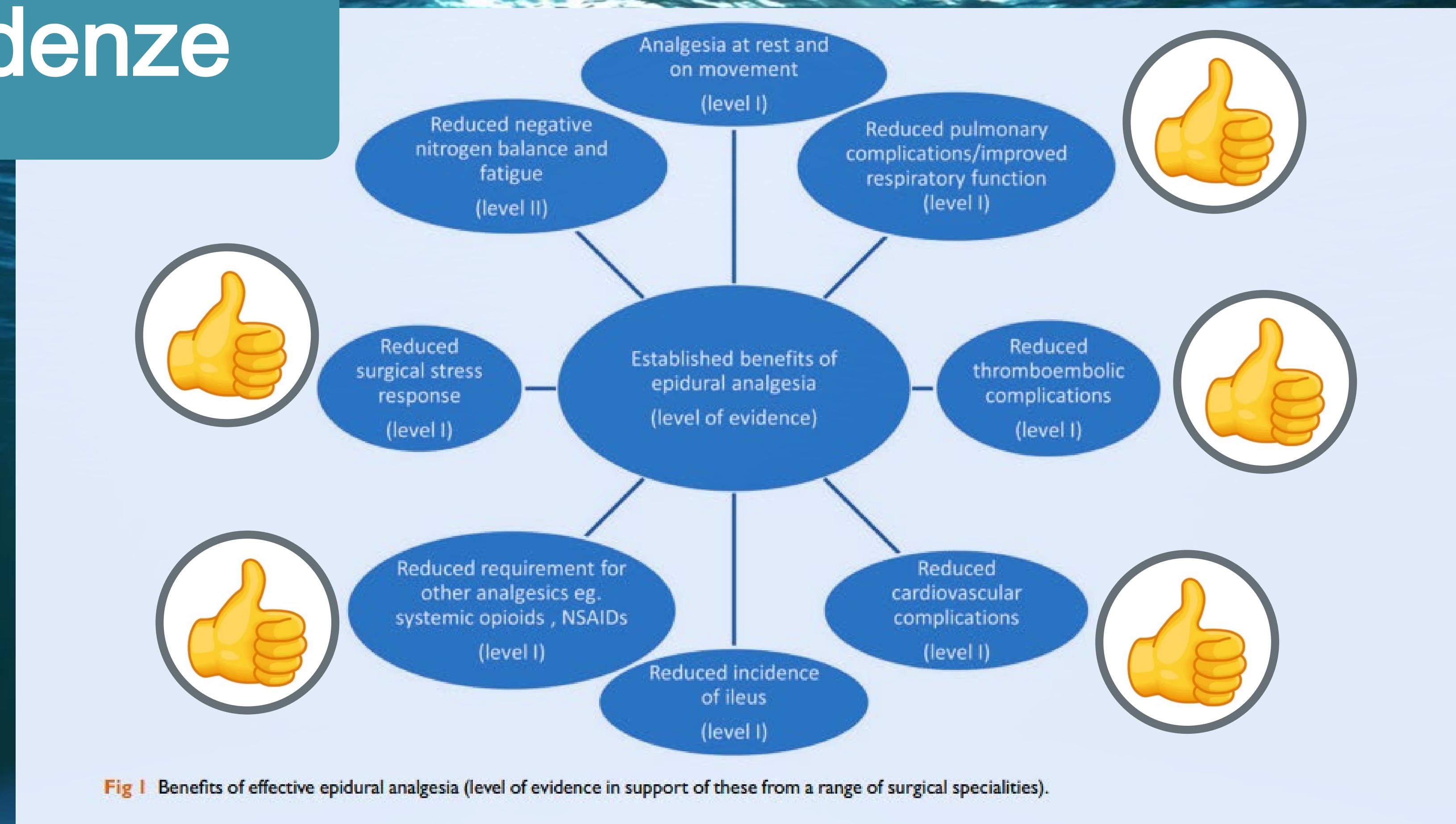
Complicanze ostetriche (distocie , ecc...)



Obiettivo o  
obiettivi?

- Controllo del dolore
- Soddisfazione materna
- Salvaguardia della attività motoria
- Controllo della paura
- Mantenimento durante il travaglio

# Evidenze



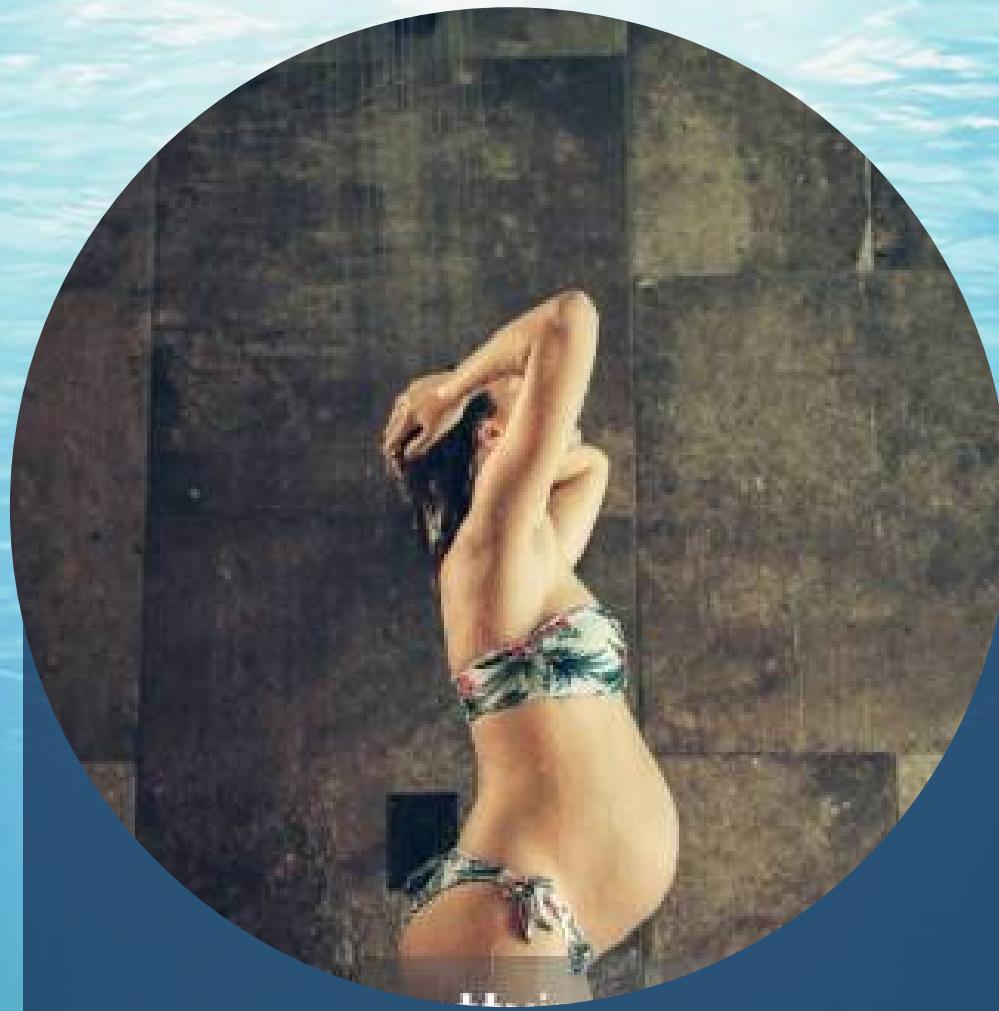
**Fig 1** Benefits of effective epidural analgesia (level of evidence in support of these from a range of surgical specialities).

