

Les principaux modes ventilatoires

Pr Antoine Roch

Réanimation-Détresses respiratoires et infections sévères

Marseille

CHU Nord

MODES VENTILATOIRES

VPC VAC+ IPAP PC VACI+

Automode

VACI VCRP CPAP ASB MMV

Autoflow VS PAC VPAC

AI VS-AI-Vt mini

VIV VA VAC VC APL APRV

VS-PPV PA PACI TC PSV APV

SIMV VAIV VPL PPS PRVC BIPAP

VPS VAPS ATC EPAP SPAP

PAV BILEVEL ASV VPC





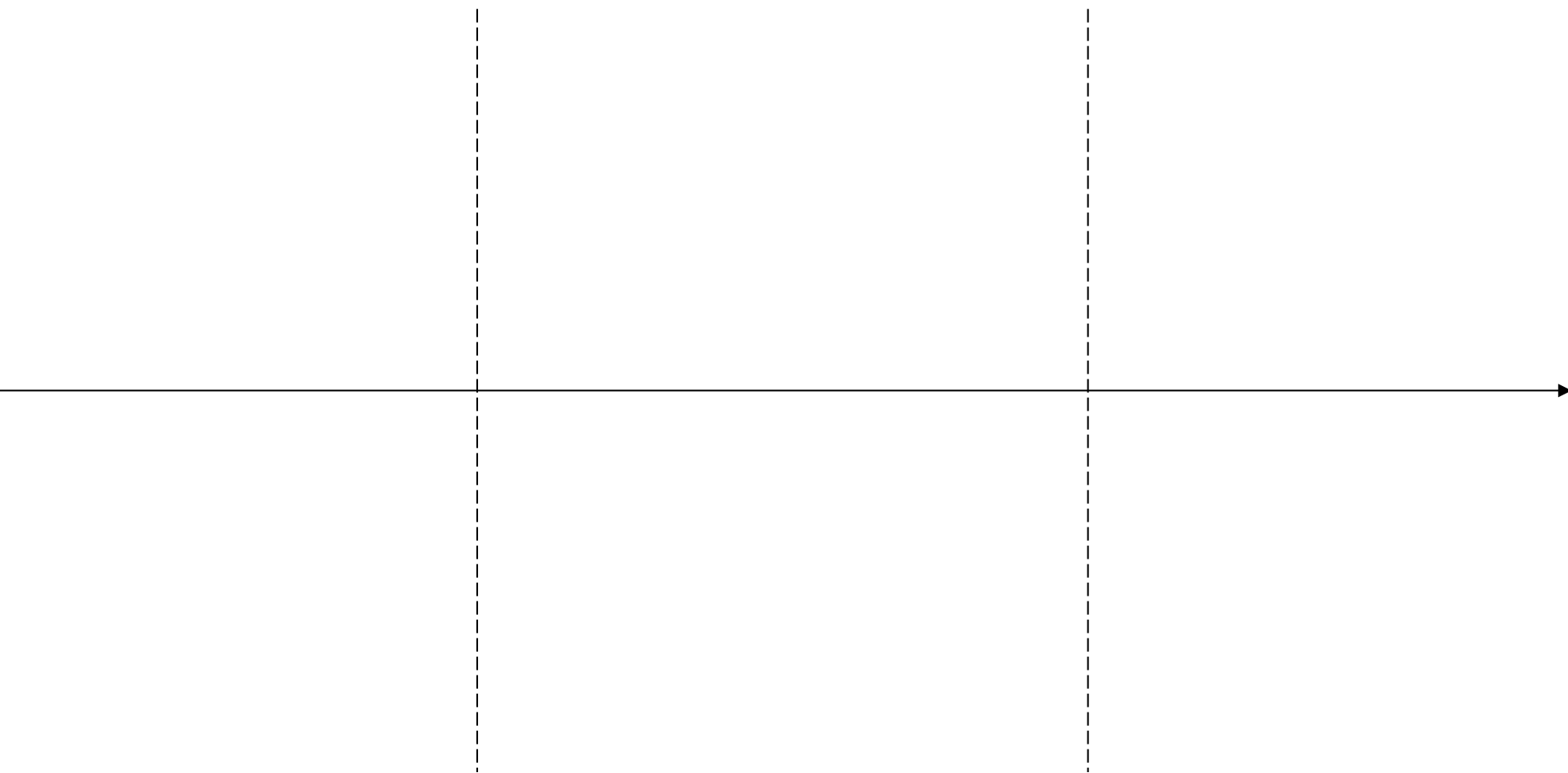
- VAC
- AI
- BIPAP
- VNI



Modes contrôlés

Modes assistés

Modes spontanés



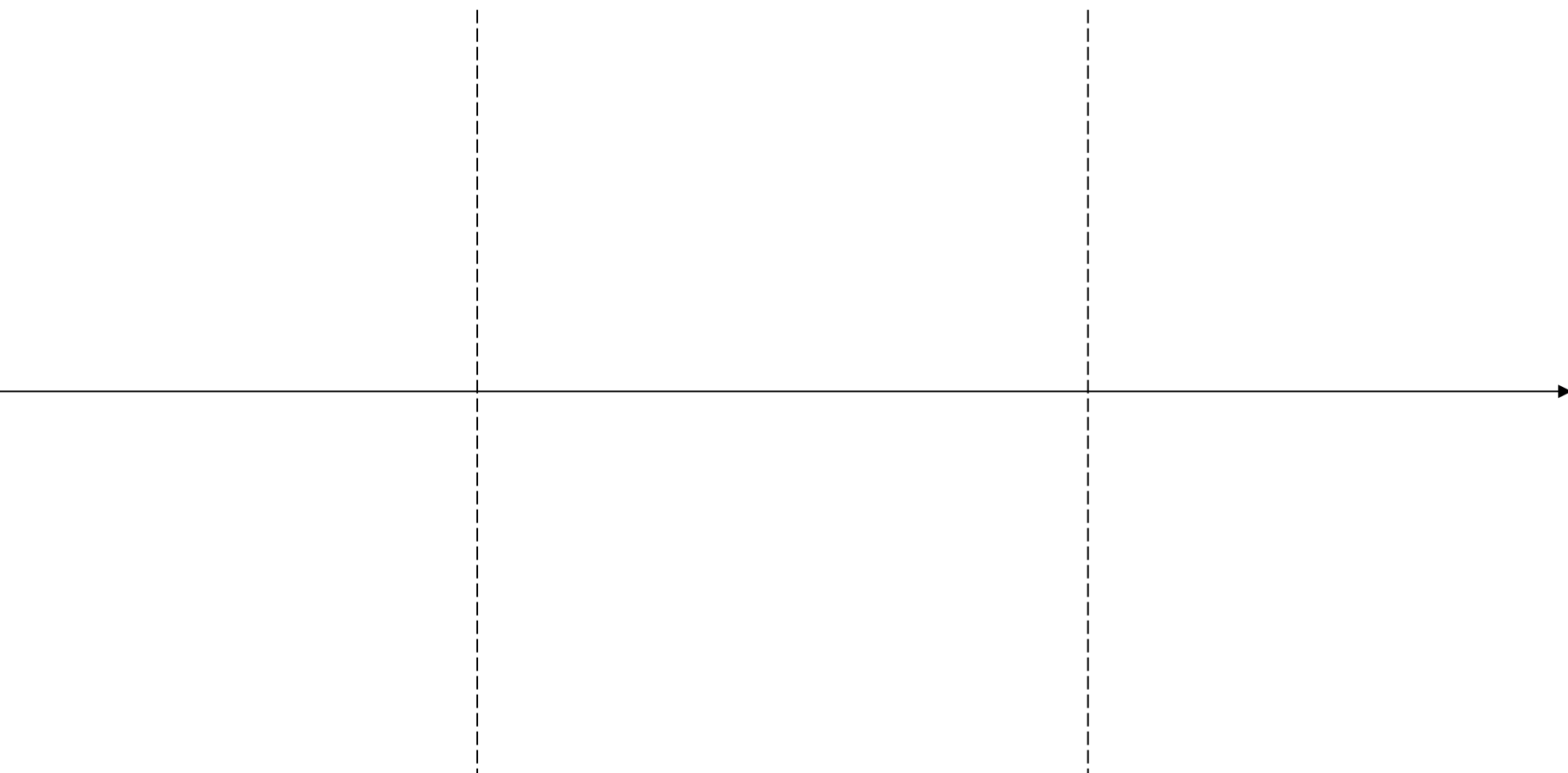
Modes contrôlés

Modes assistés

Modes spontanés

Consigne en volume

Consigne en pression



Modes contrôlés

Modes assistés

Modes spontanés

Consigne en volume

VC
Ventilation Contrôlée

VAC
Ventilation Assistée Contrôlée

VACI
Ventilation Assistée Contrôlée Intermittente

Consigne en pression

Modes contrôlés

Modes assistés

Modes spontanés

Consigne en volume

VC
Ventilation Contrôlée

VAC
Ventilation Assistée Contrôlée

VACI
Ventilation Assistée Contrôlée Intermittente

PC (VPC)

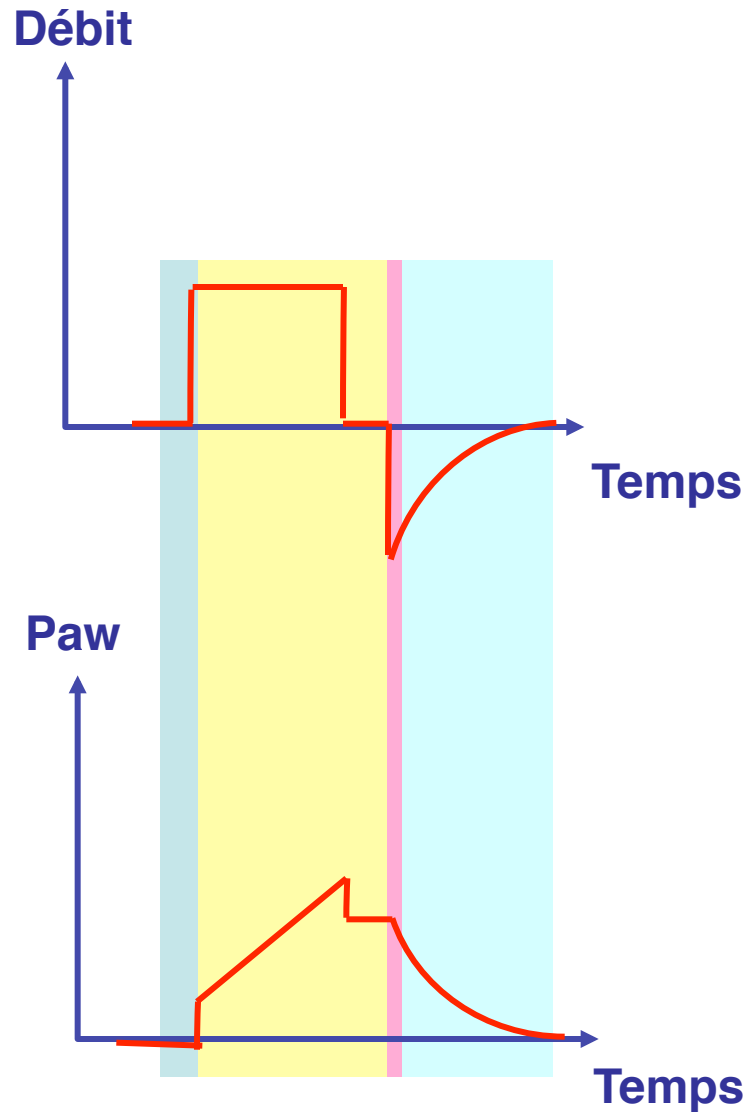
PAC
PACI
BIPAP

VSAI

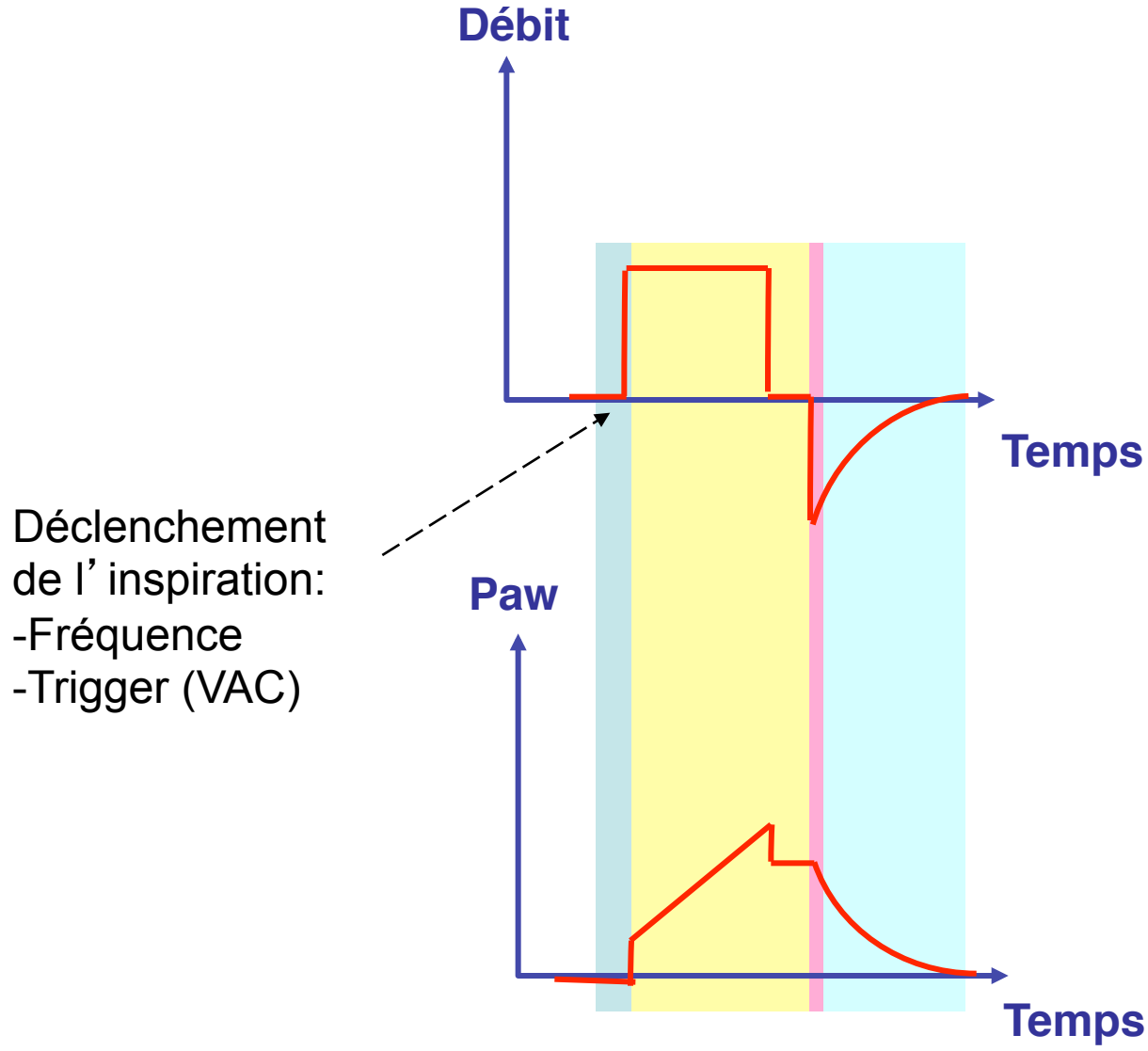
Consigne en pression

Volume contrôlé (VC)
Volume Assisté Contrôlé (VAC)

