









Course equipment

Equipment items that are used in NCPB courses are indicated below.




•Resuscitation table (optional)

①		<p>- Radiant warmer</p> <p>It is highly effective to hold an NCPB course using an actual radiant warmer (Photo:①). A radiant warmer equipped with a switch for keeping warm, aspirator, oxygen blender, and timer makes it possible to perform the simulation in a more realistic environment. Note that it is difficult to carry a radiant warmer into some course halls and that some facilities have rules not to use equipment for their regular operations in a seminar. The organizer must confirm, in advance, whether a radiant warmer and other clinical devices may be used.</p>
②		<p>- Resuscitation training table</p> <p>When no actual radiant warmer can be used, we recommend placing a simplified resuscitation table (Photo:②) on a meeting table.</p>
③		<p>It is possible to put a neonatal resuscitation model directly on a meeting table for training. However, it is preferable to use a simplified table with legs that adds a height of approx. 5 cm (Photo:③) because a meeting table is lower than an actual resuscitation table.</p>





•Neonatal resuscitation model

①		<p>- Radiant warmer</p> <p>A neonatal resuscitation model (Photo:①) accurately simulates the constitution, body surface, oral cavity, airway, respiratory tract, and other anatomical structures of a neonate. A model is carefully produced so that the rib cage moves synchronous to appropriate positive pressure ventilation, that adequate resilience is felt during chest compression, and that landmarks for tracheal intubation can be correctly understood.</p>
②	 	<p>Using a neonatal resuscitation model, it is possible to perform a highly realistic simulation that is close to the actual neonatal resuscitation procedures, including the opening of the airway, artificial respiration, chest compressions, and tracheal intubation. The NCPB courses are held with a focus on simulation training using an accurate neonatal resuscitation model. There is also a highly functional simulator that expresses heartbeat, breathing, skin color, cries, and other factors through remote control and keeps a log of the scenario program as seminar records (Photo:②).</p>

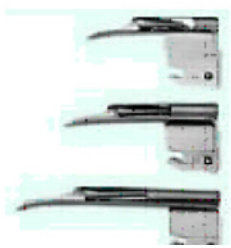
•T-piece resuscitator

①		<p>- T-piece resuscitator (to be used for Continuous Positive Airway Pressure (CPAP))</p> <p>After the initial procedure for resuscitation is completed, when spontaneous respiration exists with a heart rate of 100 per minute or higher, and both forced breathing and central cyanosis are recognized, we recommend applying Continuous Positive Airway Pressure (CPAP) at first using the air.</p>
②		<p>Using a T-piece resuscitator(Photo:①,②), it is possible to adjust the end-expiratory airway pressure on the dial at hand (i.e. on the patient side) while setting the Peak Inspiratory Pressure (PIP) on the resuscitator dial. This device makes it possible to set inspiratory pressure and end-expiratory airway pressure required for artificial respiration to pre-specified levels. The timing of expiration is also easily performed by controlling the valve with the resuscitator's thumb.</p>
③		<p>This device has the advantage that it allows anyone to perform artificial respiration because the resuscitator can be concentrated on the adherence of the mask. On the other hand, this device also has the disadvantages that a gas supply is needed, that it is not effective when there is a large leak around the mouth, just as in the case of ordinary artificial respiration, and that it is difficult to feel pulmonary compliance with this device. Recently, a disposable T-piece circuit that does not require a respirator has also become available (Photo:③).</p>


•Neonatal resuscitation bag

①		<p>- Self inflating bag</p> <p>A self-inflatable bag (Photo:①) has the advantage that the bag naturally inflates to the original size without connecting to a gas supply. The bag inflates even if the mask is loosely attached, thereby enabling the resuscitator to continue artificial respiration.</p>
②		<p>Because a relief valve is attached, the risk of applying excessive pressure is alleviated. On the other hand, this type of bag has the disadvantage that it is difficult for the resuscitator to recognize when artificial respiration is not effective. Therefore, the resuscitator must confirm whether artificial respiration is being performed adequately. A reservoir is required to use high-concentration oxygen. Recently, a bag with a PEEP valve (Photo:②) has also become available that allows the setting of end-expiratory airway pressure. As the capacity of a resuscitation bag, 500 mL is recommended for a full-term neonate.</p>
①		<p>- Flow-inflating bag</p> <p>A flow rate-inflatable resuscitation bag (Photo:①) has the advantage that it is capable of ventilation at the oxygen concentration directly fed by the gas supply. When a blender is used, it is possible to perform artificial respiration directly at the oxygen concentration specified by the blender. This type of bag also enables free-flow oxygen delivery. A well-experienced resuscitator can feel the pulmonary compliance of the baby through the bag.</p>
②		<p>This type of bag also enables mask CPAP. The disadvantages are that the bag does not inflate unless the mask is tightly attached to the baby and that most marketed models are not equipped with a relief valve, among other weaknesses. To perform artificial respiration at an appropriate inspiratory pressure, it is essential to use a manometer (Photo:②). As the gas flow to be connected, 5 to 10 L per minute is considered appropriate.</p>



•laryngoscope

<p>①</p> 	<p>- laryngoscope (for use with neonates)</p> <p>Usually, a laryngoscope for a neonate has a direct blade (Miller type or Wis-Hipple type) and is of size 00, 0, or 1. While some marketed models do not offer size 00, size 0 or 1 is considered sufficient for handling mature newborns only. The respective shapes of blade and grip slightly vary by product and can be freely selected according to the user's choice.</p>
--	--