# Abbiamo alternative ?



## *INFUSIONE DI REMIFENTANIL*

Errori di dosaggio  
Sedazione



## *STRATEGIE NON FARMACOLOGICHE*

Potere analgesico scarso



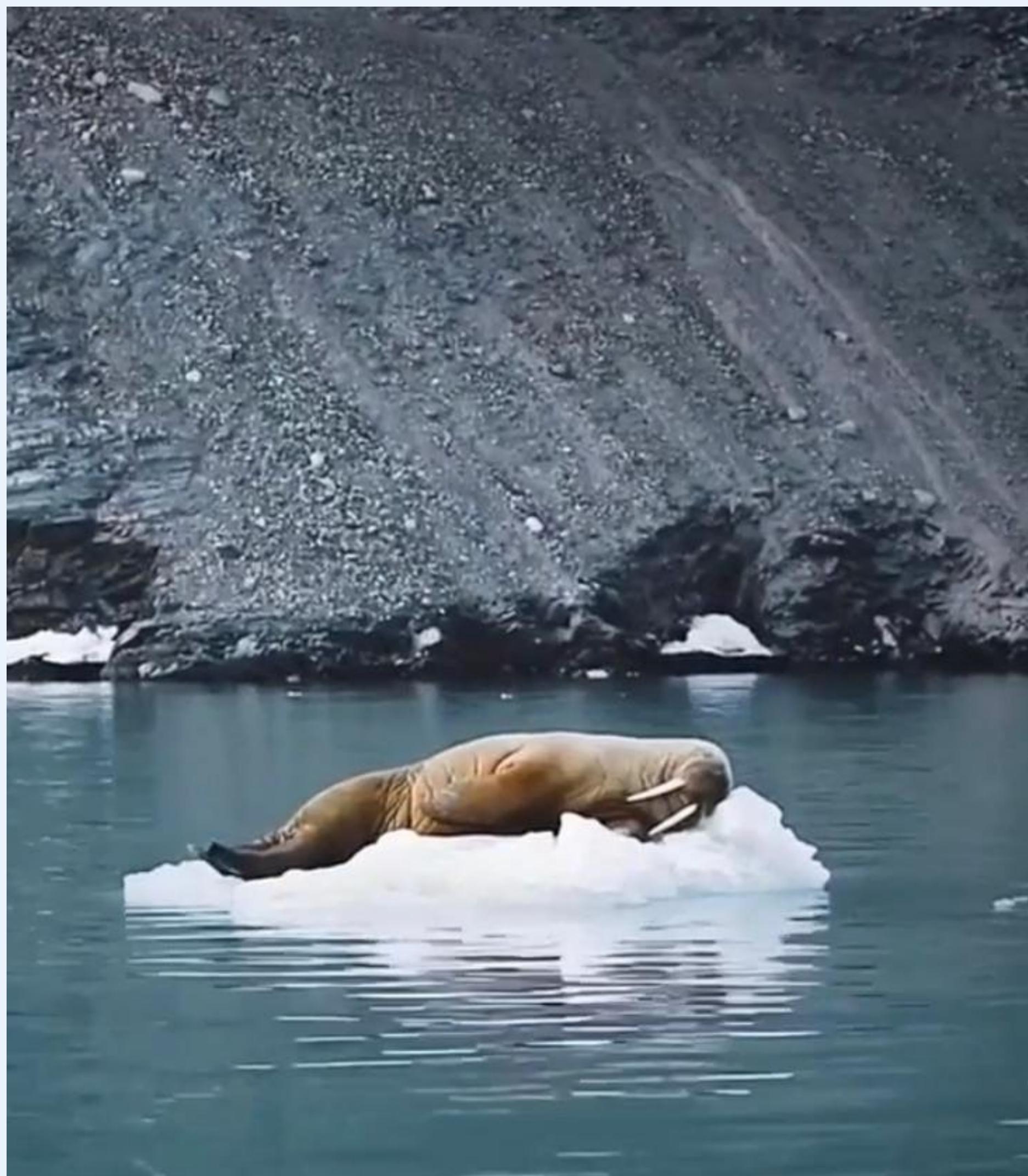
## *METODICHE INALATORIE*

Solo se impossibilità alla  
peridurale

# Progetto



*Dopo il posizionamento  
il lavoro comincia.....*

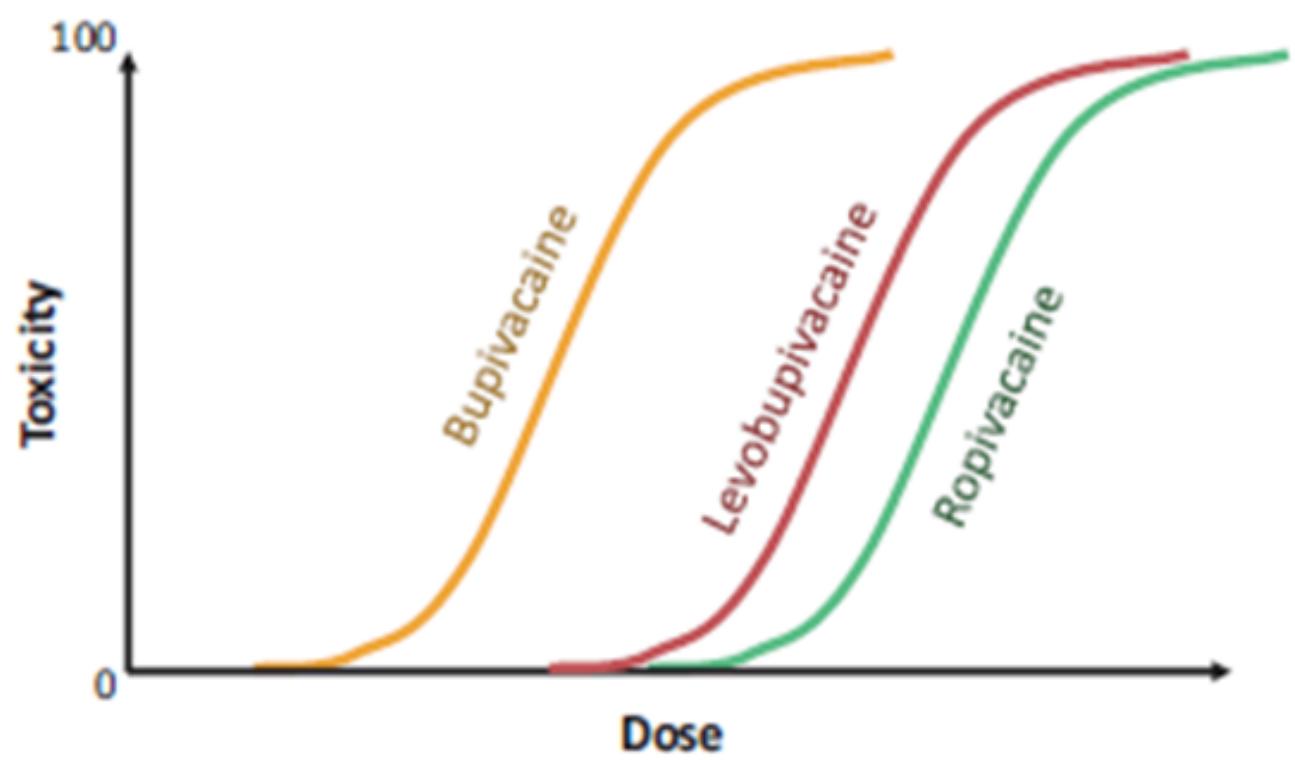


# Quali strumenti ?

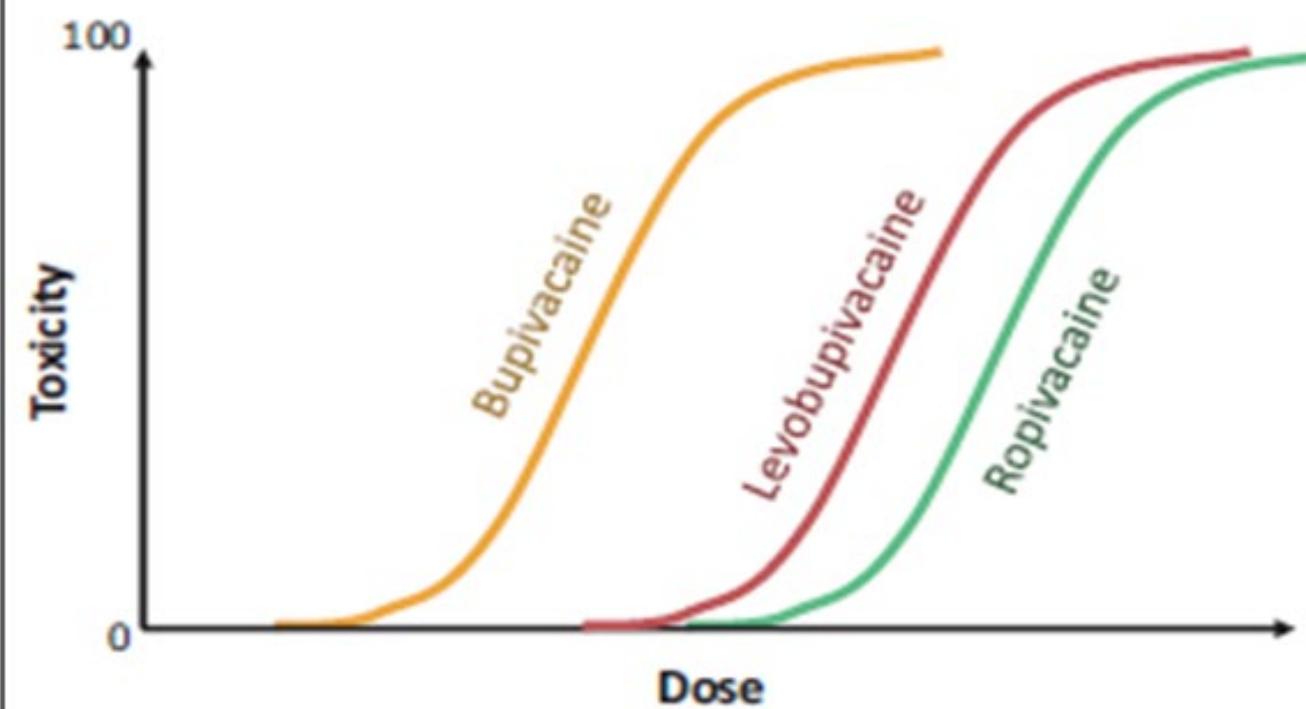
Farmaci  
Cateteri  
Dispositivi di infusione