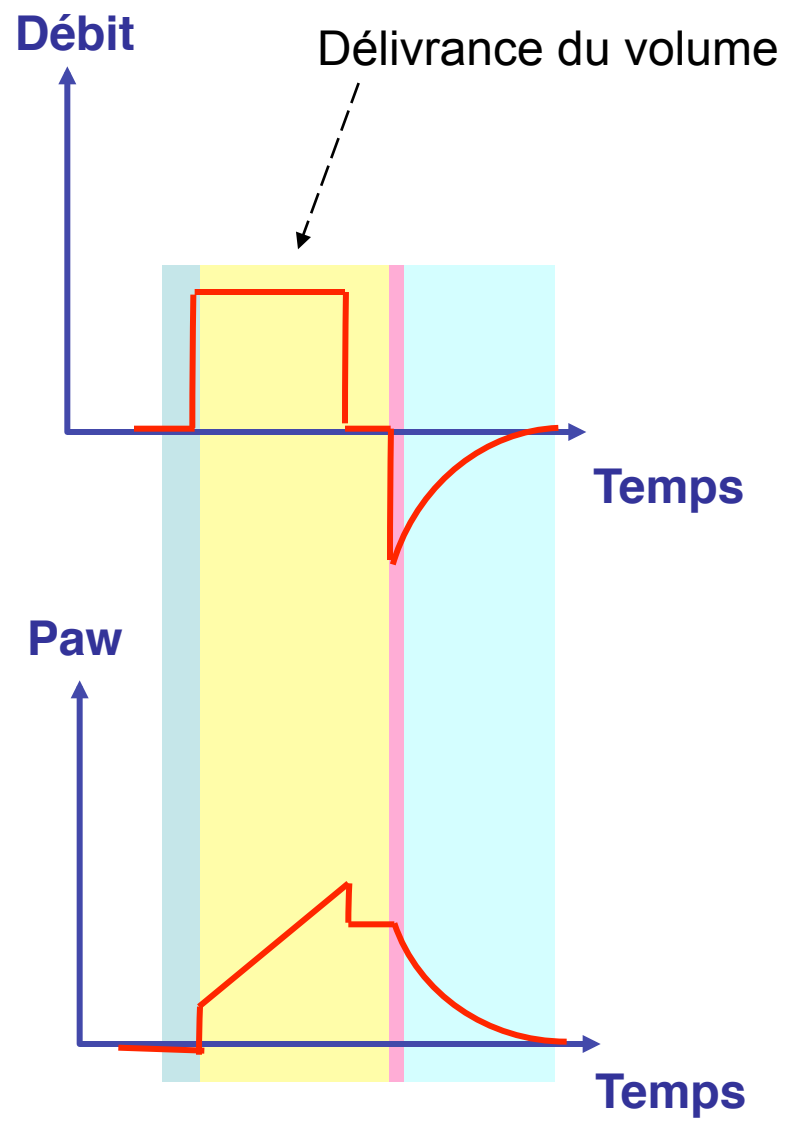
Les 4 phases du cycle ventilatoire en VC-VAC



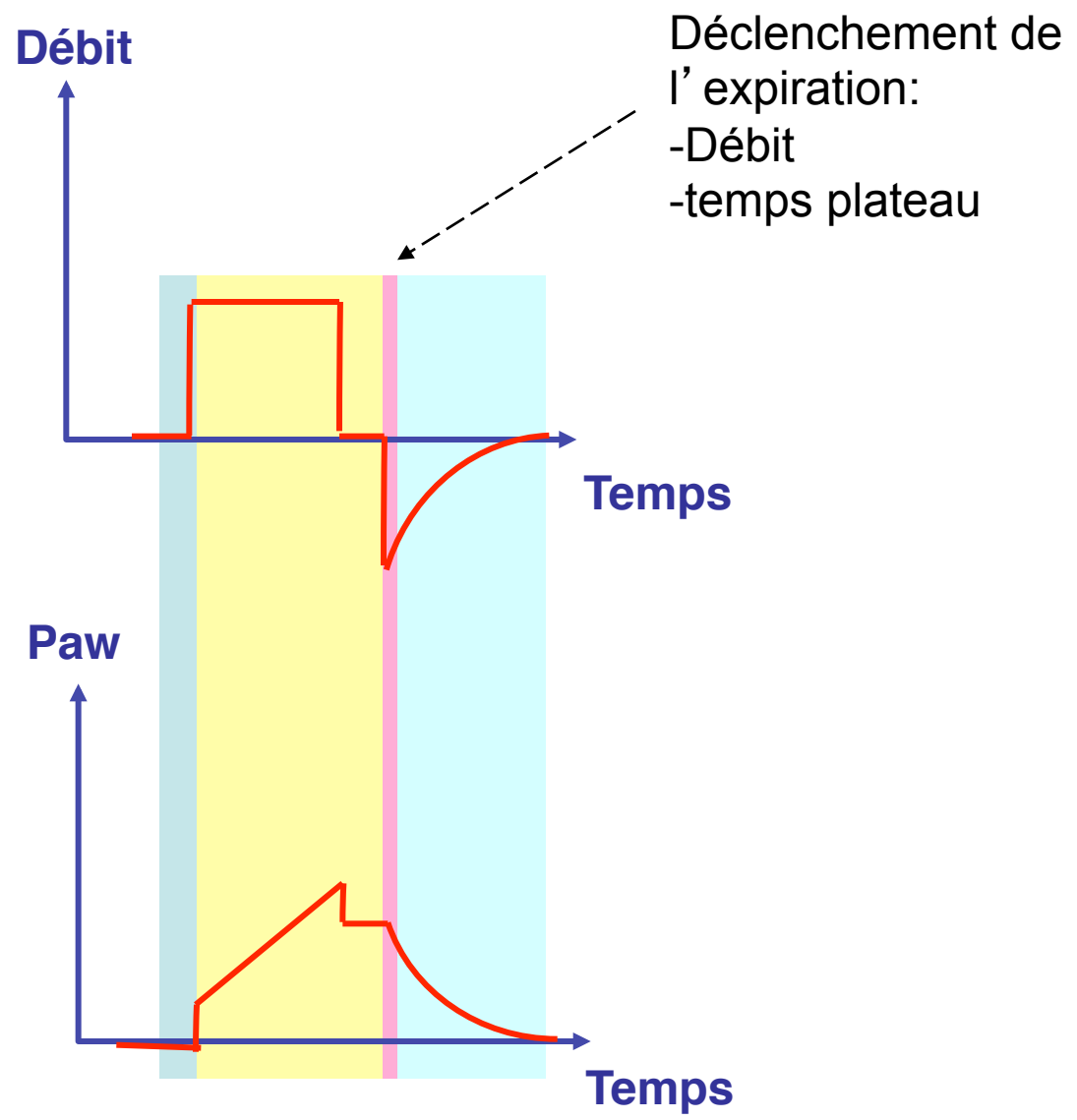
Les 4 phases du cycle ventilatoire en VC



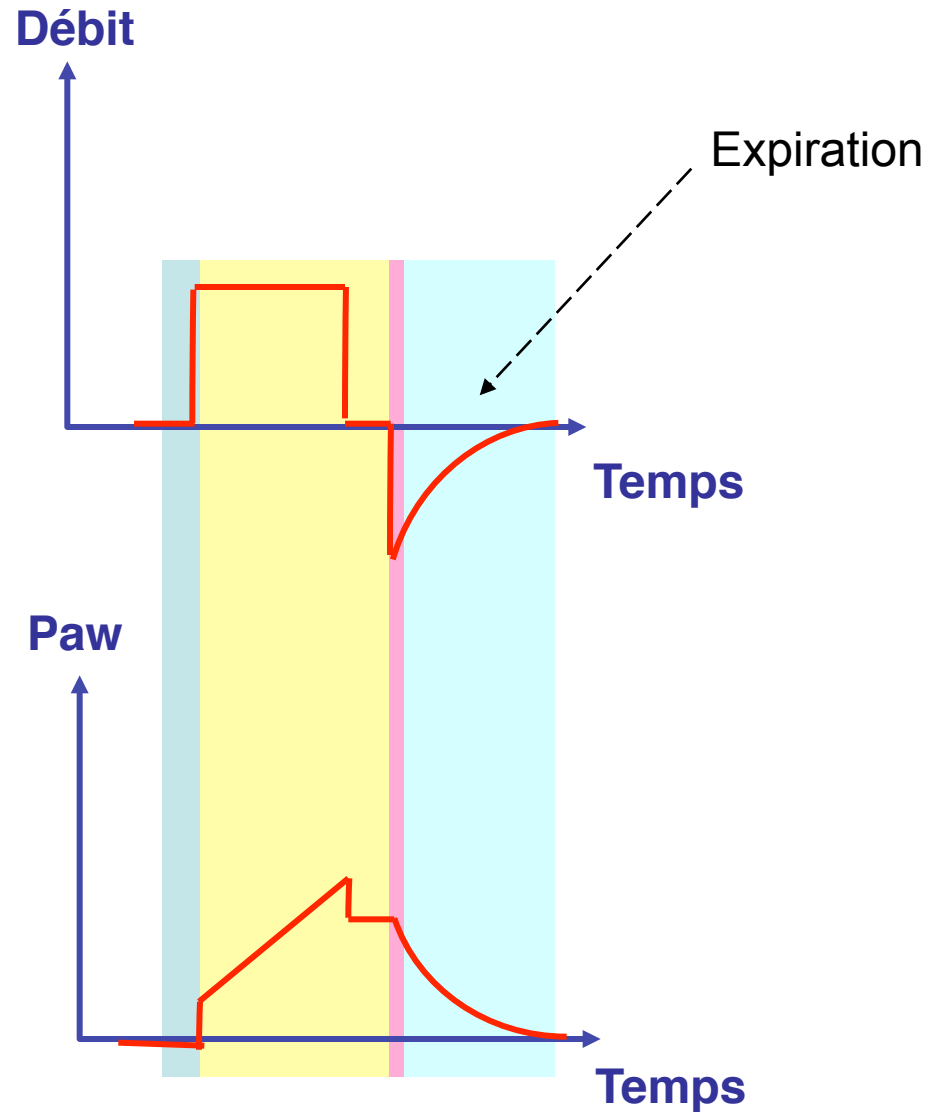
Les 4 phases du cycle ventilatoire en VC



