



Practical selection of **neonatal resuscitators**

Version 3

A field guide

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USAID
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Neonatal Resuscitators

PATH initially evaluated a variety of reusable neonatal resuscitators including both bag-and-mask and tube-and-mask designs. This updated version of the “Practical selection of neonatal resuscitators: a field guide” offers additional information about devices that are priced at less than US\$30 each. This guide presents information about the criteria used during the device evaluation, evaluation results for each device, and suggestions for choosing a resuscitator.

Importance of Resuscitation

Birth asphyxia refers to the condition when a baby does not breathe at birth. Asphyxia is estimated to account for one-third of the estimated 4 million neonatal deaths that occur annually. This results in over one million neonatal deaths and an unknown number of infants with long-term neurological disability. Reducing birth asphyxia and neonatal death requires appropriate care including a resuscitator available at every birth.

Neonatal resuscitators, when properly used, can lower the incidence of mortality associated with neonatal asphyxia. In order to achieve this, resuscitators need to be made available to all birth attendants in conjunction with adequate training.

Mechanics of Resuscitation*

Newborn resuscitation should begin as soon as asphyxia is identified. After clearing the airway and correctly positioning the newborn's head and neck, the health worker positions the mask over the mouth and nose and holds it with light pressure to form an airtight seal. Breaths should then be delivered at a rate of 40–60 breaths per minute. While it may be uncommon to have an in-line manometer (pressure

* This section provides a brief overview of a resuscitation procedure but is not meant to be a substitute for proper instruction. More information can be found online at www.aap.org/nrp/, www.helpingbabiesbreathe.org, and www.ilcor.org.

gauge), caregivers should observe the infant's chest to ensure chest rise with each breath. Typical pressures may exceed 30 cm H₂O for the initial breath and then typically diminish to 15–20 cm H₂O. Tidal volumes are small, typically 5–8 ml/kg of newborn weight.

How to Choose a Resuscitator

☑ Choose desired features.

Features on most resuscitator models are similar, but variation exists. Depending on your program, features such as oxygen ports and reservoirs, high-quality packaging, or a compact profile may be important.

☑ Choose bag and mask or tube and mask.

Both types of resuscitators can reduce the incidence of neonatal mortality, but each has distinct advantages and disadvantages.

☑ Decide between disposable and reusable.

Depending on the nature of your program and the rate of neonatal asphyxia, single-use or multiuse resuscitators may be more cost-effective. If the environment of use indicates that resuscitators will always be reused, it may be advisable to invest in a multiuse resuscitator to permit correct cleaning and disinfection after use.

☑ Decide on a price range.

Resuscitators are now available from a wide variety of manufacturers and can vary widely in price despite having many of the same features. Resuscitators manufactured in the United States or Europe are often higher priced than similar resuscitators manufactured in other countries. The resuscitators in this field guide are divided into resuscitators costing under US\$30 and over US\$30.

Important Features for Safe and Proper Resuscitation

Properly Sized and Form-Fitting Mask

Proper resuscitation depends on a good seal between the resuscitator and the neonate. Resuscitators are equipped with a variety of mask types including air-filled anatomically shaped masks or round, one- or two-piece masks (with a silicone flange). *Resuscitators generally include one mask size, and purchasers will want to purchase an additional mask for each resuscitator (to cover both low and normal birthweight neonates).*

Single-Use vs. Multiuse Resuscitators

Single-use (disposable) resuscitators can be lower priced than similar reusable models. However, single use resuscitators are often manufactured with lower-cost materials that cannot be reprocessed and are often sealed to prevent disassembly. Single-use models are not included in this guide.

Multiuse (reusable) resuscitators are often higher priced than similar disposable models. Reusable resuscitators are typically designed for both disassembly and reprocessing (including autoclaving). Due to the possibility of reuse, the cost per use of multiuse resuscitators may be lower than similar single-use resuscitators.

Pressure-relief Valve

Preventing lung damage is a paramount concern for anyone performing resuscitations. A pressure-relief valve is designed to limit the pressure that the resuscitator can deliver. All bag and mask resuscitator models tested had a relief valve except the Blue Cross resuscitator. *Note: Many of the models evaluated lacked any indication regarding the position of the valve—enabling the user to disable the relief valve without their knowledge.*

Pressure-relief valve



Minimal Dead Airspace

Resuscitators that minimize dead airspace between the neonate's face and the nonrebreathing valve prevent the neonate from rebreathing expelled air with a higher concentration of CO₂. *Note: Dead airspace volume was not determined during this evaluation.*

Designed for Assembly/Disassembly

Ridged surfaces on parts that disassemble help identify these parts to the user as well as make the resuscitator easier to disassemble with wet hands. Color coding can help users distinguish different components, and quality design can augment the ease of assembly and disassembly.