## Relative Potencies

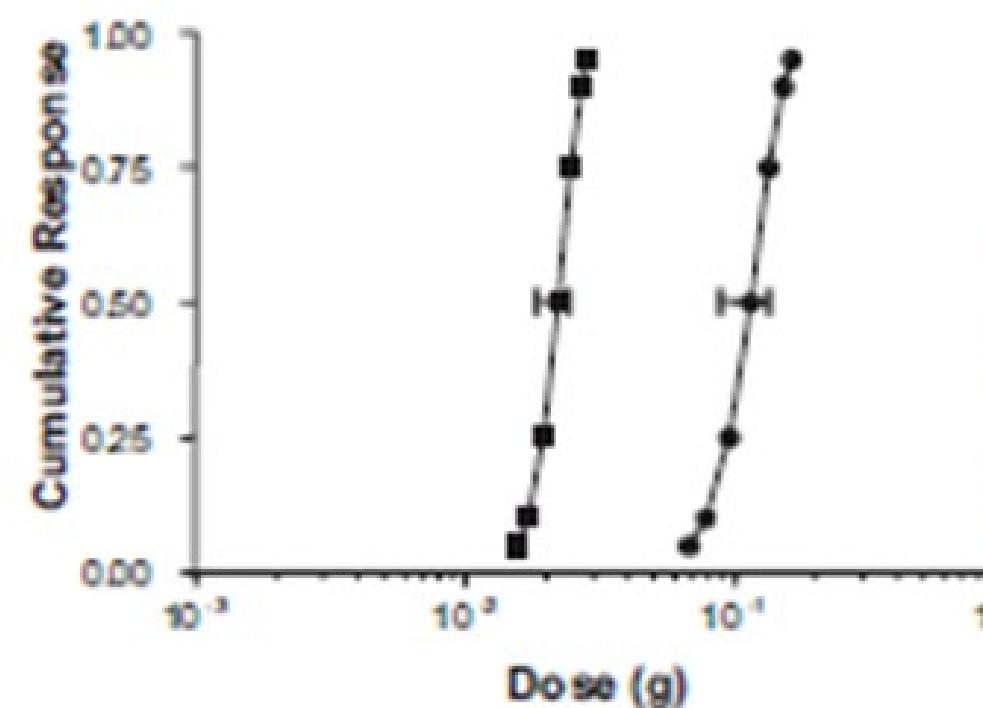


## Relative Toxicities

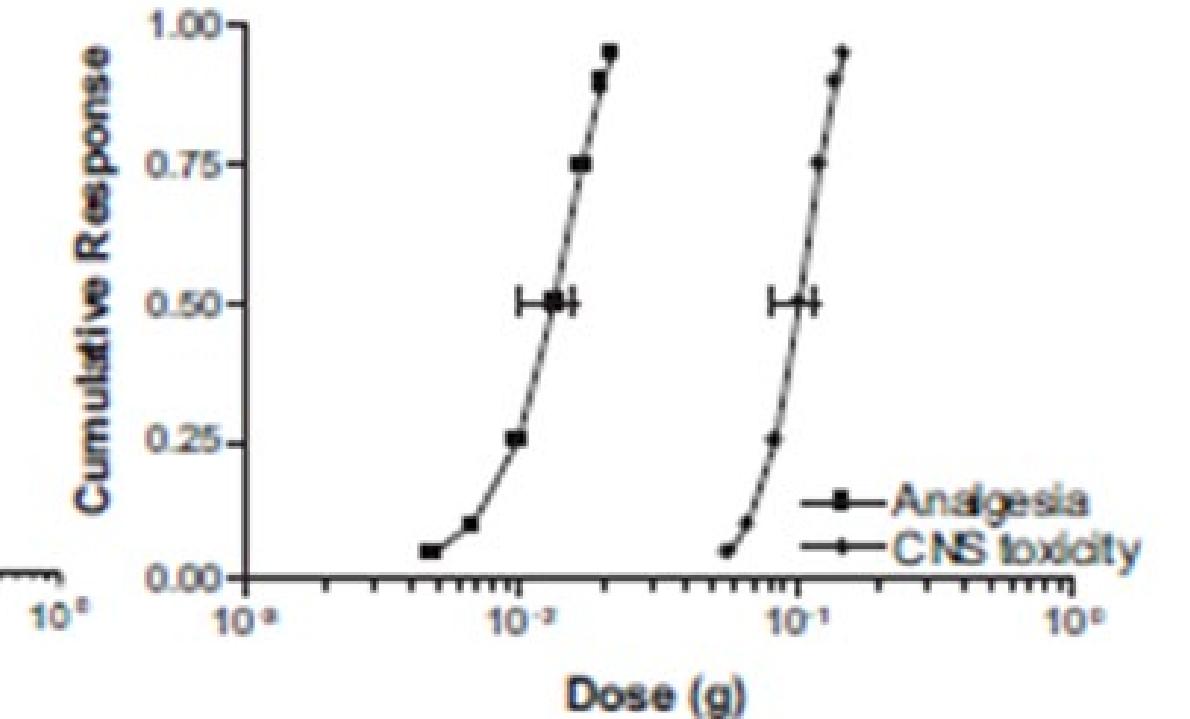


## Therapeutic index

Ropivacaine  
Log Dose-Response



Bupivacaine  
Log Dose-Response



Safety: Bupivacaine = Ropivacaine

# Neuroassiale ok... Quali altri i farmaci?

## 2022 Narrative Review

CNS Drugs (2022) 36:877–896  
<https://doi.org/10.1007/s40263-022-00936-y>

REVIEW ARTICLE



### The Options for Neuraxial Drug Administration

Henning Hermanns<sup>1</sup> · Elke M. E. Bos<sup>1</sup> · Mark L. van Zuylen<sup>1</sup> · Markus W. Hollmann<sup>1</sup>  · Markus F. Stevens<sup>1</sup>

Accepted: 14 June 2022 / Published online: 15 July 2022  
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**Table 3** Synopsis on state of approval of neuraxial drugs

	FDA approval Epidural	FDA approval Intrathecal
<i>Local anesthetics</i>		
Lidocaine	Yes	Yes
Bupivacaine	Yes	Yes
Levobupivacaine	Yes	No
Ropivacaine	Yes	No
Mepivacaine	Yes	No
Chloroprocaine	Yes	Yes
Tetracaine	No	No
<i>Opioids</i>		
Morphine	Yes	Yes
Sufentanil	Yes	No
Fentanyl	No	Yes
Hydromorphone	No	No
Buprenorphine	No	No
Diamorphine	No	No
Tramadol	No	No
Methadone	No	No
Meperidine	No	No
Levorphanol	No	No
Butorphanol	No	No
Oxymorphone	No	No
Pentazocine	No	No
<i>Calcium channel antagonists</i>		
Ziconotide	No	Yes
Gabapentin	No	No
Verapamil	No	No
<i>GABA agonists</i>		
Baclofen	No	Yes
Muscimol	No	No
Midazolam	No	No



## The Options for Neuraxial Drug Administration

Henning Hermanns<sup>1</sup> · Elke M. E. Bos<sup>1</sup> · Mark L. van Zuylen<sup>1</sup> · Markus W. Hollmann<sup>1</sup>  · Markus F. Stevens<sup>1</sup>

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# Conclusioni

However, despite extensive use, the amount of approved medications for intrathecal and epidural use remains limited, especially for adjuvants. Hence, there is ongoing off-label use in clinical practice on a regular base. To ensure both patient safety but also legal safety for healthcare givers, a joint effort by practitioners, researchers, pharmaceutical industry, and authorities should be advocated in order to aid the risk-benefit analysis.

A fronte di un estensivo uso nello spazio peridurale e intratecale il numero di farmaci approvati a tale uso è limitato, soprattutto per gli adiuvanti.



# Protocollo **NULLIPARA**

## **NULLIPARA**

Dose iniziale		Dose successiva			
Dilatazione cervicale	Posizione della testa				
Cm		Farmaco e dose	volume totale (ml)	farmaco e dose	volume (ml)
2-3	-2 / -1	Sufentanil 10y	5 - 10	Ropivacaina 0.10%	20
3-5	-1	Ropivacaina 0.10% Levobupivacaina 0.0625% e Sufentanil 10y	15 - 20	Ropivacaina 0.10% Levobupivacaina 0.0625%	20
>6		Ropivacaina 0.10% Levobupivacaina 0.0625% e Sufentanil 10y	20	Ropivacaina 0.15%-0.20% Levobupivacaina 0.125%	10
Dilatazione completa	-1 / 0	Ropivacaina 0.15%	20		