Les 4 phases du cycle ventilatoire en VC



Les 4 phases du cycle ventilatoire en VC



Les réglages de la VC

VT

F

Débit

Temps
plateau

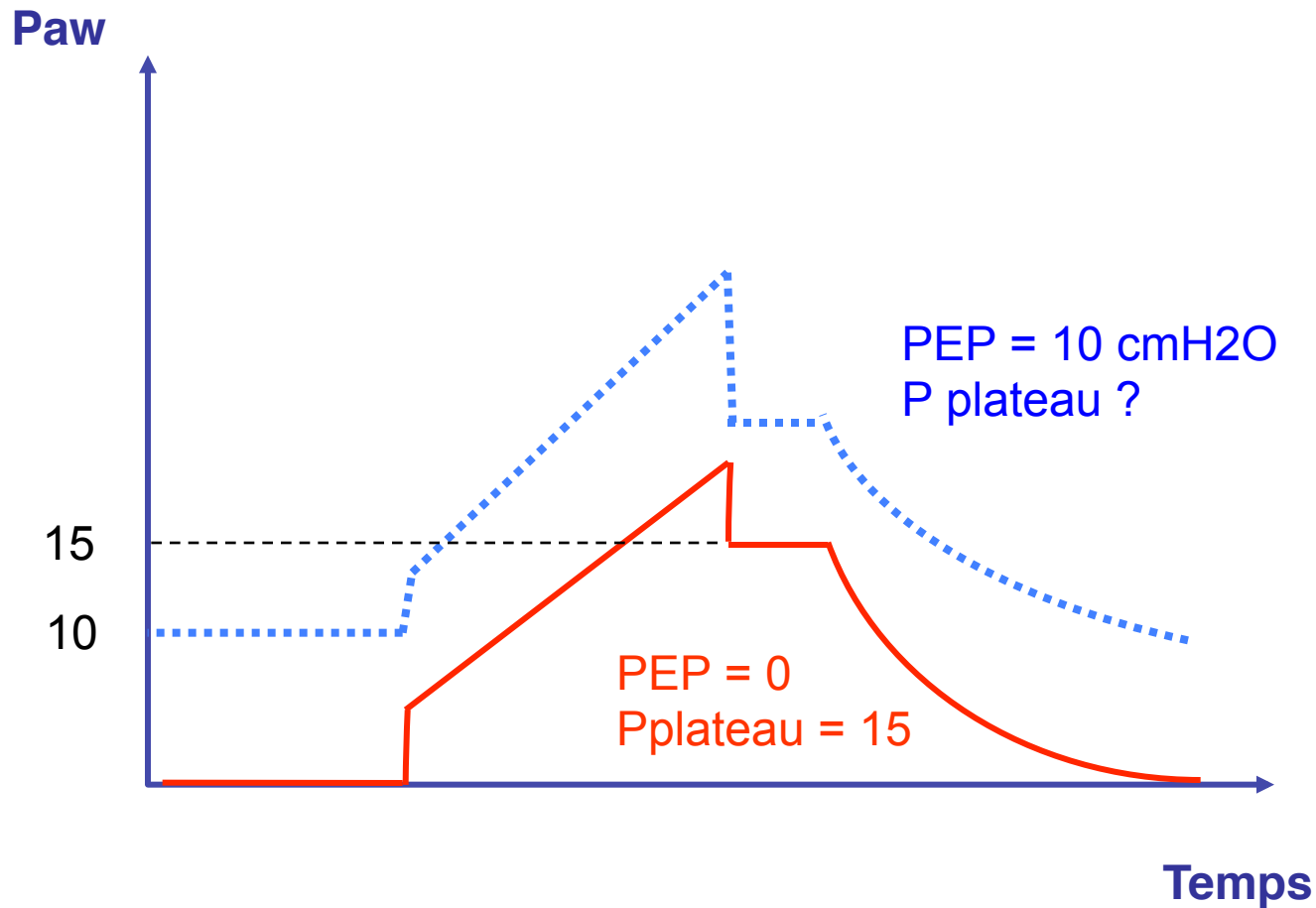
PEP

I/E

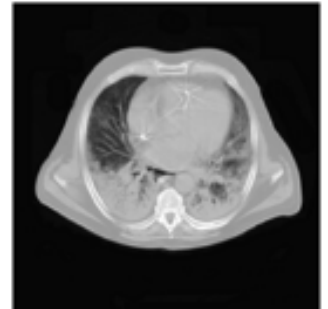
FiO₂

T_{inspi}

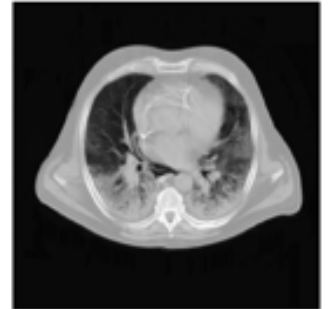
Pression Expiratoire Positive



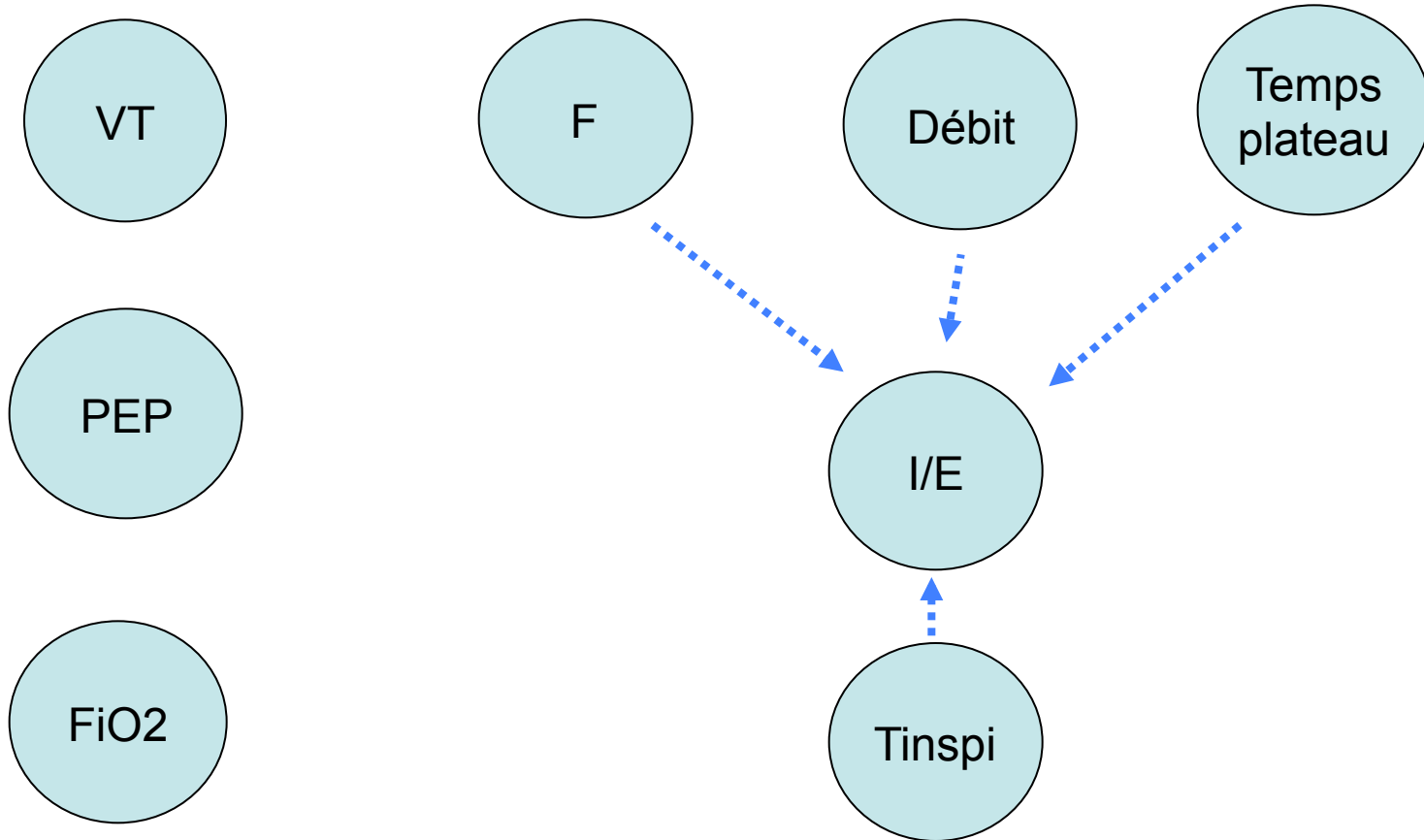
PEEP = 5 cmH₂O



30 cmH₂O



Les réglages de la VC



Fréquence respiratoire = 20 /min



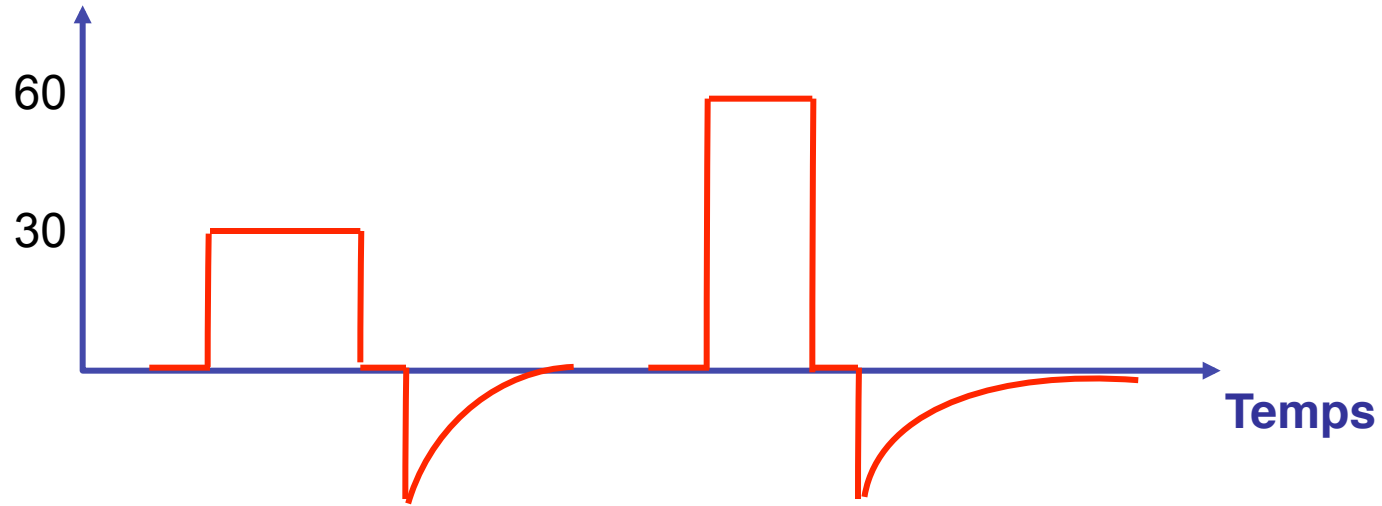
$$T_{\text{tot}} = T_i + T_e$$



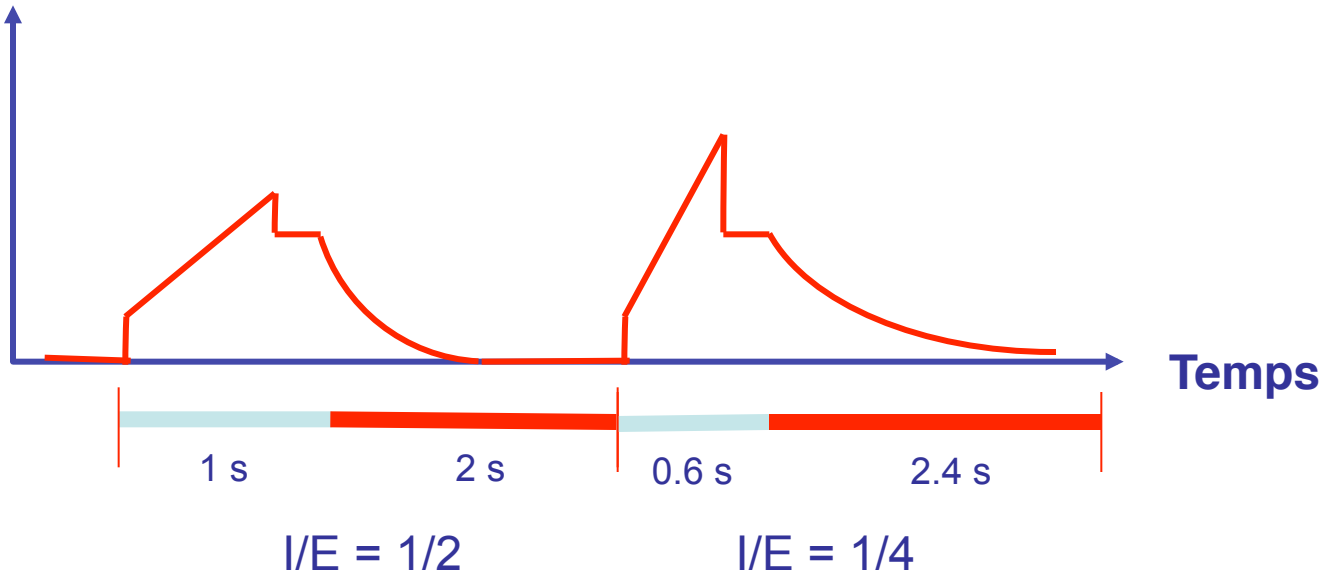
$$I/E = 1/2$$

Débit inspiratoire

Débit (l/min)

