

PC/PS Ventilator Management
East Bay Newborn Specialists Guideline
Prepared by D Durand
09-27-10

Initial PC/PS settings

- Positive end expiratory pressure (PEEP) 5-8 cm H₂O
- PC T_{insp} 0.25-0.35 sec
- PC Rate 10-60 (if the patient can consistently trigger the ventilator, aim for PC rate well below the patient's spontaneous rate)
- In most cases, a decrease in PC rate will be offset by the patient's drive to increase the number of PS breaths given, so there is no need to "fine tune" PC rate. Do not decrease PC rate to less than 10.
- PC adequate to give exhaled tidal volume 4-6 mL/kg
- PS adequate to give exhaled tidal volume 4-6 mL/kg

Adjusting PEEP to achieve optimal lung inflation

- CXR is not a particularly good measure of lung inflation. However, it can provide a crude estimate of significant over- or under-inflation.
- Adjustments in both PIP and PEEP should aim to optimize lung inflation, FIO₂, and PaCO₂.
- In general, the target lung inflation has the dome of the right diaphragm between 8 and 9.5 ribs
- Excessive V_T can contribute to over-inflation on CXR – aim to keep V_T in the target range of 4-6 mL/kg
- Air trapping from inadequate expiratory time (rate too high) can also contribute to over-inflation

Adjusting PEEP to achieve optimal FIO₂

Assuming the exhaled tidal volume is in the target range of 4-6 mL/kg, and the lung inflation is in the target range

- FIO₂ > 0.40, increase PEEP in 1 cmH₂O increments (usually to max of 8 cm H₂O) until FIO₂ no longer decreases
- FIO₂ < 0.30, decrease PEEP in 1 cmH₂O increments (to minimum 4-5 cm H₂O) until FIO₂ begins to increase, or until patient is at extubation settings
- If FIO₂ increases by 0.2, repeat a CXR to evaluate lung inflation.

Adjusting settings based on PaCO₂

Assuming the exhaled tidal volume is in the target range of 4-6 mL/kg, and the lung inflation is reasonable. If PaCO₂ is below the target range, make sure the ventilator is not auto-cycling. If PaCO₂ is above the target range, make sure the patient is triggering the ventilator.

- In general, a 10% increase/decrease in PC/PS will result in a change in PaCO₂ of 5-10 torr.

Adjusting PC and PS

Since the patient will be setting her own ventilator rate, PEEP, PC, and PS are the main parameters we can adjust.

- Adjust PC and PS based on graphics monitoring to deliver V_T of 4-6 mL/kg
- In most cases, PC and PS will be set at the same level so they both deliver the same V_T

Automode

- Automode is an option on the Servo ventilator where the ventilator is in either PC SIMV or pure PS (without any PC), depending on the patient's respiratory drive. This is an alternative to "regular" PC/PS in some patients.