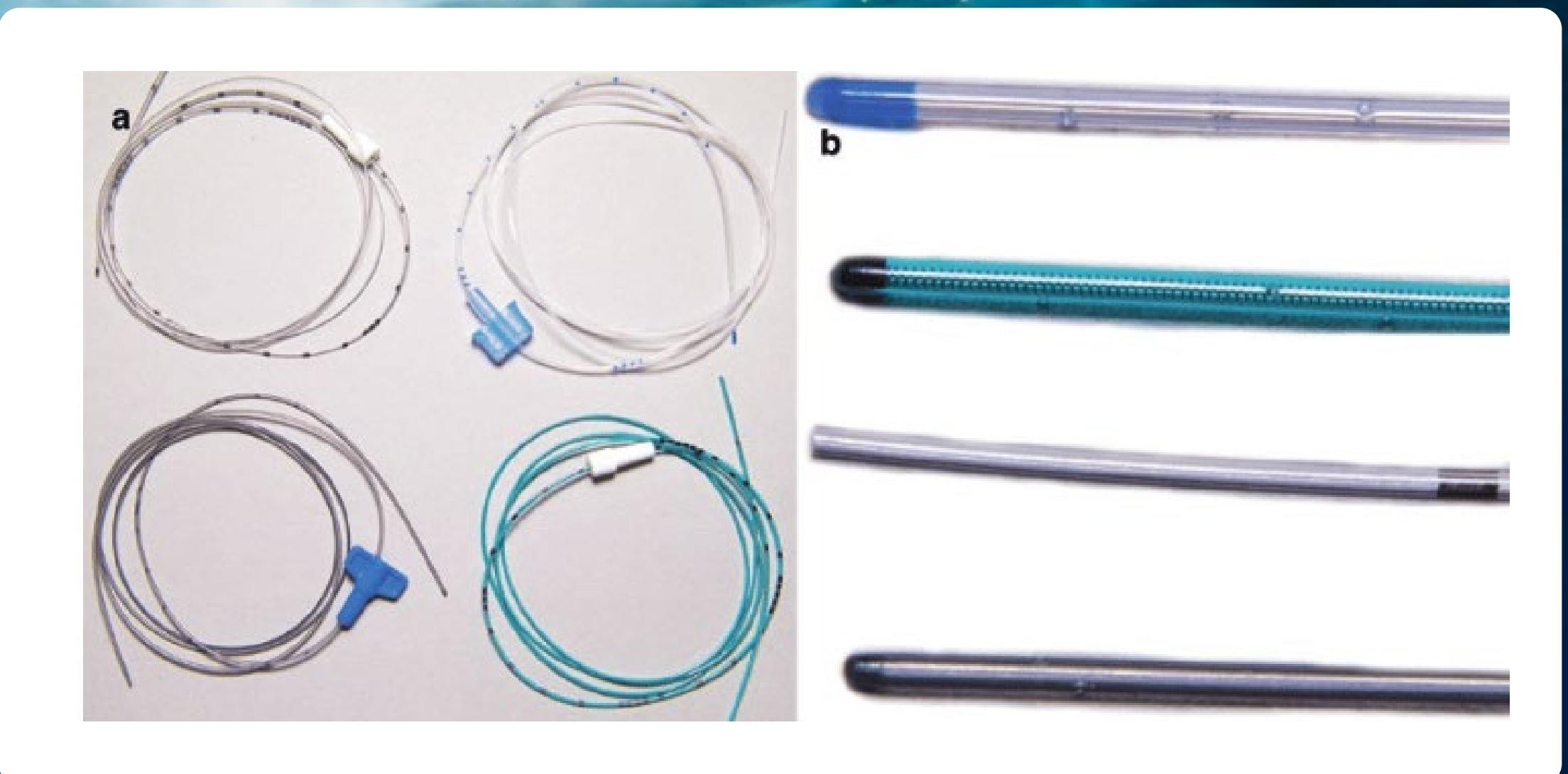
# Protocollo PLURIPARA

## PLURIPARA

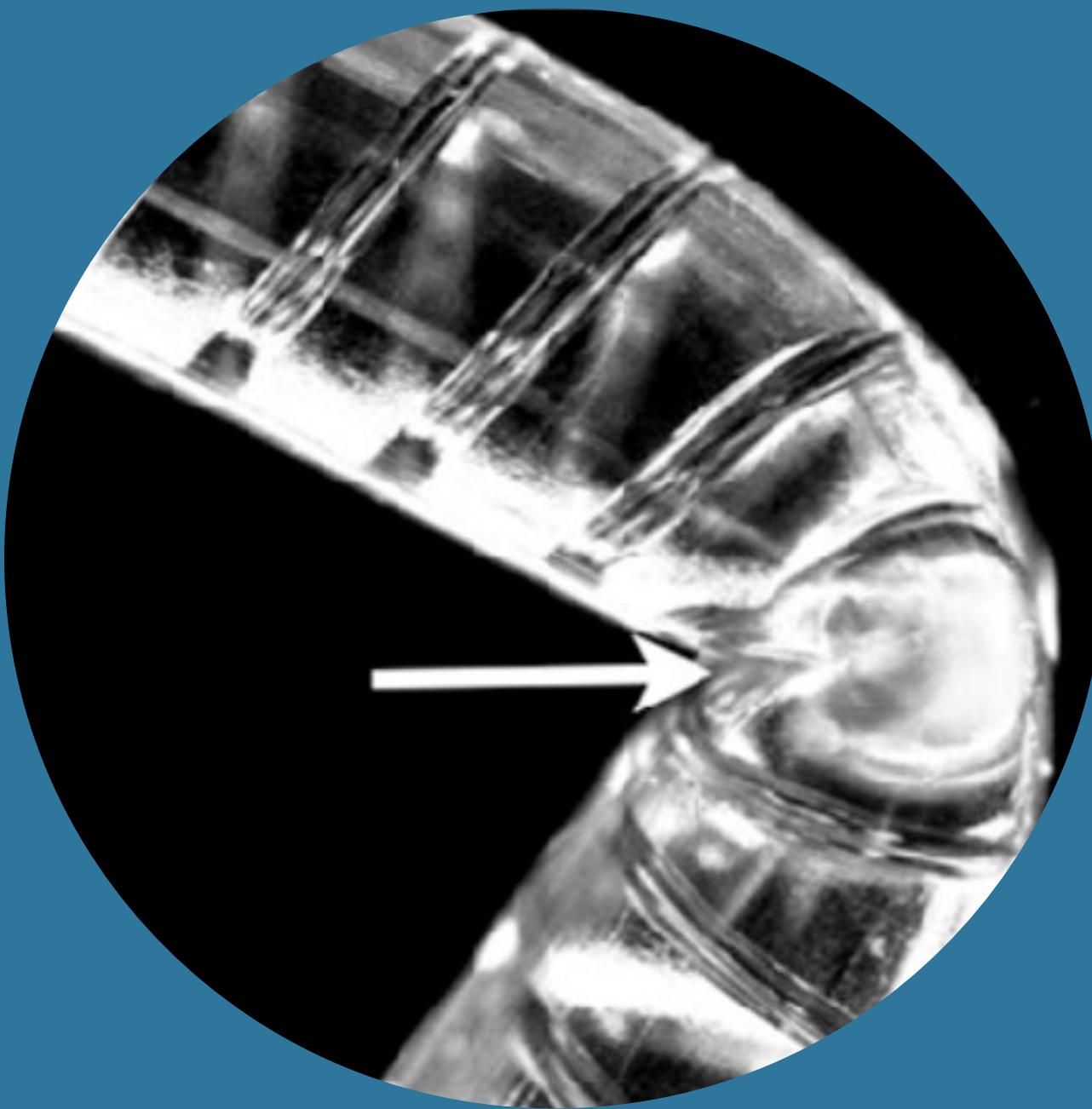
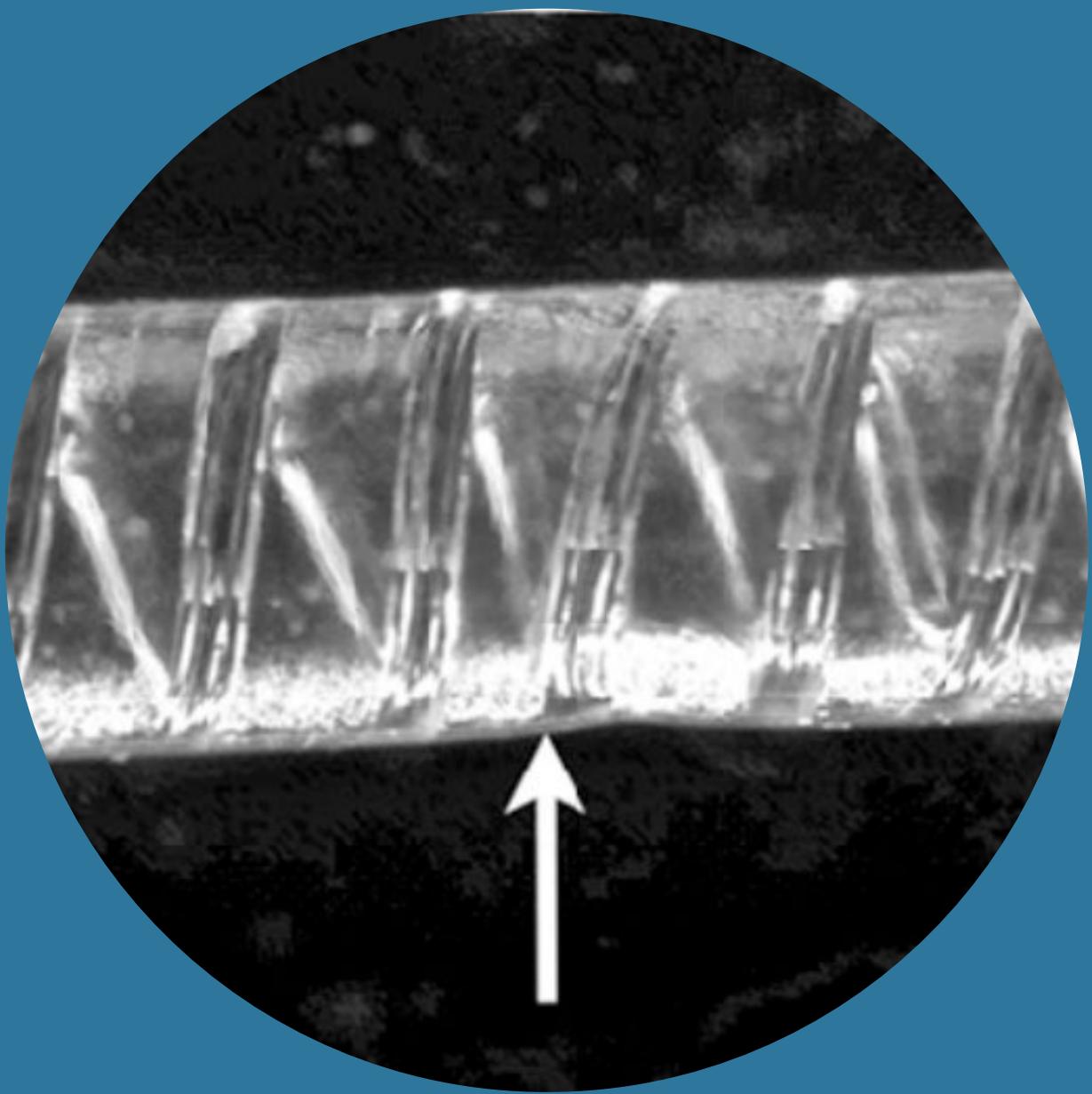
Dilatazione cervicale	Posizione della testa	Dose iniziale		Dose successiva	
centimetri		Farmaco e dose intratecale	Volume intratec. (ml)	Farmaco e dose epidurale	Volume epidurale (ml)
3 - 4	-2 /-1	Ropivacaina 0.04% o Levobupivacaina 0.04% e Sufentanil 2-2,5 y	5	Ropivacaina 0.10% o Levobupivacaina 0.0625%	15-20
6 - 7	-1	Ropivacaina 0.06% o Levobupivacaina 0.05% e Sufentanil 2-2.5 y	5	Ropivacaina 0.15% o Levobupivacaina 0.0125%	10-15
Dilatazione completa	-1/0	Ropivacaina 0.06% o Levobupivacaina 0.05% e Sufentanil 2-2.5 y	5		