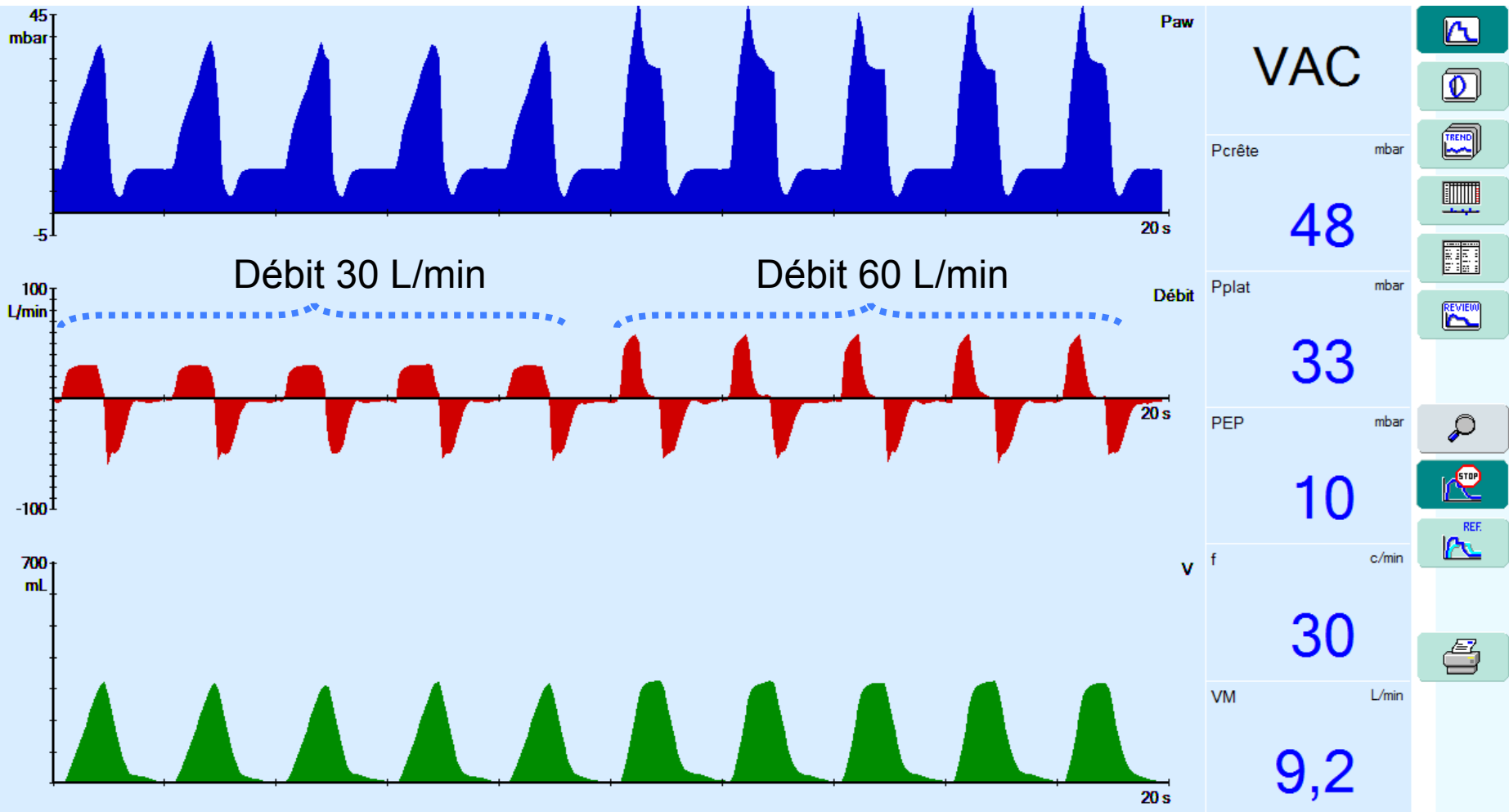


Paw

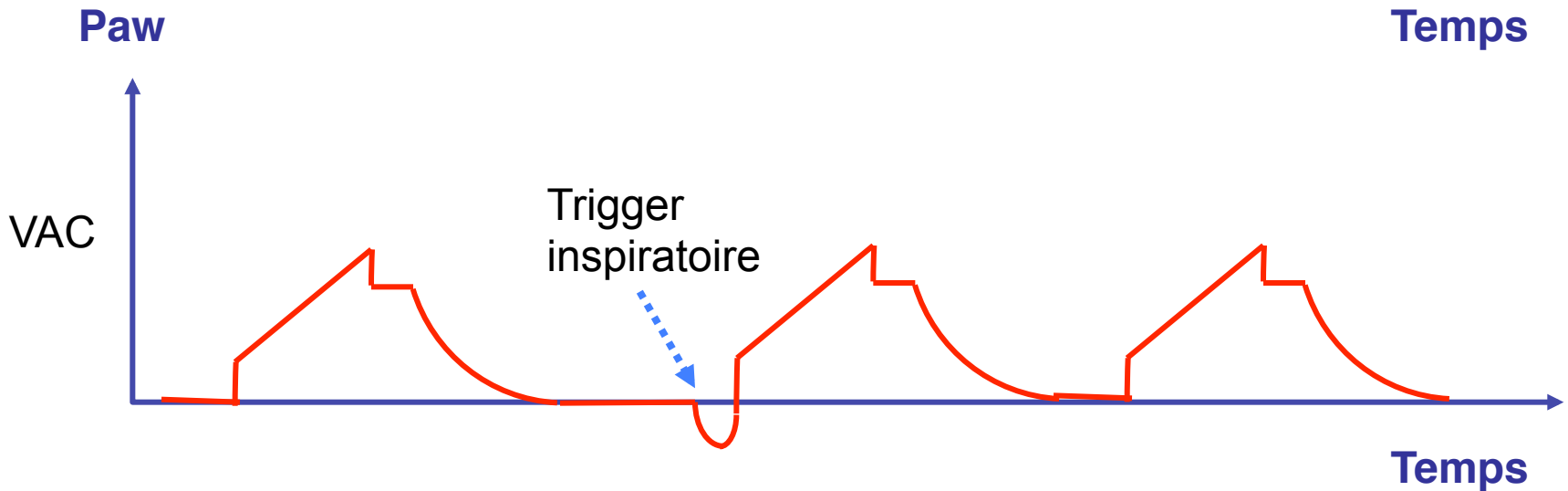
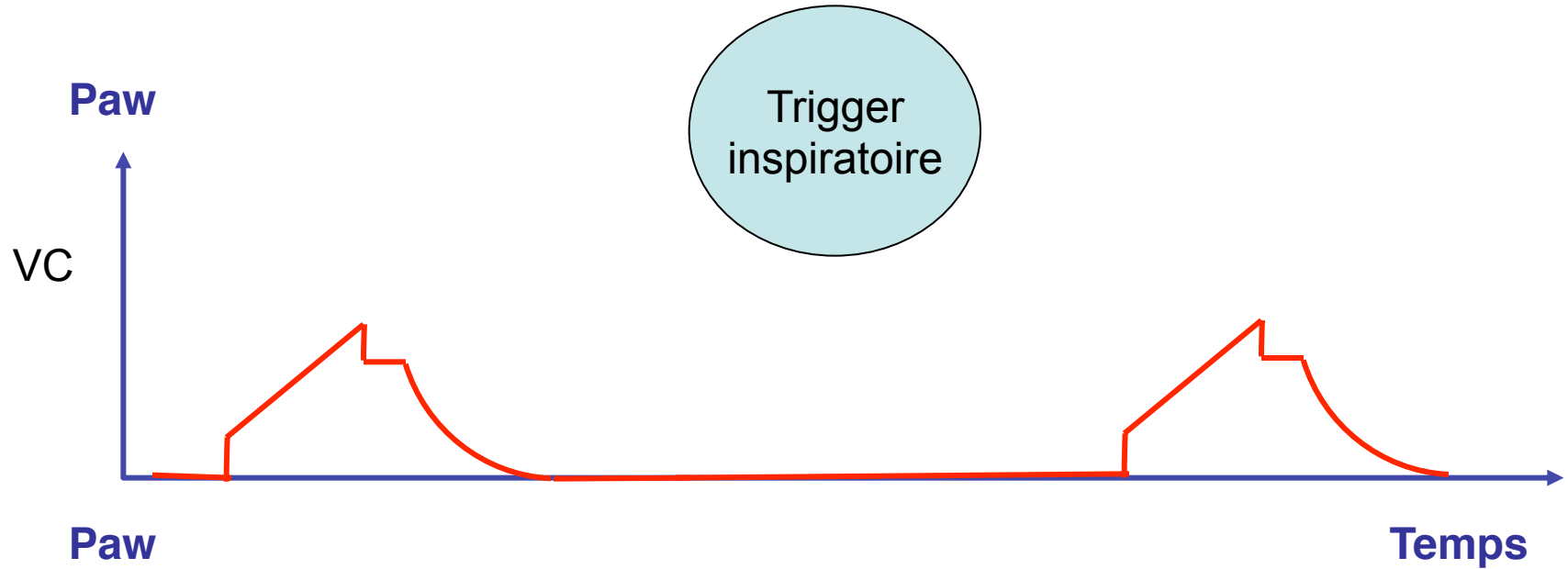


Débit inspiratoire

T inspi = 0.75 sec



Différence VC - VAC



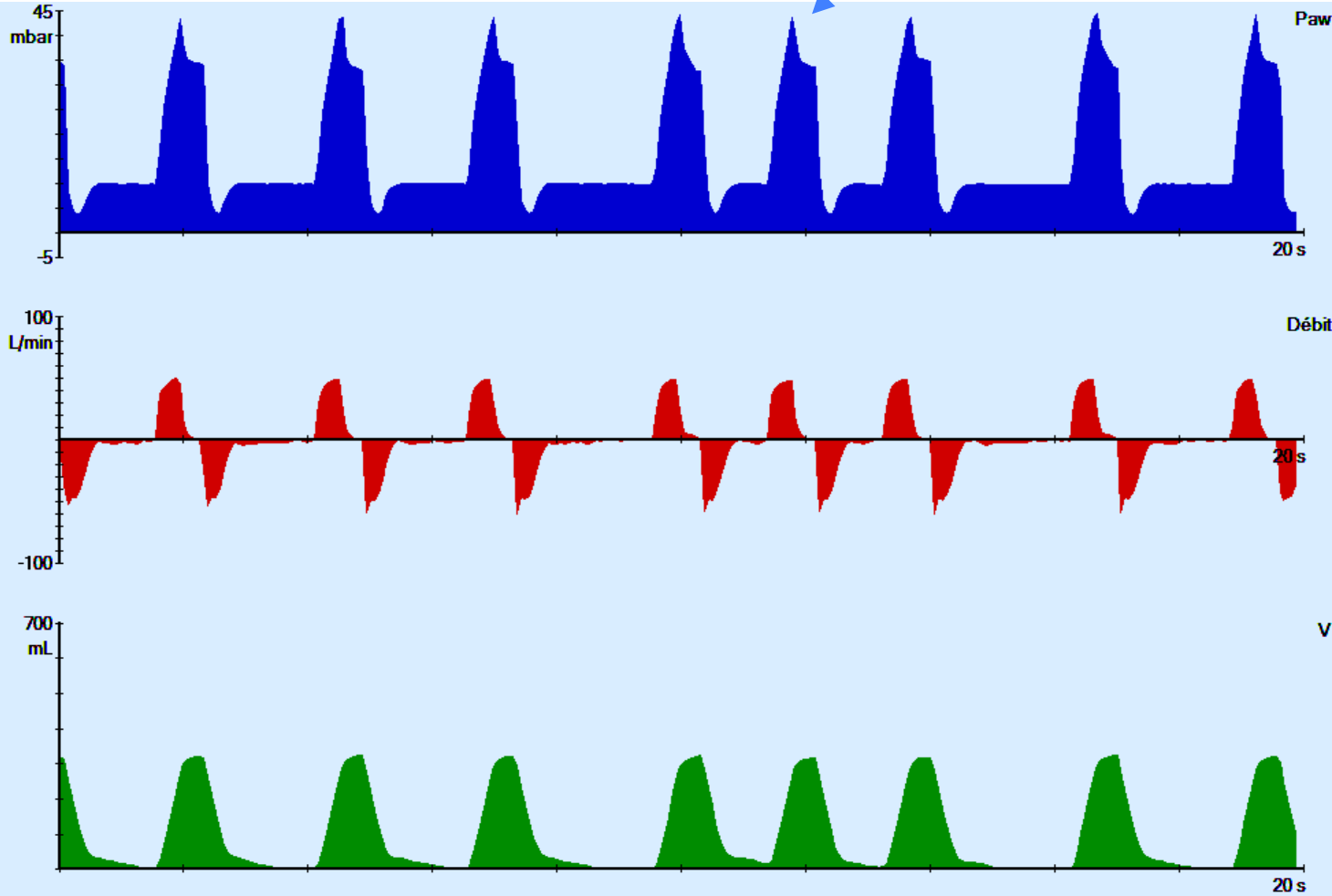
Trigger inspiratoire

Dépression ou débit de gaz inspiratoire, crée par la contraction des muscles inspiratoires du patient, qui déclenche l'inspiration

Trigger en débit : le respirateur laisse circuler un certain débit de gaz dans le circuit pendant la pause respiratoire. Lorsque le débit du côté expiratoire du circuit est plus petit que celui du côté inspiratoire, le respirateur sait que le patient a débuté une inspiration.