•air pump

<p>①</p> 	<p>- air pump</p> <p>The course program includes an artificial respiration exercise using a flow rate-inflatable bag. When the seminar is held in a hall that does not have a gas outlet, an air pump (Photo:①) is required to drive the gas supply. The maximum flow rate should be 10 L per minute or higher. It becomes possible to check the gas flow rate during the exercise when an oxygen flow meter (a humidifier is not necessary) is used in combination.</p>
--	---

•Oxygen flowmeter and blender

<p>①</p> 	<p>- Air-oxygen blender</p> <p>Consensus2010 recommended adjusting the oxygen concentration to the baby's status. This recommendation is maintained in Consensus 2015. While it is essential to use a blender (Photo:①) in the resuscitation practice, it is difficult to hold a seminar using an air-oxygen blender unless the NCPR seminar hall is equipped with a medical gas outlet. The high price of a blender also makes it difficult to prepare one for a course.</p> <p>In place of a blender, what about making and using a simulated blender? It would be a good idea to use a handmade simulator that consists of an adequate paper box and a simulated dial and oxygen concentration scale (Photo:②).</p>
<p>②</p> 	

•Pulse oximeter

- Oxygen saturation meter

Consensus 2010 recommended the use of a pulse oximeter (Photo:①) to objectively evaluate a baby that requires neonatal resuscitation.

It is considered essential to use a pulse oximeter from the perspective of avoiding excessive oxygen delivery. This recommendation is maintained in Consensus 2015. In the Instructor Training Course, a specially designed pulse oximeter simulator (Photo:②) is used.

In general courses, it would be sufficiently effective to use a disposable SpO₂ sensor in combination with flip charts that indicate heart rate and SpO₂ value (Photo:③).

There is also a simplified simulator (Photo:④) developed by the NCPR Committee.



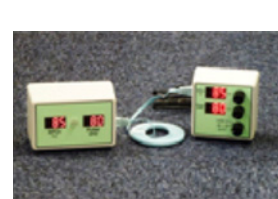
①



②

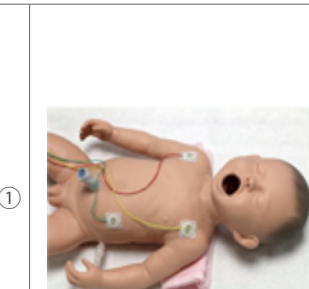


③



④

•ECG monitor



①

- ECG monitor

Consensus 2015 suggest an examination of the use of an ECG monitor for a baby that requires artificial respiration. It facilitates the determination of a correct resuscitation policy to evaluate the baby's heart rate more accurately and more objectively. Some highly functional simulators produce heartbeats and express an ECG on a separate monitor. However, such a highly functional simulator is extremely expensive and not for general use. In a seminar using a normal neonatal model, it would become necessary to express the heart rate using flip charts or other tools after attaching ECG electrodes (Photo:①) to the neonatal model.

•Algorithm Chart

- Algorithm Chart

The Algorithm Chart (Photo:①) is sold by the JSPNM (NCPR Project Office). We recommend attaching this chart to a panel and using an easel to put it in a position that is easily visible to participants (Photo:②).



①

•consumables strage bag

- consumables strage bag

Various consumables need to be used in a course. It takes time and energy to take them out of individual boxes and lay them out on a table. A storage bag with exclusive pockets (Photo:①) allows you to identify each item at a glance and saves much energy.



①

•Consumables

Name	Sizes	Manufacturers (reference)	Remarks
Suction Catheters	12Fr 10Fr 8Fr 6Fr	Terumo, etc.	
Suction bulb syringe	Large Small	Atom Medical, etc.	
Face mask	Large (for a neonate) Small (for a neonate)	Atom Medical, AMBU, etc.	Anatomical shape
Endotracheal tubes	3.5mm 3.0mm 2.5mm	Covidien, Terumo, etc.	Cuffless
Stylet	2.5mm or more 2.0mm or more	Smiths Medical, InterMed	Standard type Ultrafine type
End-tidal CO ₂ detector	Pedi cap Ministat cap	Covidien, MPI	
Umbilical vein catheter	5.0Fr	Covidien	PVC-free
stethoscope	For neonates	3M Littmann, etc.	
Feeding tube	6.0Fr	Atom Medical, JMS, etc.	Cathetip type with a contrast medium line, misconnection-proof
Syringe (cathetip)	1.0ml 2.5ml 5.0ml 10.0ml 20.0ml 30.0ml 50.0ml	JMS, etc.	
Syringe (general-purpose)	1.0ml 2.5ml 5.0ml 10.0ml 20.0ml 30.0ml 50.0ml	Terumo, Nipro, etc.	General purpose
SpO ₂ sensor Probe for neonates	For neonates	Masimo, Nihon Kodan, Covidien, etc.	Disposable (with a cable)
ECG electrode	For neonates		
Adhesive plaster	Width: 1.0 cm	3M	General purpose
Bath towel	Two sheets		General purpose
Face towel	Two sheets		General purpose
Laryngeal mask away	For neonates	Intersurgical, etc.	