# Quali cateteri ?

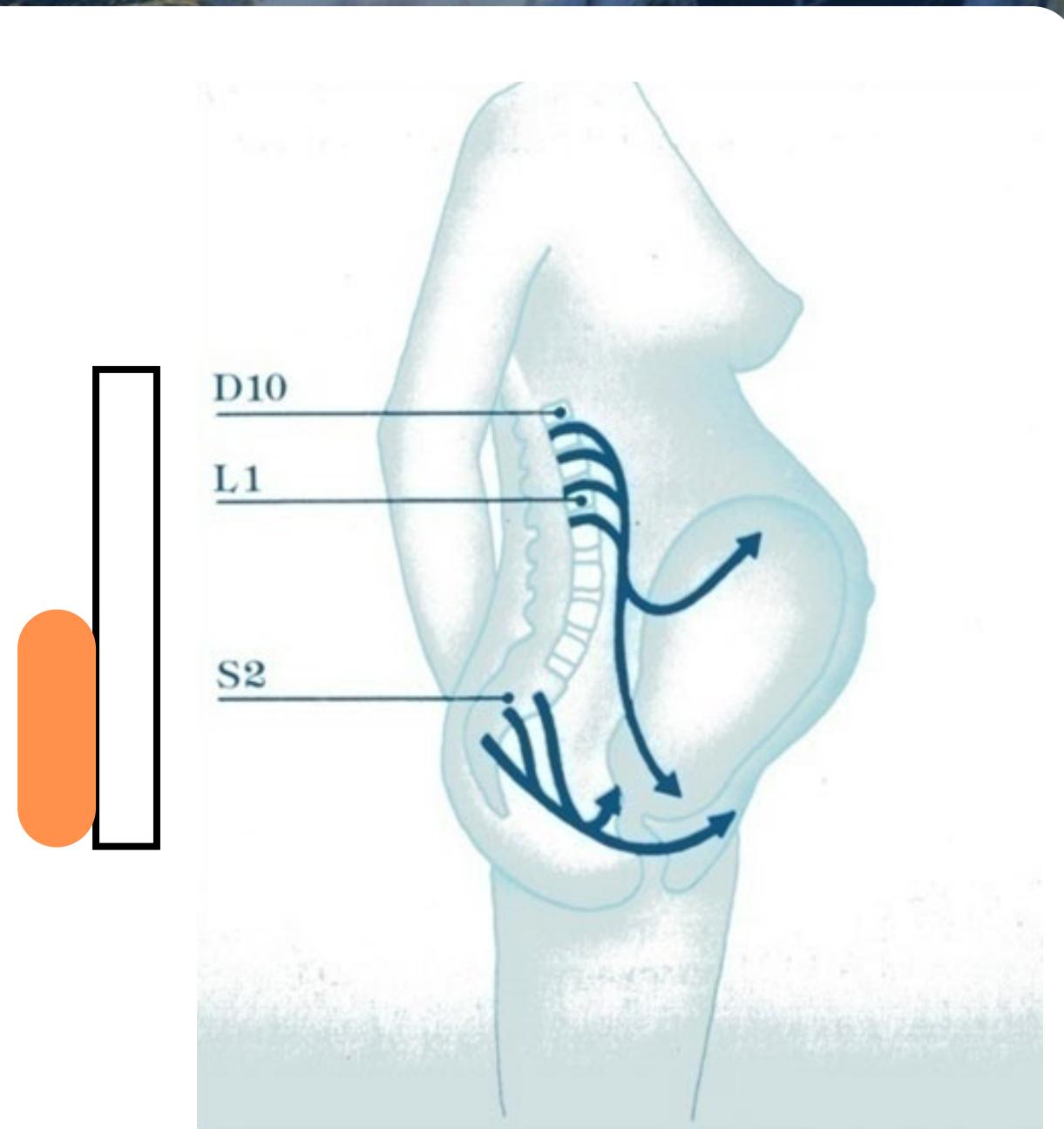
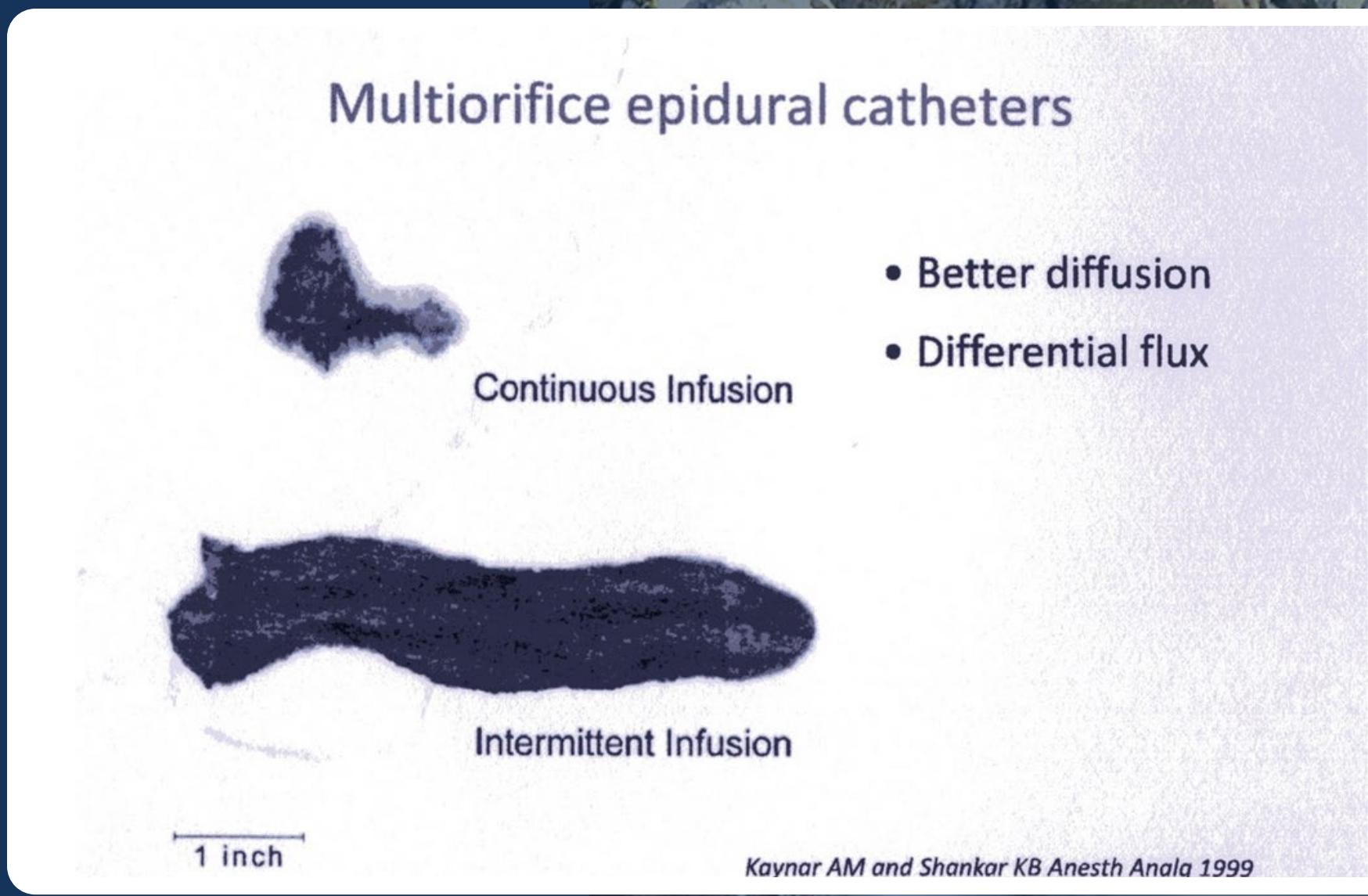
Armati  
Non armati  
Monoforati  
Pluriforati



# Perchè armati ?



# Infusione continua o intermittente?



# Quale dispositivo infusivo ?

Sicurezza/affidabilità

Volume erogato

Tempo di erogazione





Quali variabili  
da considerare ?