Trigger inspiratoire

Cycle spontané



VAC

Pcrête mbar

46

Pplat mbar

PEP mbar

10

f c/min

25

VM L/min

7,9

-
-
-
-
-
-
-
-
-

Aide inspiratoire (AI)
Pressure support
Pression assistée

Les réglages en VSAI

AI

pente

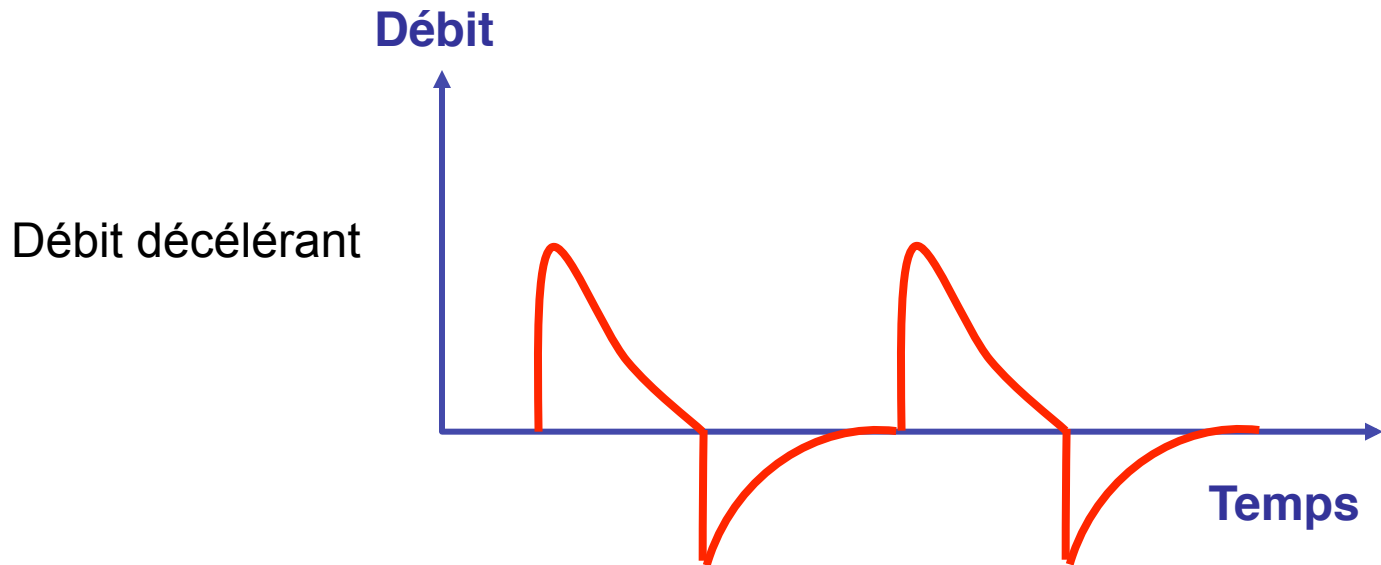
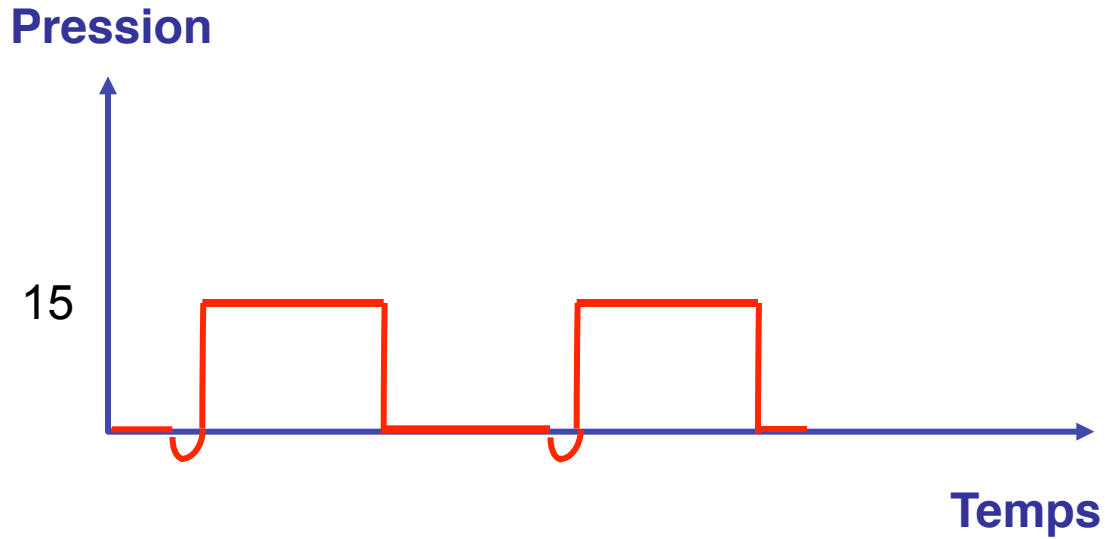
PEP

Trigger
inspi

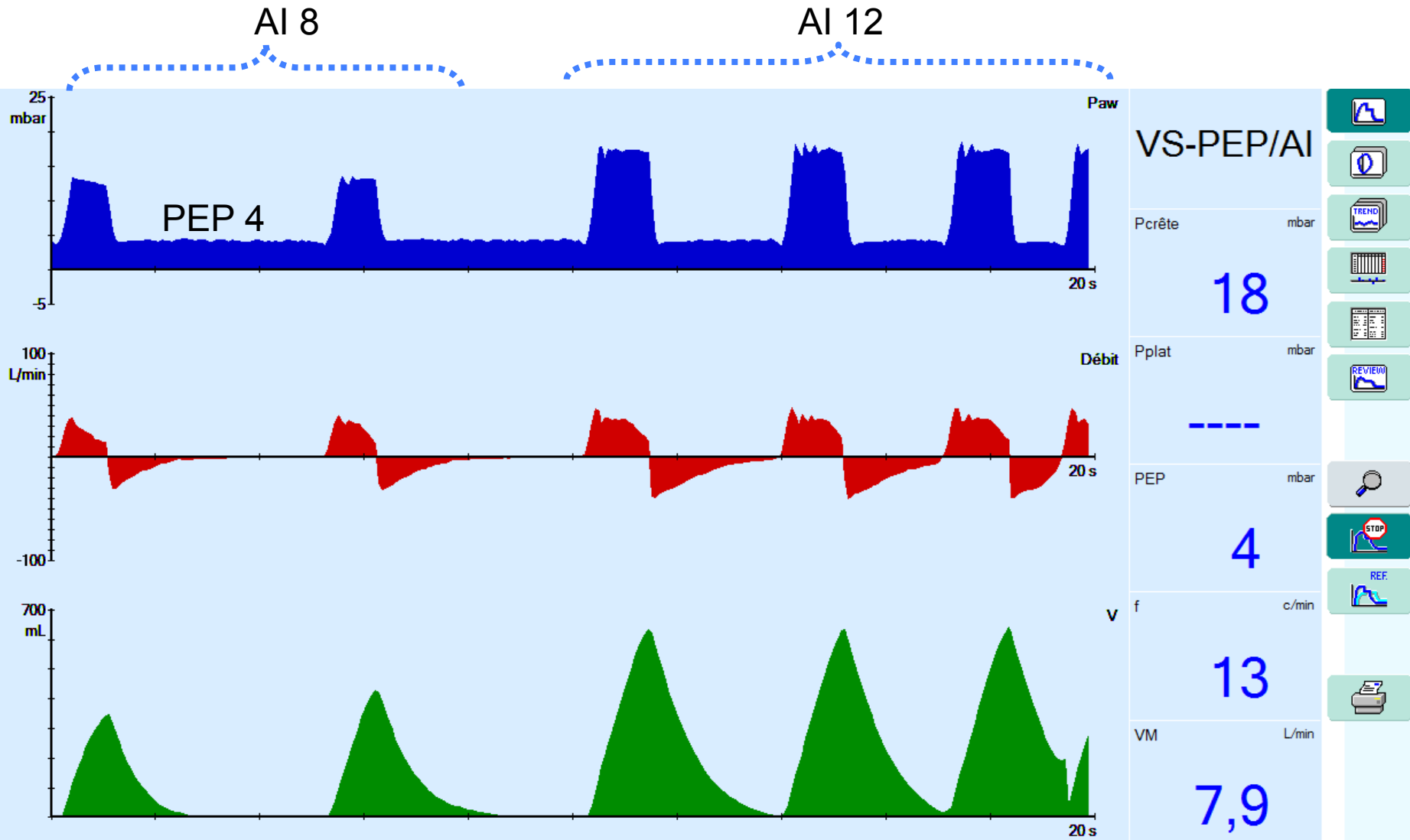
FiO₂

Trigger
expi

Pression = aide inspiratoire (cmH2O)



Pression = aide inspiratoire (cmH2O)



Les réglages en VSAI

AI

pente

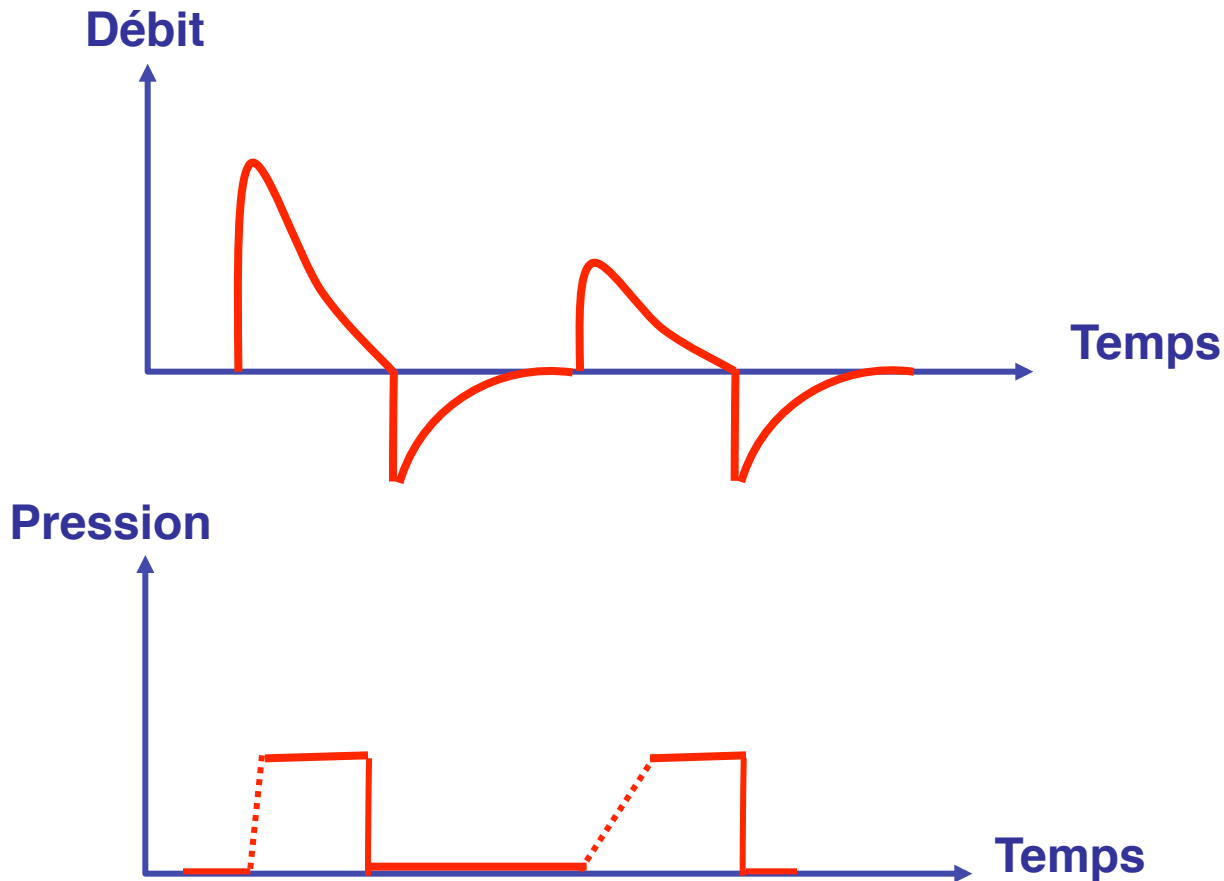
PEP

Trigger
inspi

FiO₂

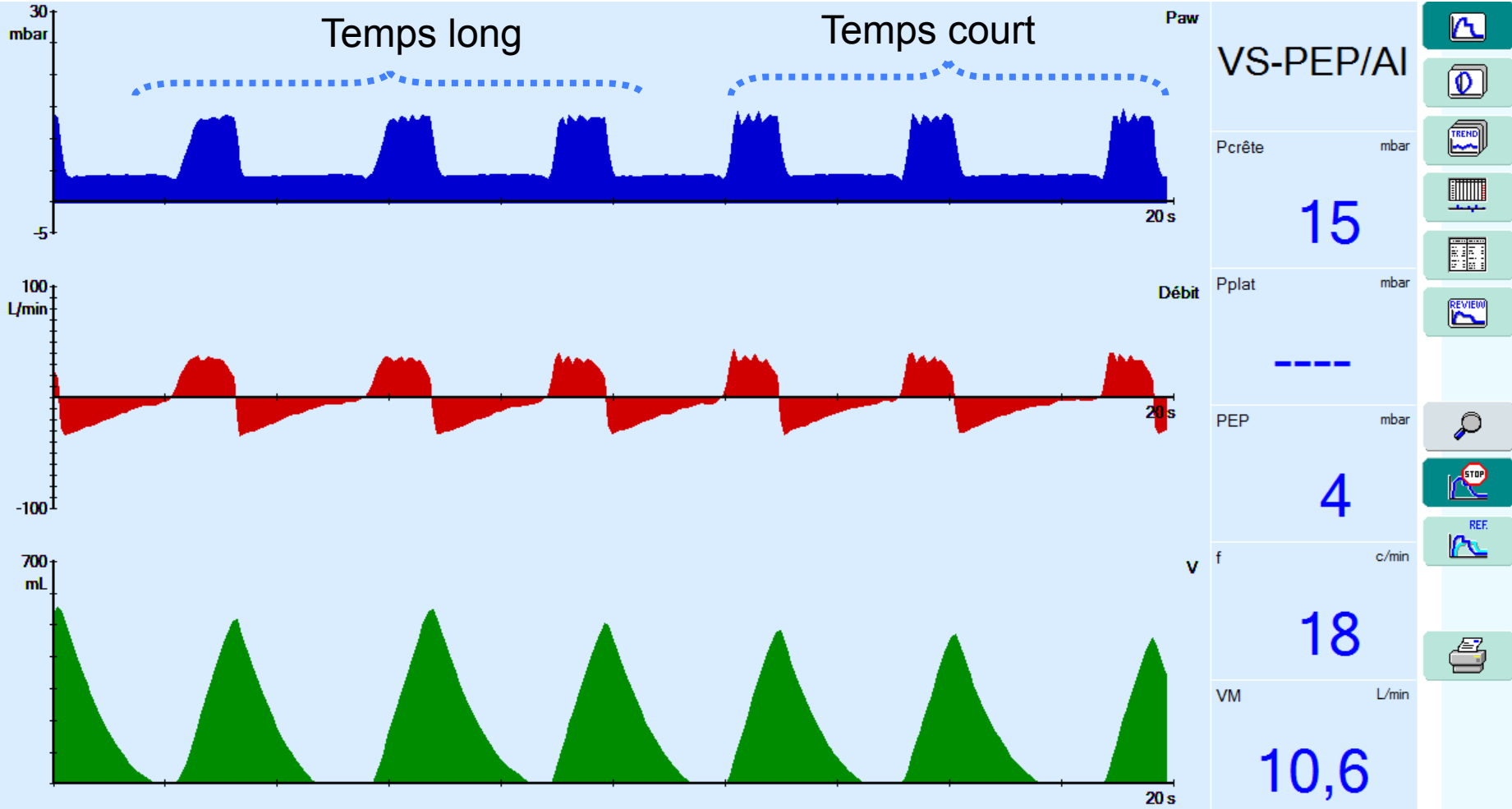
Trigger
expi

Pente en VSAI = temps de mise en pression (0-200 msec)