# Concentrazione



# Volume



# Tempo



# Finestra terapeutica

Effetto

Tempo



# Finestra terapeutica ?



VOLUME



TEMPO



CONCENTRAZIONE



Finestra terapeutica

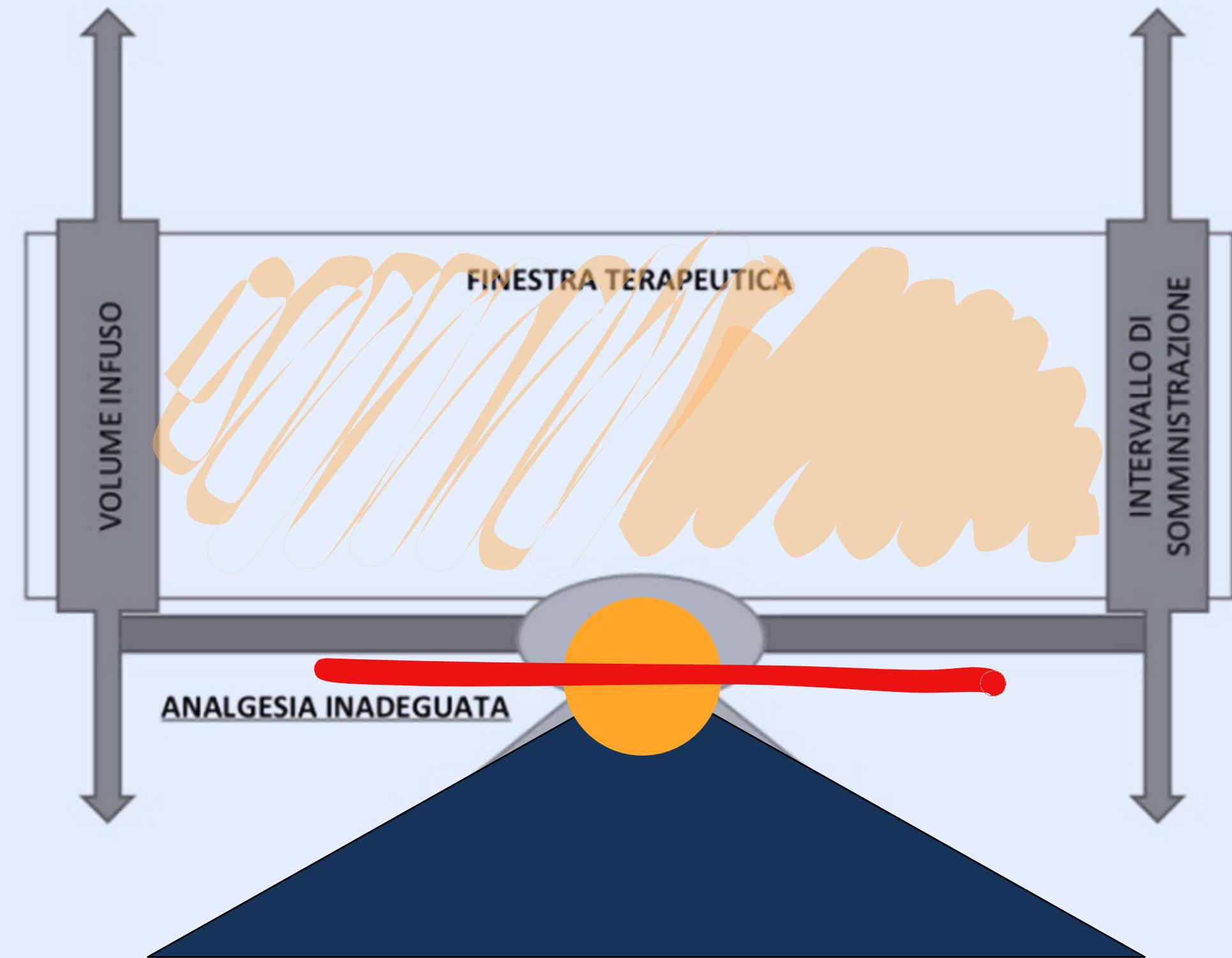
= Target clinico



PUNTO  
DI  
EQUILIBRIO



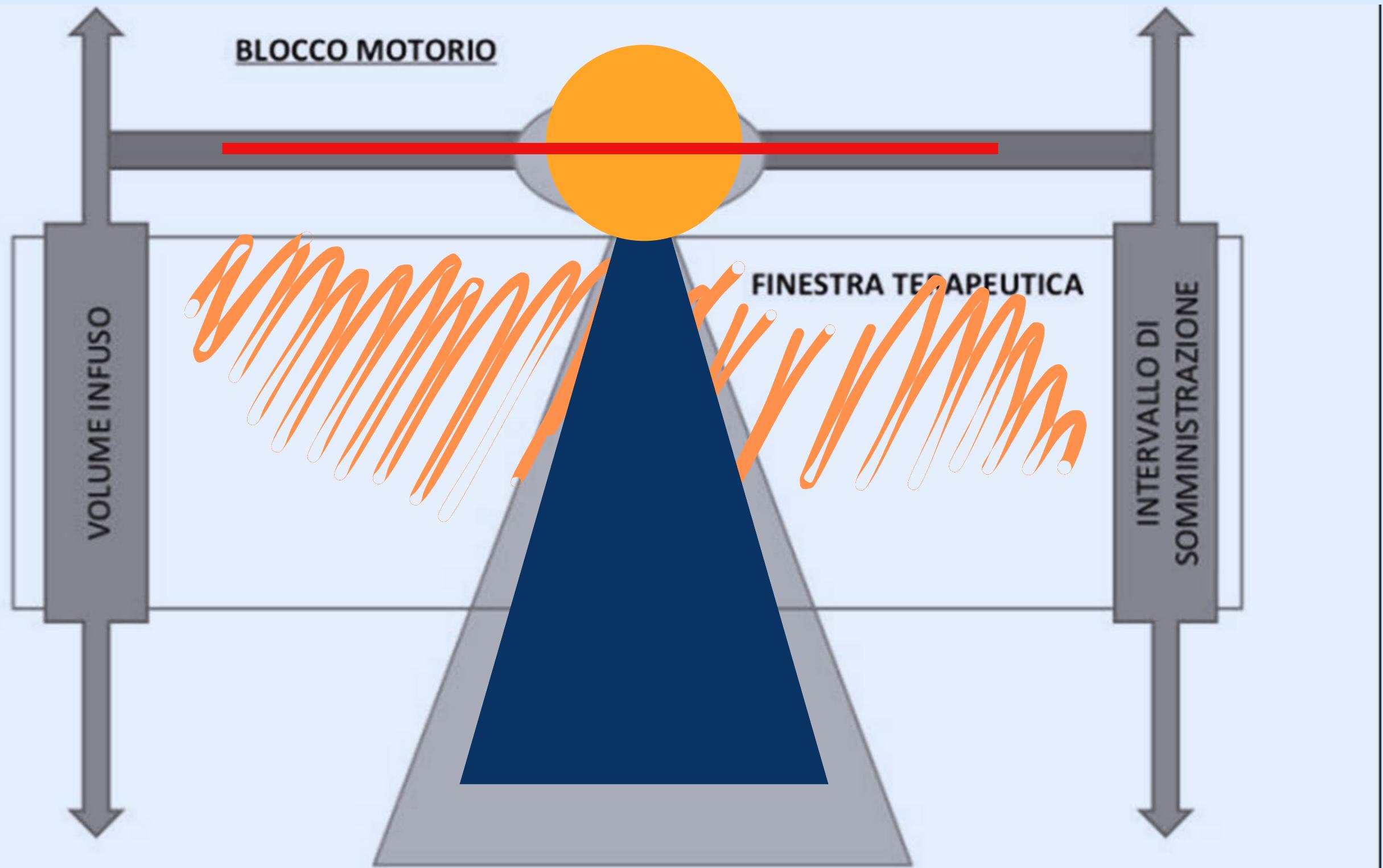
# Analgesia inadeguata



**Fig.4** Variabilità del punto di equilibrio ai limiti inferiori della finestra terapeutica



## Blocco motorio



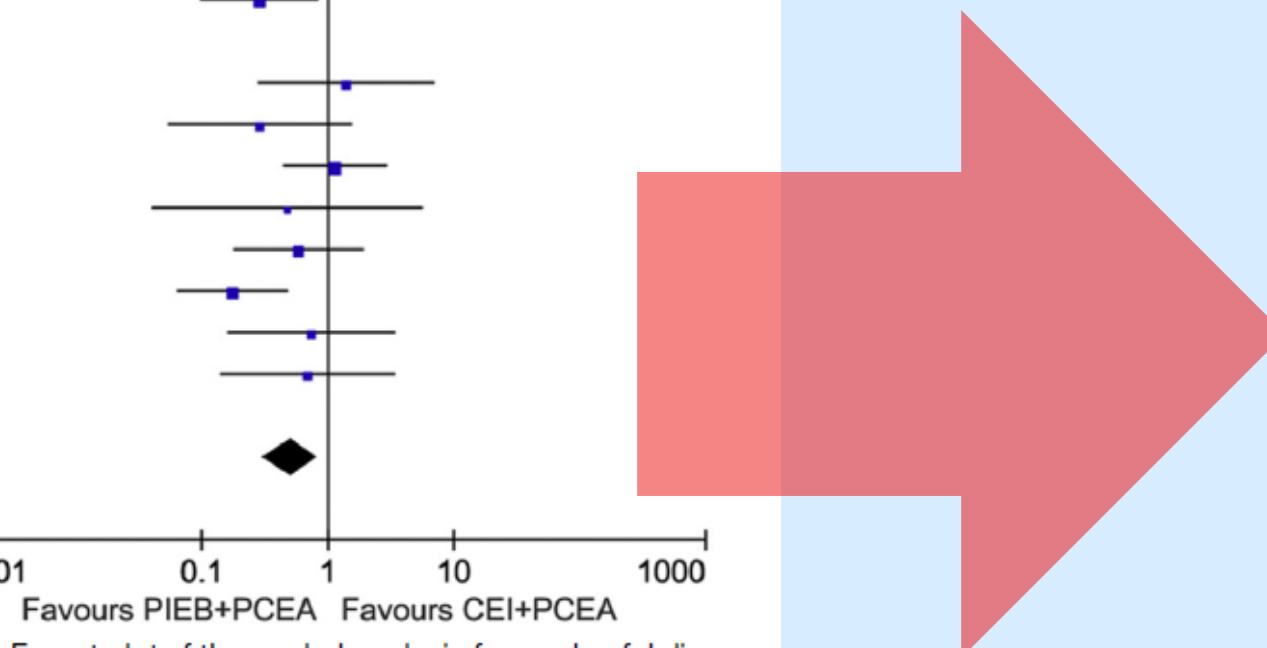
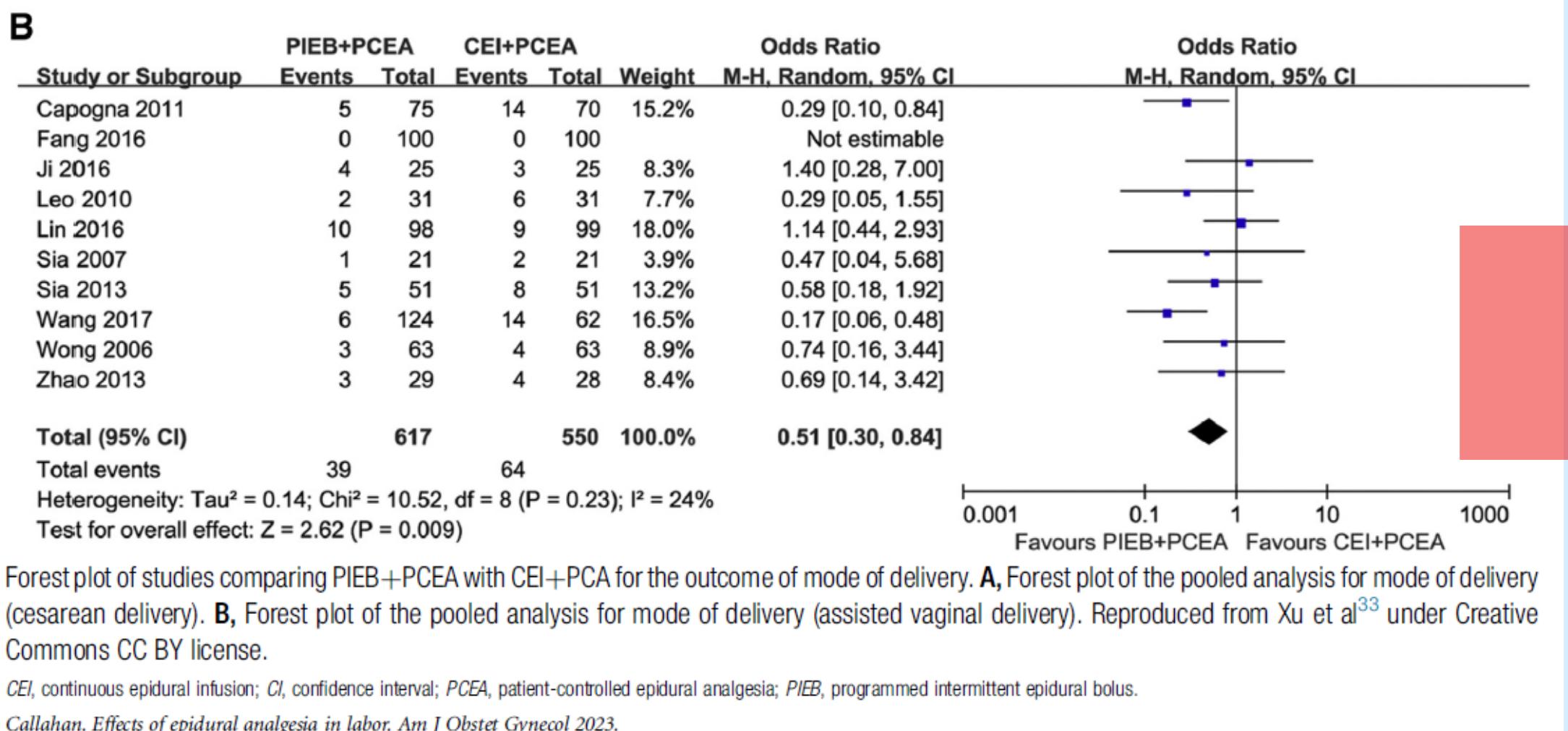
# Quali strategie infusive?