- Permet de mettre en adéquation la demande du patient et l'offre du respirateur
- conditionne le débit maximum atteint (jusqu' à 200 litres/min)

Pente en VSAI = temps de mise en pression



Les réglages en VSAI

AI

pente

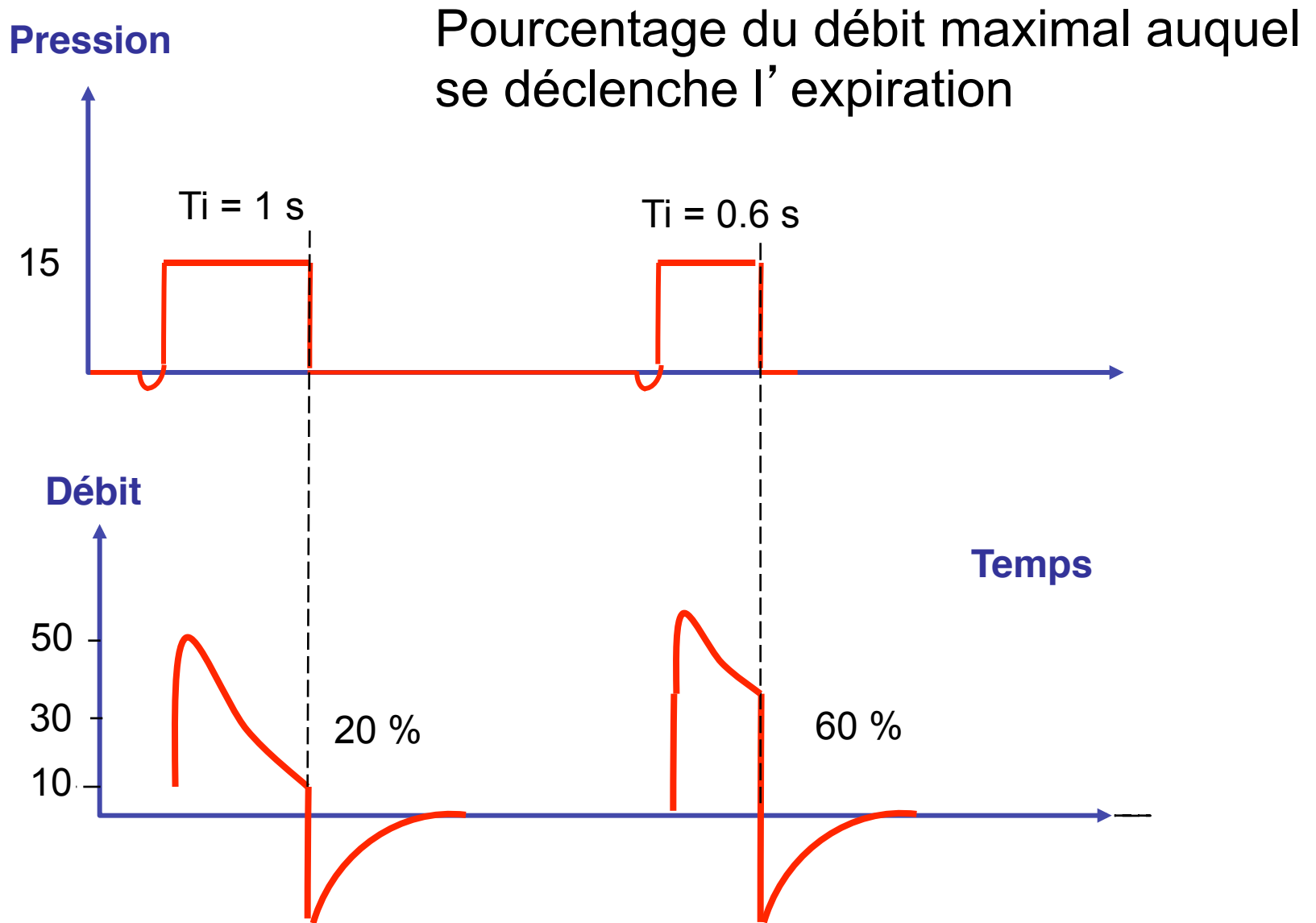
PEP

Trigger
inspi

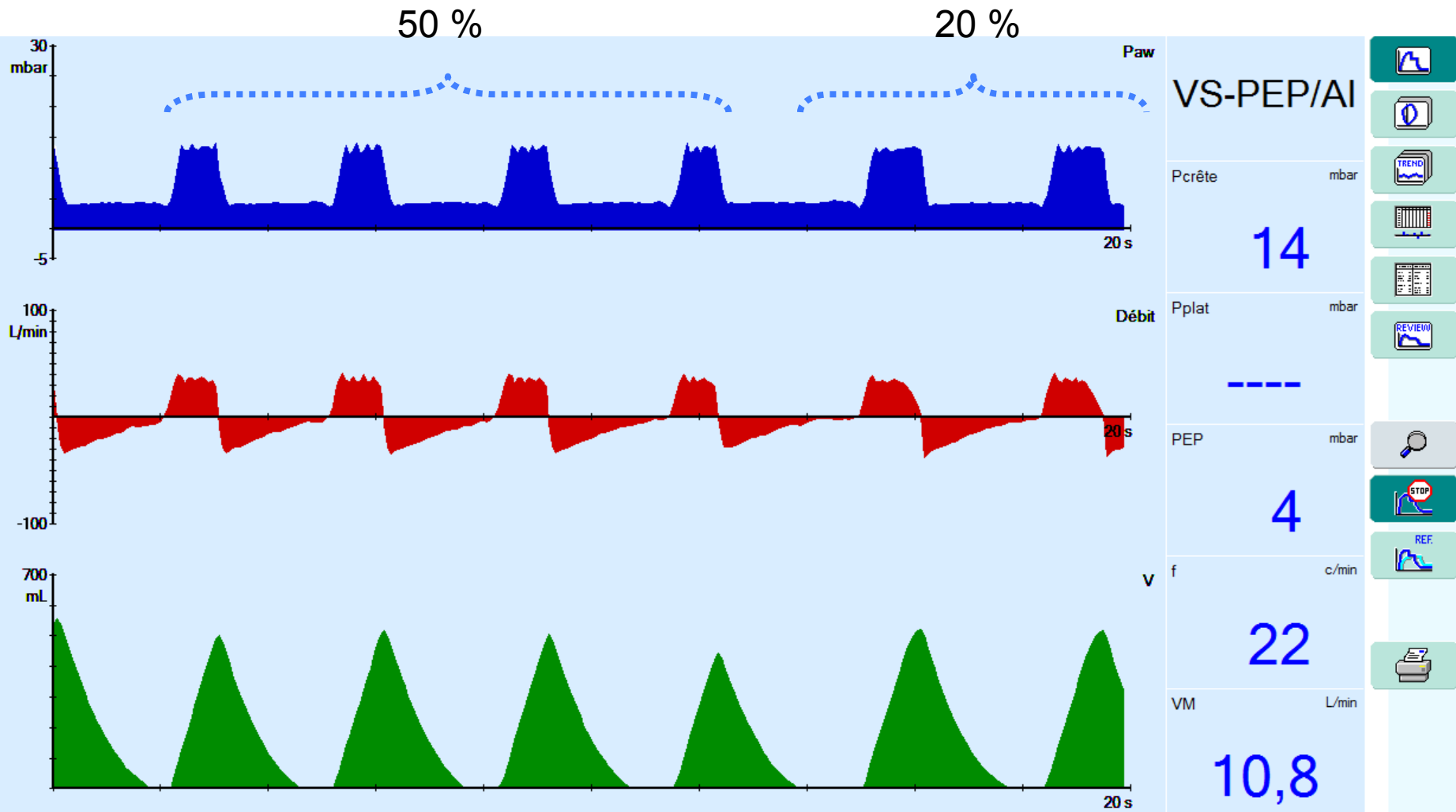
FiO₂

Trigger
expi

Trigger expiratoire en VSAI



Trigger expiratoire en VSAI

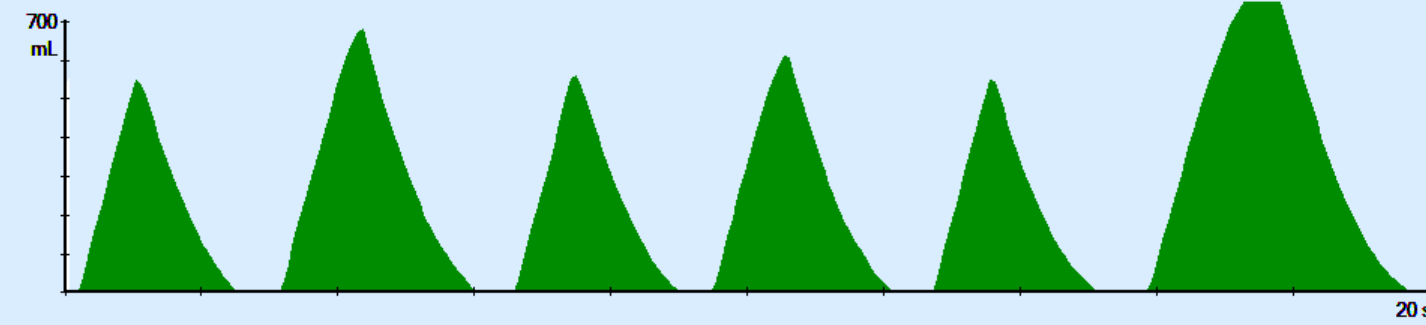
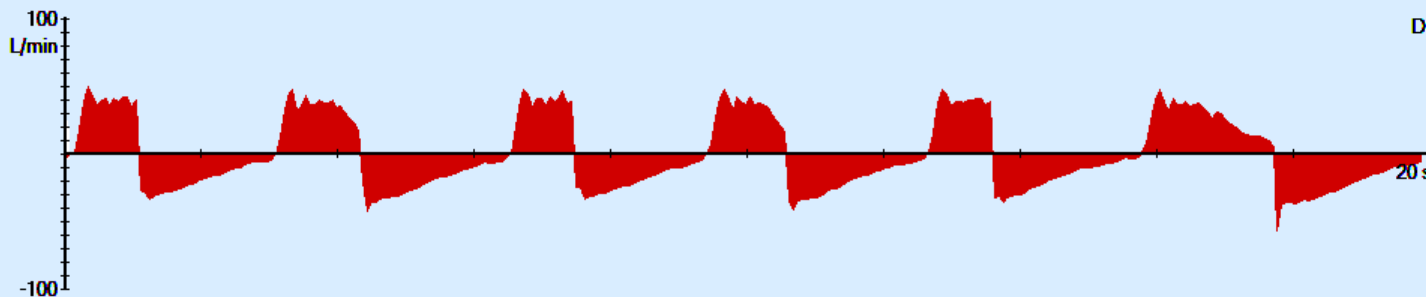
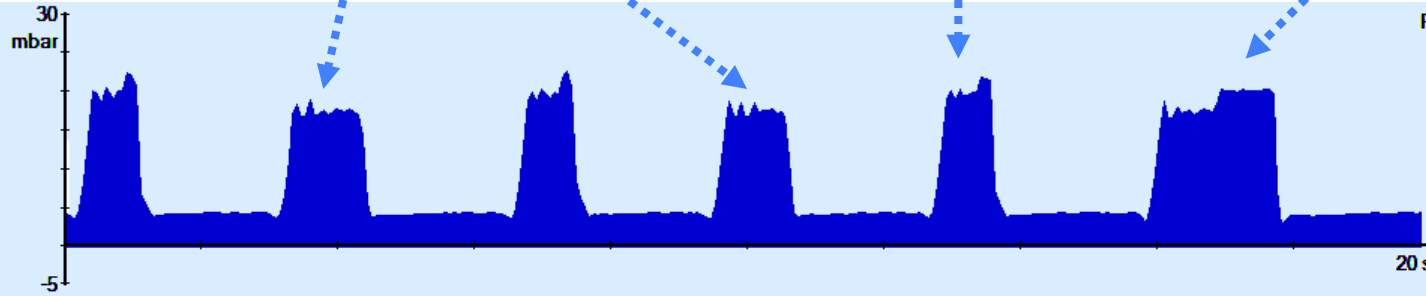


BIPAP

Cycles contrôlés en pression

Cycle en aide

VS sur cycle contrôlé



Paw
BIPAP/AI

Pcrête mbar
19

Débit
Pplat mbar

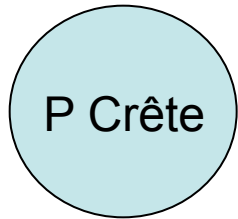
PEP mbar
4

f c/min
17

VM L/min
11

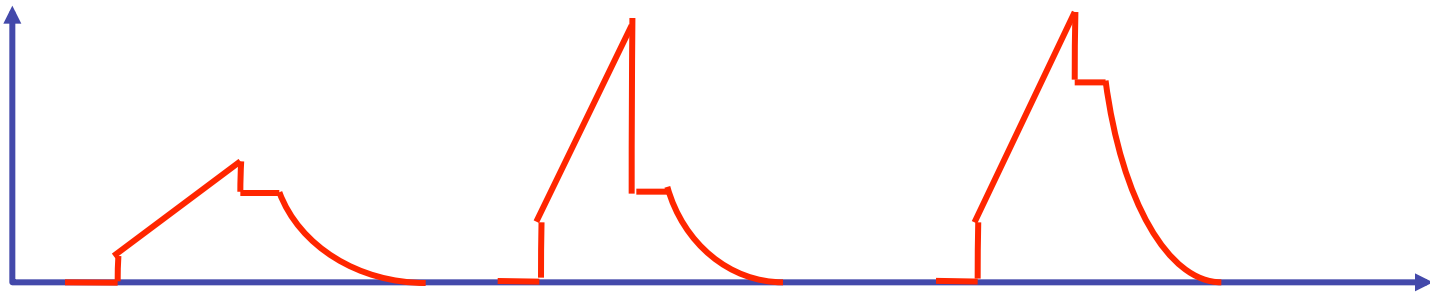
Surveillance de la ventilation mécanique

Surveillance en VC – VAC



dépiste : obstruction +++, désadaptation

Pression



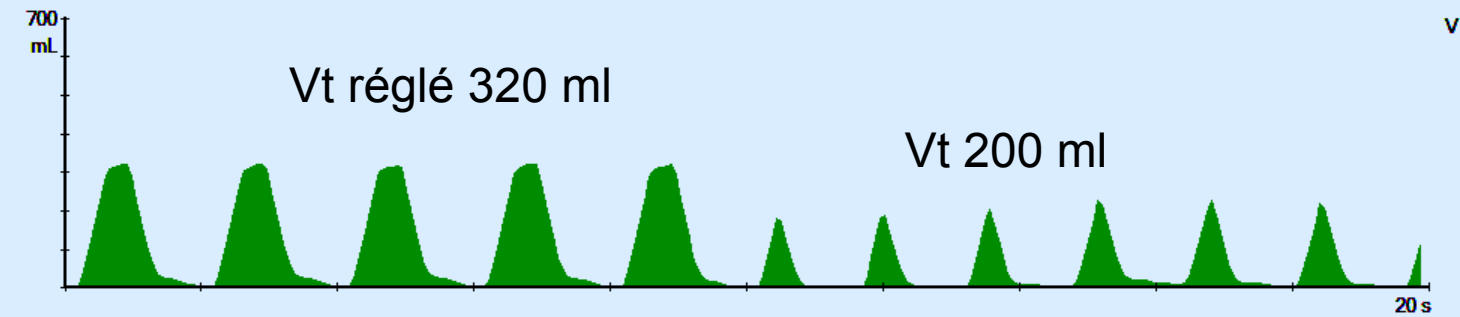
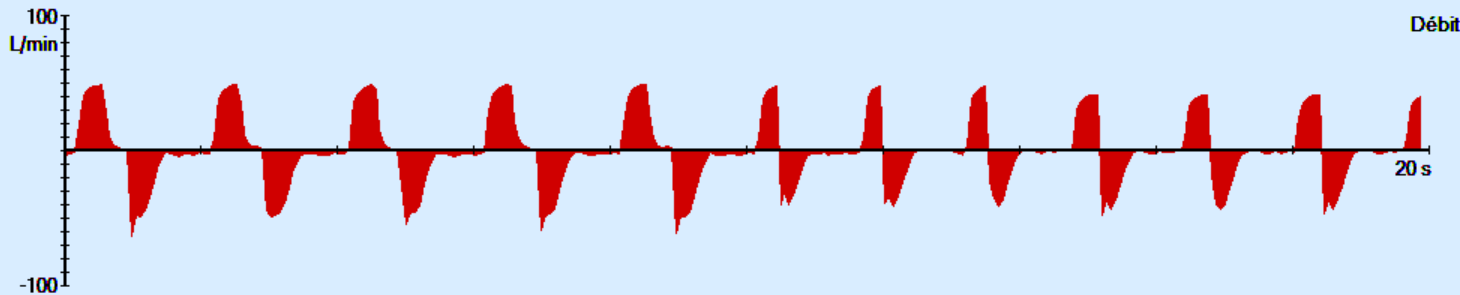
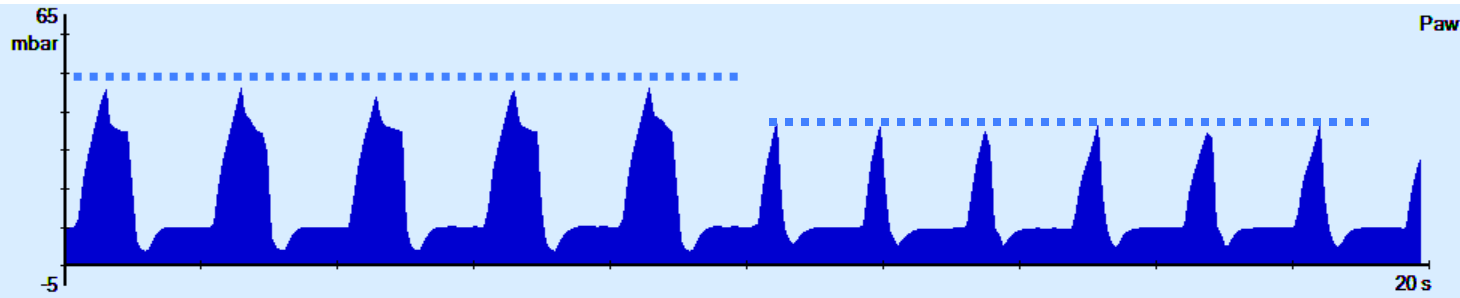
- obstruction de sonde
- bronchospasme
- encombrement
- désadaptation

- pneumothorax ?

Temps

Alarme P crête 50 cmH2O

Alarme P crête 35 cmH2O



VAC

Pcrête mbar
41

Pplat mbar
29

PEP mbar
10

f c/min
32

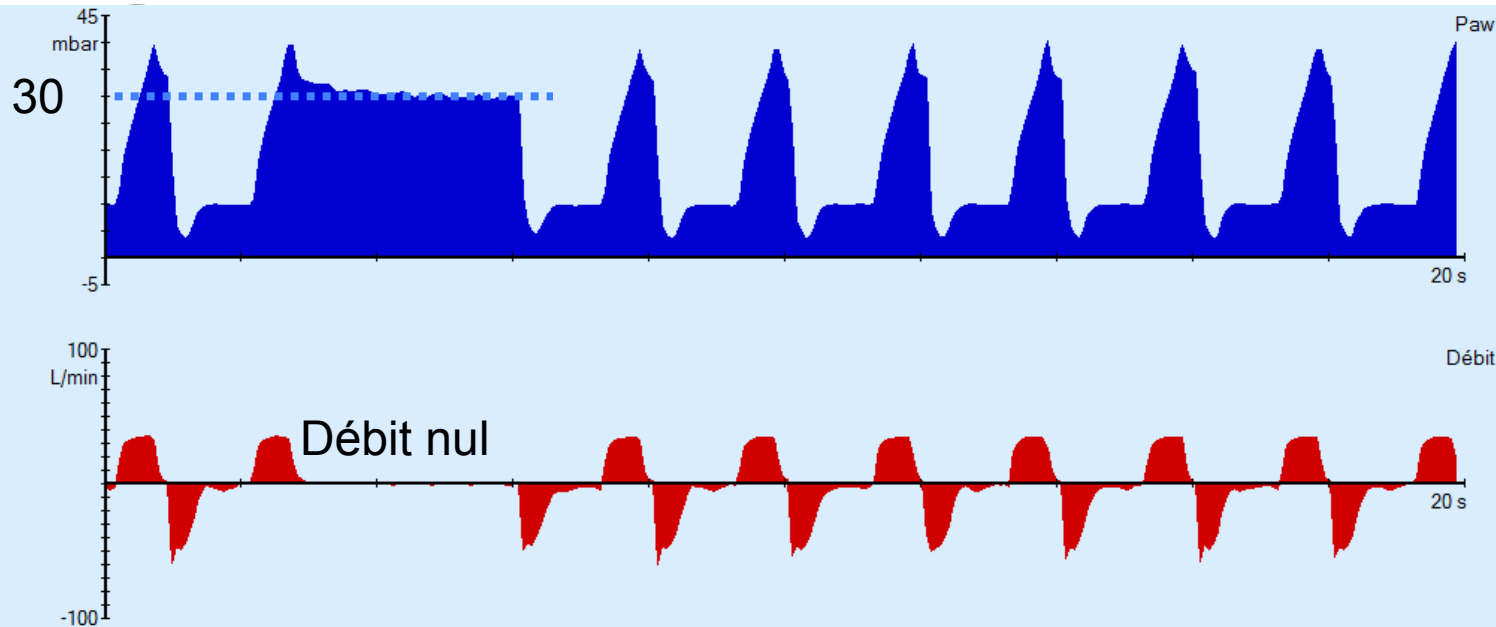
VM L/min
9

-
-
-
-
-
-
-
-
-

Surveillance en VC – VAC

P Plat

- Intéressante car P_{plat} reflet du caractère délétère de la ventilation si élevée (> 30 cmH₂O)
- fournie de façon continue sur certains ventilateurs si plateau réglé
- mesurée le plus souvent en effectuant un plateau (pause inspiratoire)