- Single shot
- Infusione continua
- TOP -UP
- PIEB
- PCEA

## Modern labor epidural analgesia: implications for labor outcomes and maternal-fetal health

Elliott C. Callahan, MD; Won Lee, MD; Pedram Aleshi, MD; Ronald B. George, MD, FRCPC

 Check for updates



PIEB+PCEA group had: decreased incidence of assisted vaginal delivery and breakthrough pain, higher maternal satisfaction, and shorter duration of labor

PIEB + PCEA vs CEI + PCEA  $\Theta$ OUTCOME

**Automated mandatory bolus versus basal infusion for maintenance of epidural analgesia in labour (Review)**

Tan HS, Zeng Y, Qi Y, Sultana R, Tan CW, Sia AT, Sng BL, Siddiqui FJ

2023

**18 STUDI PER 4590 DONNE /  
TRAVAGLIO  
PIEB vs CI**

### Authors' conclusions

Overall, AMB is associated with lower incidence of breakthrough pain, reduced LA consumption, and may improve maternal satisfaction. There were no significant differences between AMB and BI in the incidence of caesarean delivery, instrumental delivery, duration of labour analgesia, and Apgar scores. Larger studies assessing the incidence of caesarean and instrumental delivery are required.



Ridotta incidenza di breakthrough pain



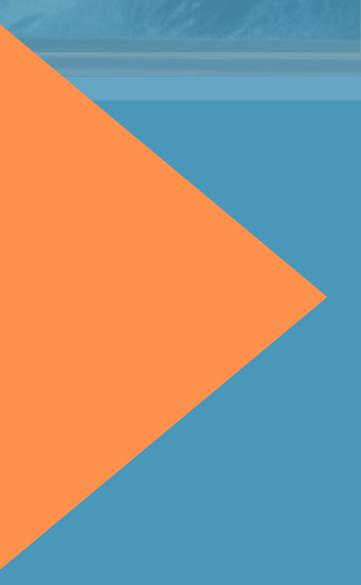
Ridotto consumo di farmaci



Migliore soddisfazione materna



**Tempo**



Effetto

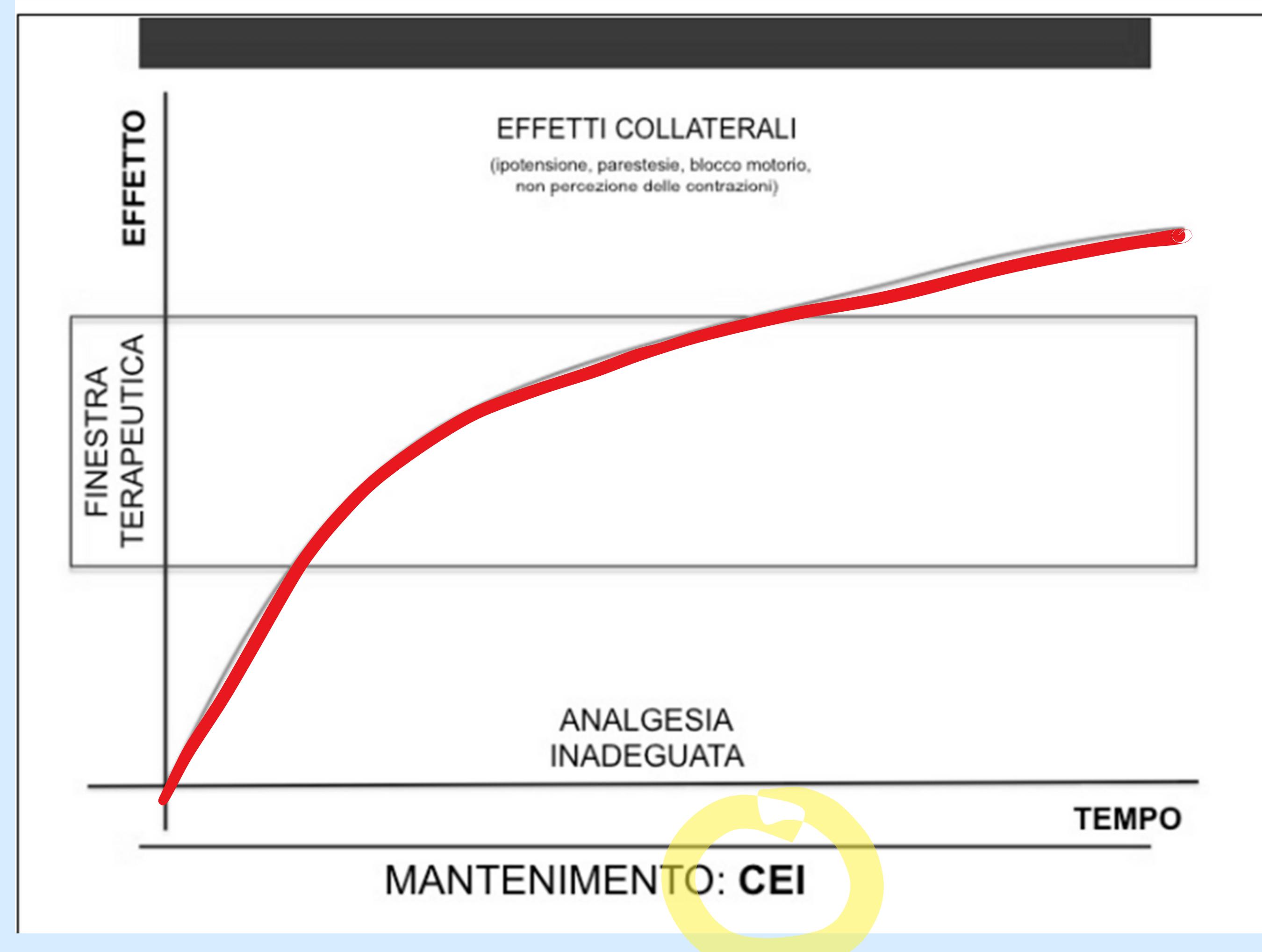
Blocco motorio  
effetti collaterali

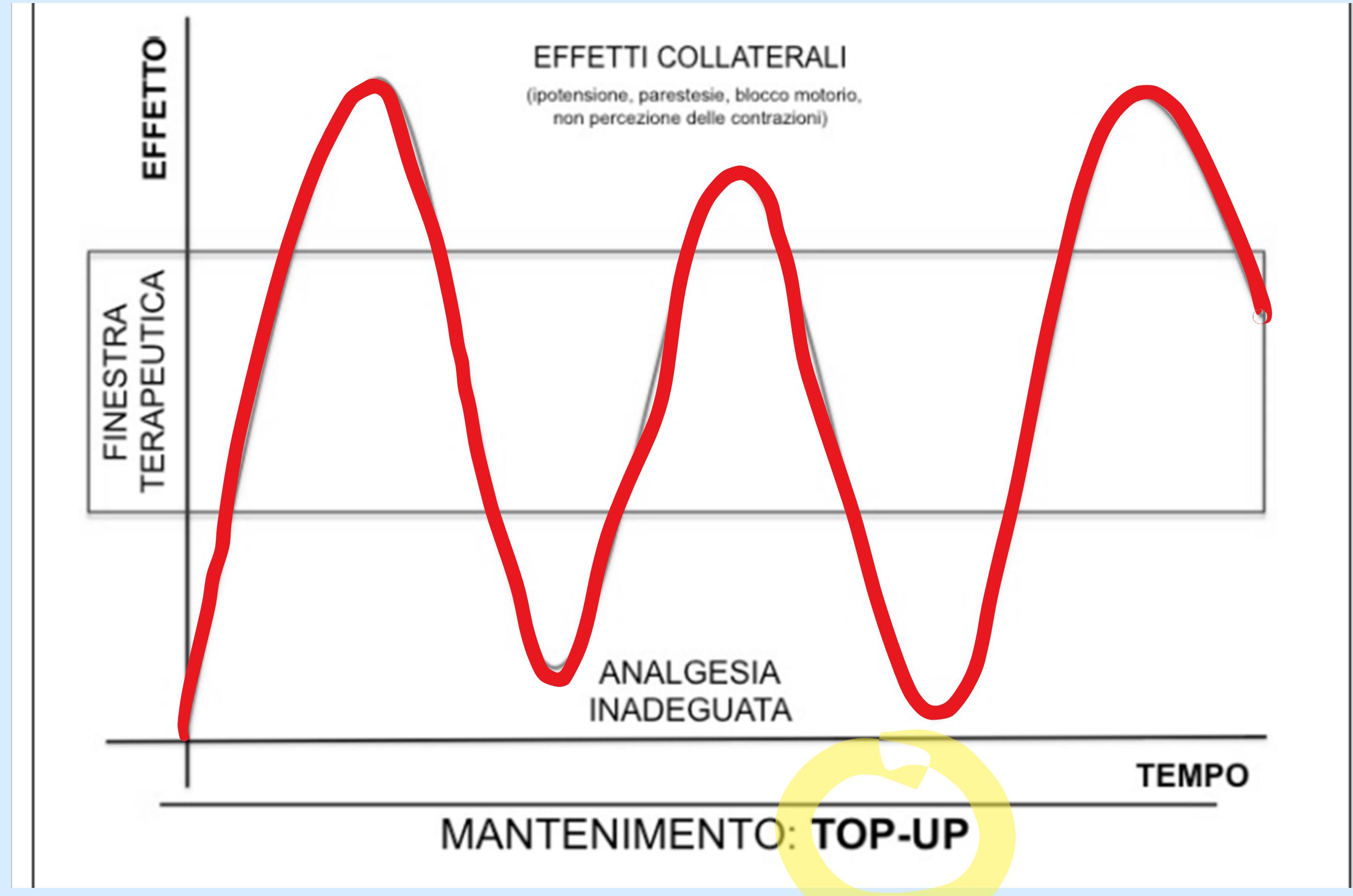
Finestra  
terapeutica

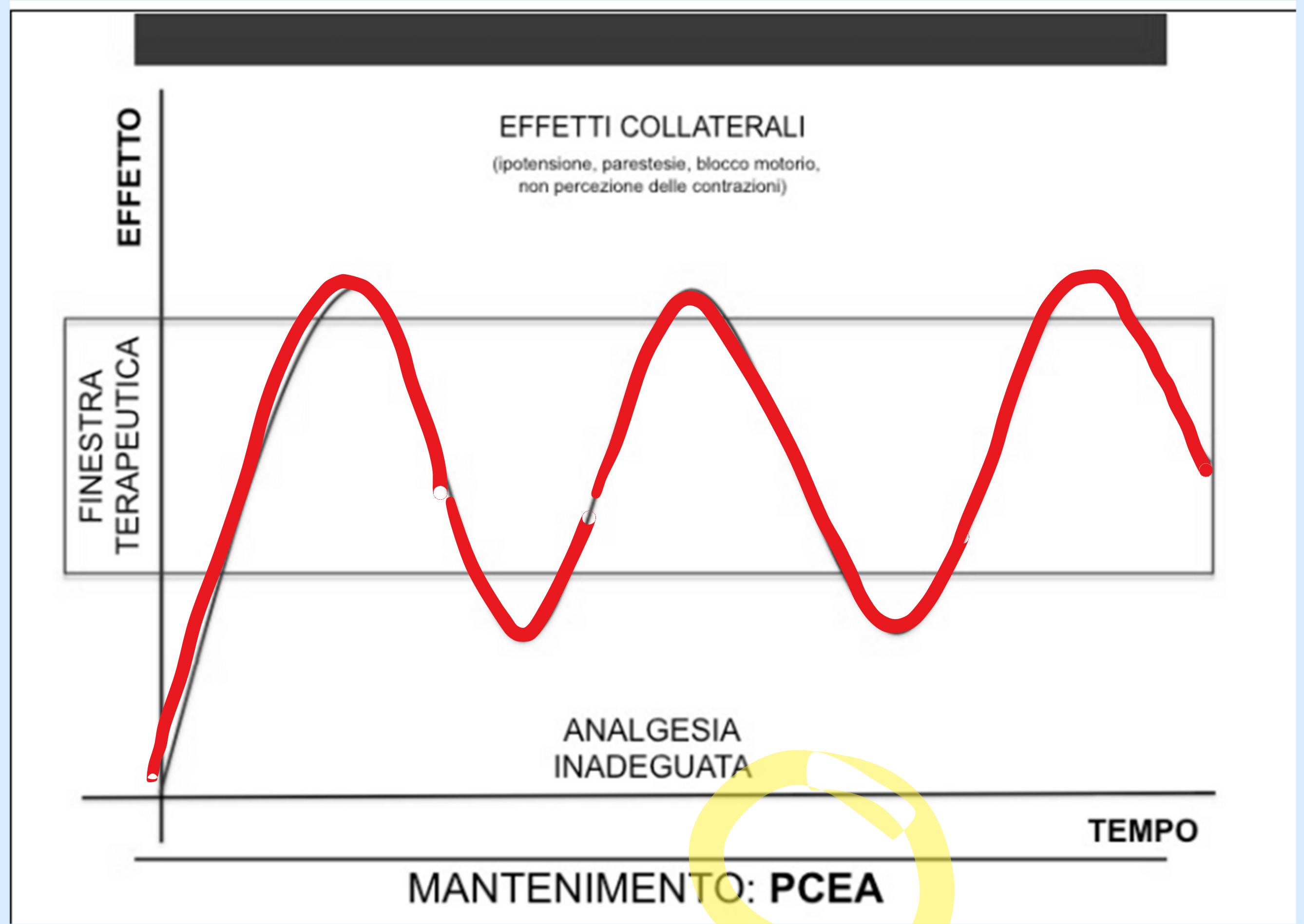
Analgesia inadeguata  
-  
dolore

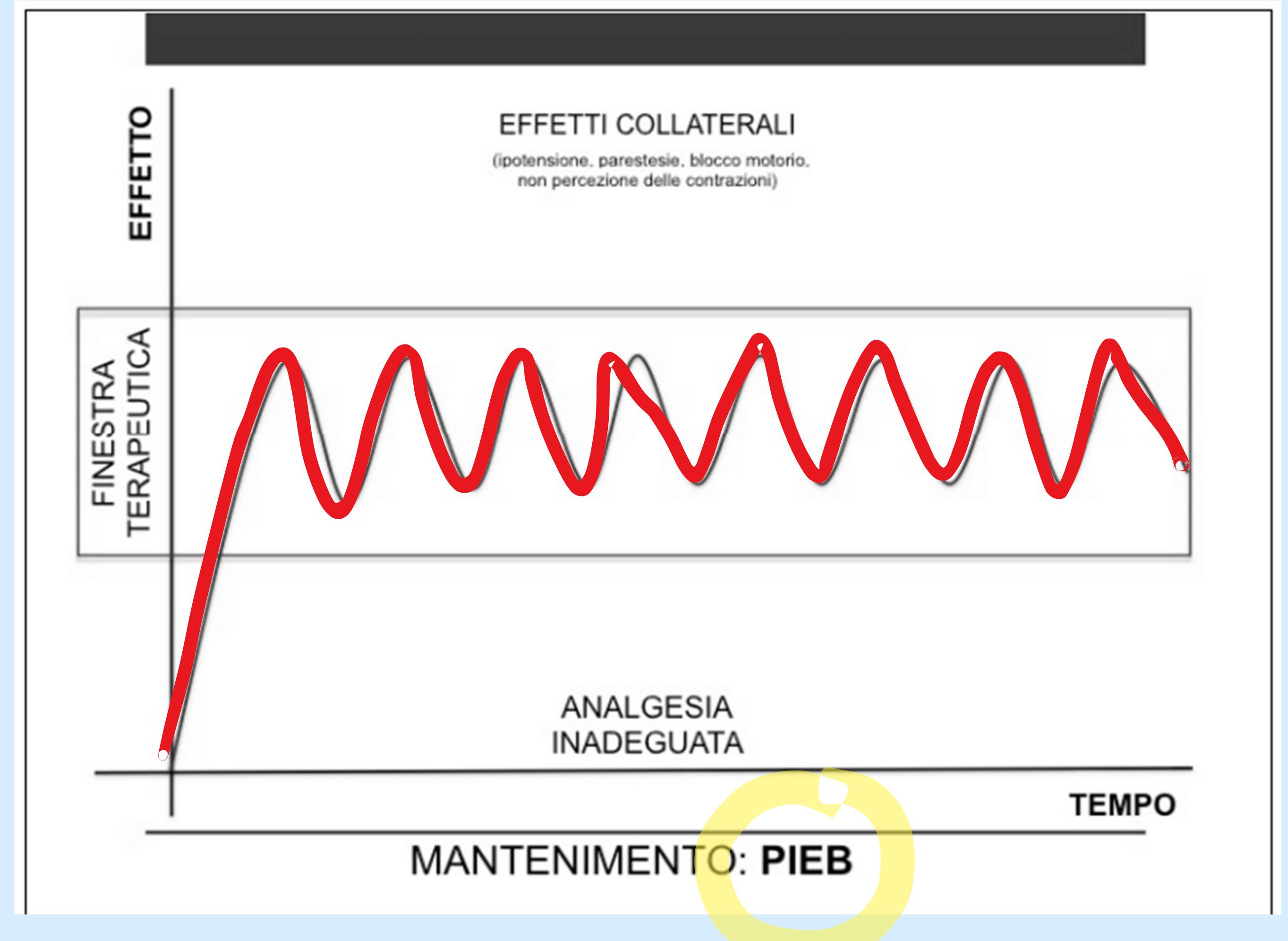
Tempo













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Journal of Clinical Anesthesia

journal homepage: [www.elsevier.com/locate/jclinane](http://www.elsevier.com/locate/jclinane)



Review

Influence of different volumes and frequency of programmed intermittent epidural bolus in labor on maternal and neonatal outcomes: A systematic review and network meta-analysis

Ryan Howle <sup>a,b</sup>, Sophie Ragbourne <sup>c</sup>, Danaja Zolger <sup>c</sup>, Adetokunbo Owolabi <sup>c</sup>, Desire Onwochei <sup>c,d</sup>, Neel Desai <sup>c,d,\*</sup>