VAC

Pcrête mbar

39

Pmoy mbar

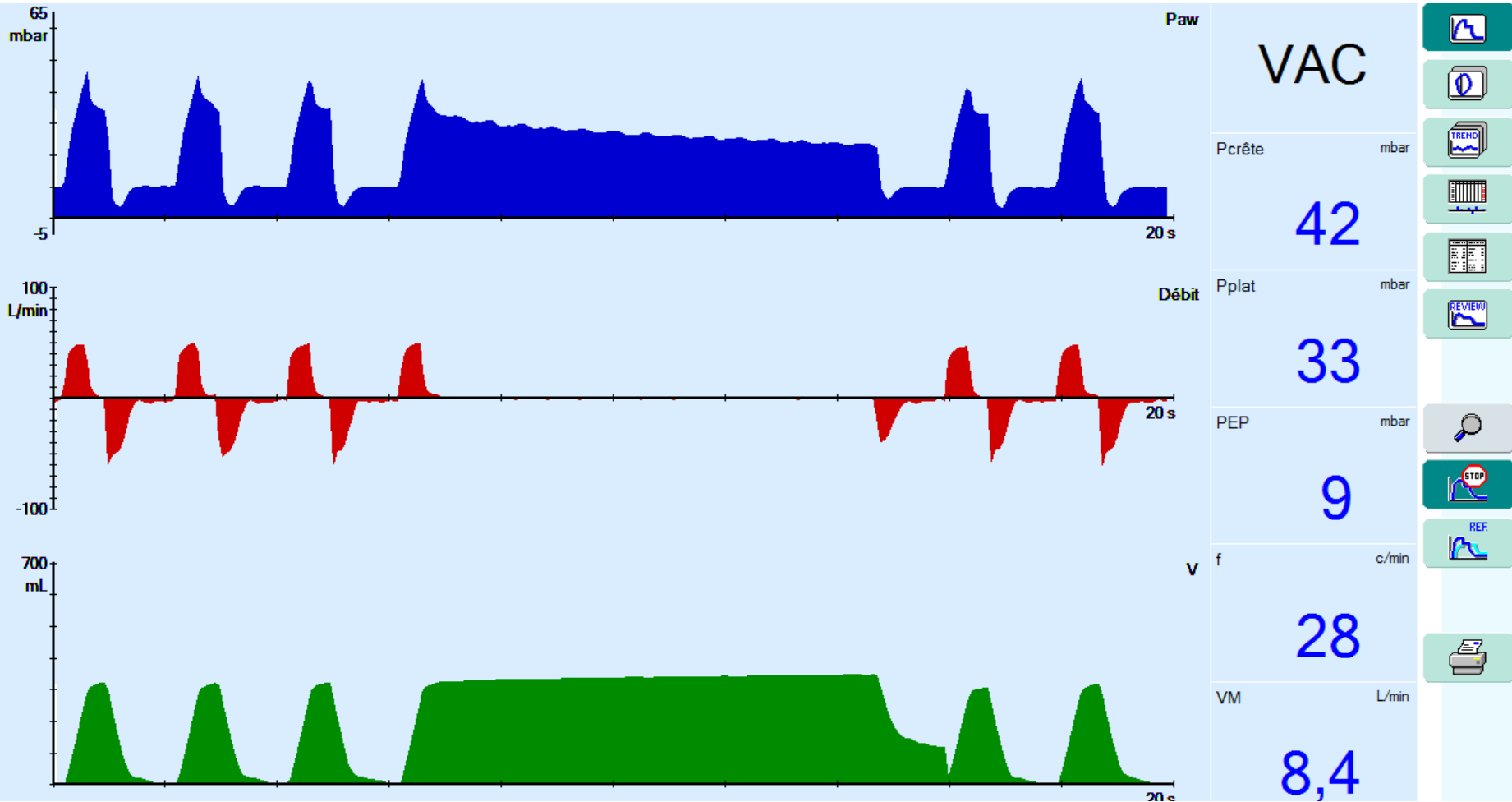
17

PEP mbar

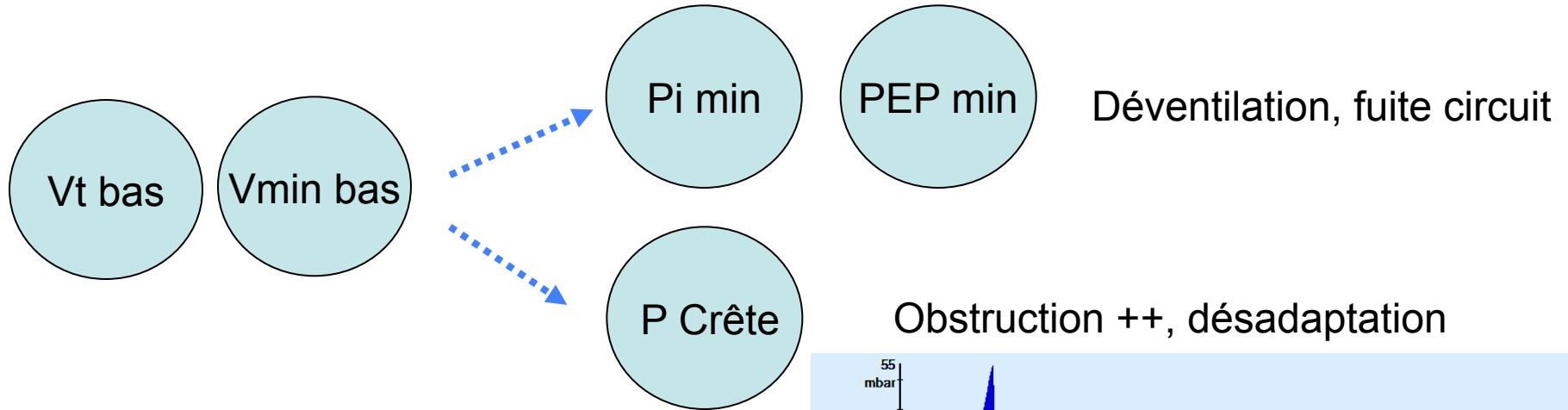
9



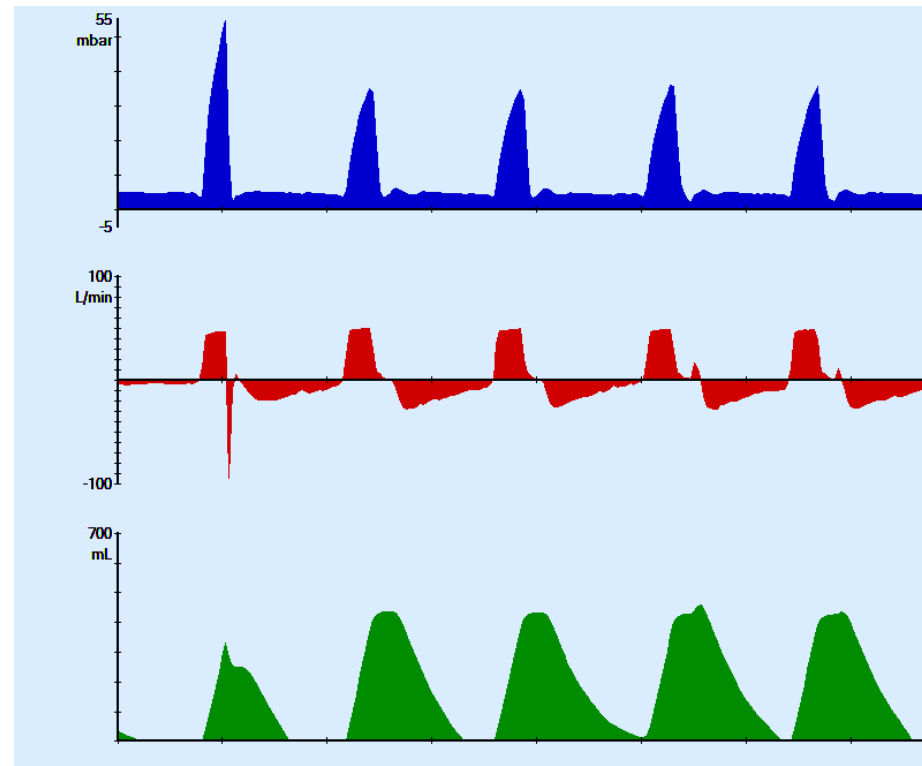
Pression de plateau : fuite aérienne



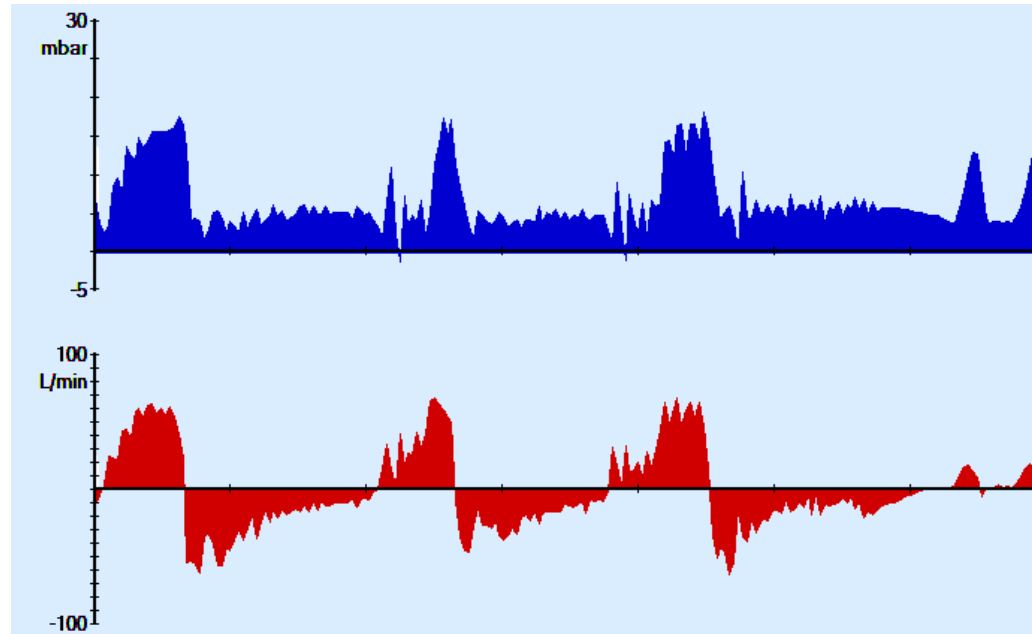
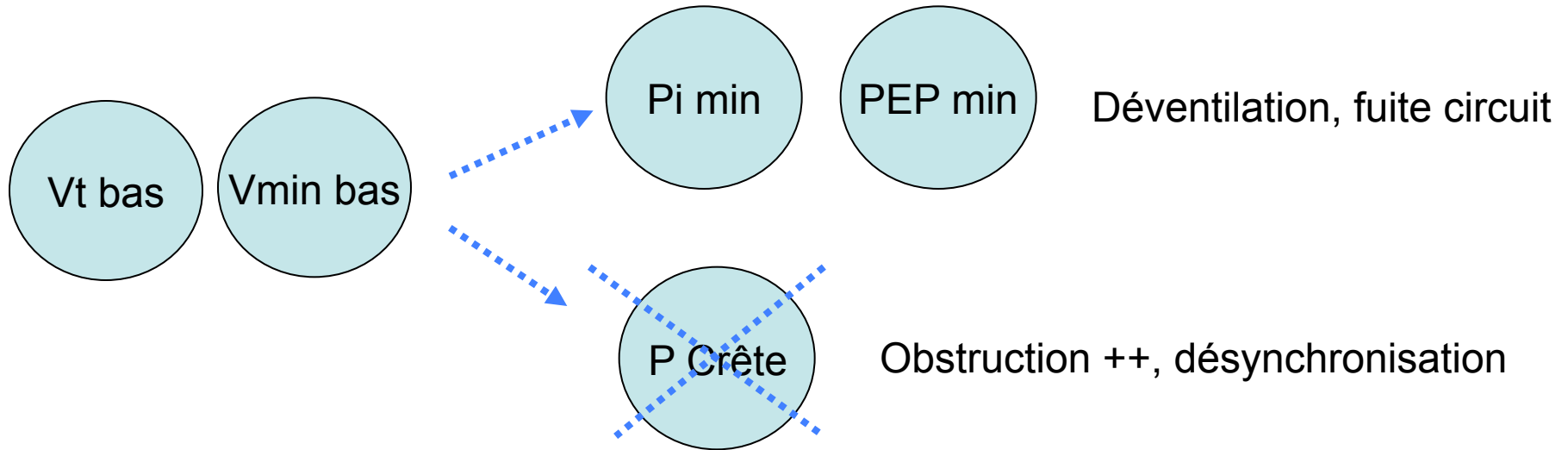
Surveillance en VC – VAC



Obstruction ++, désadaptation



Surveillance en VSAI



PaO₂

MEAN PRESSURE MONITOR

34

P_{mean} - cm H₂O

P moyenne

Set Max. P_{aw}

4 0

P_{aw} > 90 cm H₂O

45 - Sec Silence

Reset Power Fail

3 0

P_{aw} < 5 cm H₂O

Oscillator Overheat

Oscillator Stopped

OSCILLATOR

Piston Position And Displacement

70

Amplitude (P) - cmH₂O

DeltaP

33

% Inspiratory Time

I/E

6

Fréquence

Frequency - Hz

MEAN PRESSURE

LIMIT (10-40 cm H₂O)

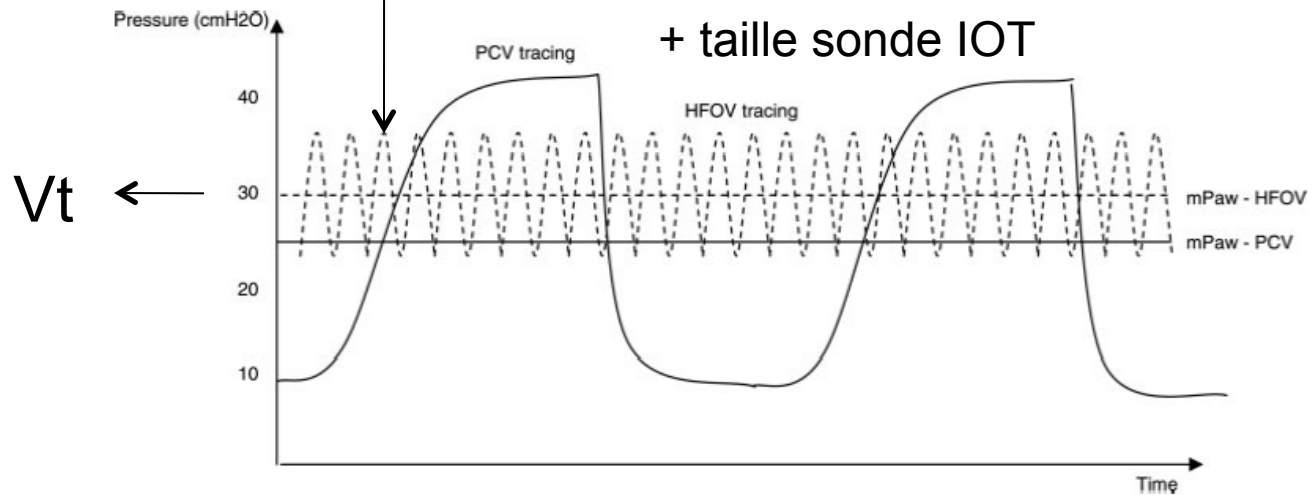
MIN - - MAX

ADJUST (20 at Flow Depend n)

MIN - - MAX

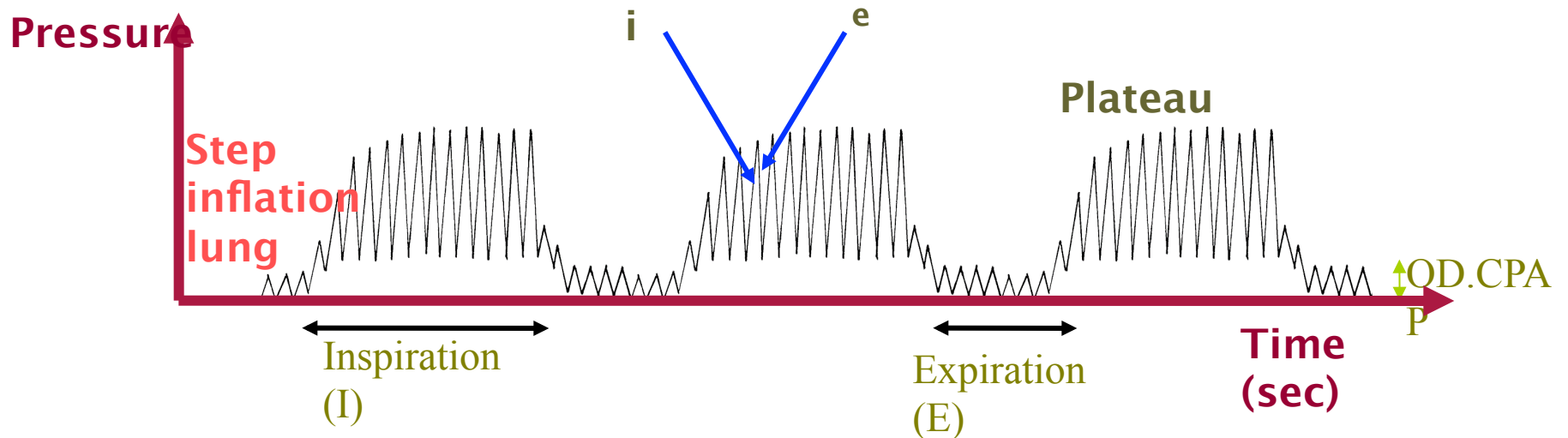
BIAS FLOW

LPM





HFPV



Merci de votre attention