<sup>a</sup> Department of Anaesthesia, Rotunda Hospital, Dublin, Ireland

<sup>b</sup> Department of Anaesthesia, Mater Misericordiae University Hospital, Dublin, Ireland

<sup>c</sup> Department of Anaesthesia, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

<sup>d</sup> King's College London, London, United Kingdom



## 5. Conclusions

Overall, this meta-analysis and systematic review indicates that PIEB 5/30 and PIEB 10/60 may represent the optimal PIEB regimens from the perspective of volume and time interval. PIEB 5/30 was not inferior to PIEB 10/60 in regard to the need for rescue analgesia and decreased the pain score at 4 h when compared to PIEB 2.5/15, PIEB 5/60 and PIEB

10/60. PIEB 10/60 was superior to PIEB 2.5/15, PIEB 4/45 and PIEB 5/60 with respect to the need for rescue analgesia and PIEB 10/60 followed by PIEB 5/30 were best placed to lower the cumulative dose of local anesthetic in labor, resulting in a reduction in the incidence of lower limb motor blockade with PIEB 10/60. No differences were present between the various PIEB combinations of administered volume and dose interval for maternal satisfaction. The quality of evidence for the two primary outcomes, the need for rescue analgesia and the maternal satisfaction, was low. PIEB 10/40 was not subject to investigation in randomized controlled trials but sequential allocation studies have revealed its potential to be effective in 90% of nulliparous women in the first stage of labor. The quality of the evidence for the primary outcomes, the need for rescue analgesia and future research should focus on PIEB 5/30, PIEB 10/40 and PIEB 10/60 and how the method of analgesia initiation, nature and concentration of local anesthetic, design of epidural catheter and rate of administration might influence outcomes related to the mother and neonate.

2024

30 trials dal

2004 al 2022



# ANESTESISTA OPERATORE



TECNOLOGIA





"La vita è come andare in bicicletta :  
se vuoi stare in equilibrio devi muoverti

"

Albert Einstein

*GRAZIE*