Critical decision

Bag and Mask

Pros

- Pressure-limiting valve on most models reduces risk of lung rupture.
- More familiarity on part of providers.
- Wider variety on the market.

Cons

- Higher cost.
- More parts.



Properly Sized Bag (bag and mask only)

A bag specifically designed for providing appropriate tidal volumes for neonates can help reduce errors during use and simplify training. Most bag-and-mask models had bags that evaluators felt were appropriately sized.



Standard Mask Connections

Standard-sized connections are important to ensure compatibility with replacement components and masks from other manufacturers. Standard connections are a 15-mm inner diameter and a 22-mm outer diameter mask connector. Similarly, mask stems should have a 15-mm outer diameter or 22-mm inner diameter.

Which is right for your program?

Tube and Mask

Pros

- Often lower cost than bag-and-mask devices.
- Users may feel greater control delivering the pressure and monitoring the neonate's progress.
- Fewer parts.



Cons

- Fatiguing to use.
- Users may need additional training and practice to provide proper and consistent resuscitation.
- Caregiver cannot give instructions or counseling during resuscitation.

Guide to the Device

Comparison Tables (pp. 10–27)

For each of the devices, the following information is provided in order to assist the reader in making an informed choice when purchasing a neonatal resuscitator. More information about specific resuscitators may also be available from the individual manufacturer or distributor.

The ASTM standard used as the basis for several evaluations is F920-93 Standard Specifications for Minimum Performance and Safety Requirements for Resuscitators Intended for Use with Humans.

Device Information

This section provides basic information on model number, supplier, website (to get more information electronically), and cost (as purchased).

Features That Count

This section provides information on features that have been identified as particularly important in resuscitator selection.

- **Mask size:** Size of mask(s) included with resuscitator.
- **Mask type:** Type of mask included with resuscitator.
- **Properly sized bag:** Based on user input and international guidelines.
- **Pressure-relief valve/position indication:** More information on proper valve operation can be found in the Laboratory Evaluations section (see pg. 7).
- **Designed for assembly/disassembly:** Whether the resuscitator was designed to facilitate assembly and disassembly.
- **Standard mask connections:** Whether the resuscitator has standard mask connections that will permit it to be used with masks from other manufacturers or differently sized masks (e.g., normal neonate, low-birthweight neonate).

Device Features

This section provides information on:

- **Components:** Extra components included with the resuscitator.
- **Features:** Additional features of the resuscitator that are not required for basic operation.
- **Packaging:** Description of resuscitator packaging.
- **Single-use/multiuse:** Whether the resuscitator is designated by the manufacturer for single or multiple uses.

Laboratory Evaluations

This section provides information from laboratory testing on:

- **Pressure-limiting valve:** The pressure recorded at the patient connection port when air at a flow rate of 15 L per minute was passed through the resuscitator (per ASTM standards). This test evaluates the proper function of the pressure-limiting valve in relation to the manufacturer's designation.
- **Cleaning-effectiveness:** Evaluated by introducing blood into the device via the face mask, allowing the resuscitator to dry for one hour, and cleaning the resuscitator in a detergent solution using a soft-bristled brush. Score is based on the amount of blood remaining on the device after one minute of cleaning.
- **Disinfection-device durability:** Disassembled resuscitators were submerged in a 0.5% chlorine solution for 48 hours and evaluated for damage. No microbiological evaluation was conducted to determine the degree of disinfection.
- **Instructions-completeness:** Instructions included with the resuscitators were evaluated for completeness based on complete and correct information, accompanying diagrams, technical information, and reuse instructions.

- **Instructions–ease of reading:** Instructions were evaluated using a Flesch Reading Ease score, a method based on the length of words and sentences. Flesch scores are assigned a grade level as follows: Very difficult–post graduate; Difficult–college; fairly difficult–high school; Standard–8th to 9th grade; Fairly easy–7th grade; Easy–5th to 6th grade; Very easy–4th to 5th grade.

Usability

- **Ease of use/comfort:** Describes the ability of the user to intuitively adopt correct and consistent use of the resuscitator.
- **Disassembly/reassembly:** Describes the ease and completeness of disassembly and reassembly by users without written instructions.
- **Device ergonomics:** Describes an ergonomic analysis of the resuscitators as performed by the evaluation team. This includes size of device in relation to hand size, features to improve comfort or usability, and interaction of users with the device.

Devices Under US\$30

Anand Medicaids



Device Information	Model Number	IR-01
	Supplier	Anand Medicaids Private Limited 33/16, Punjabi Bagh New Delhi, 110 026 INDIA
	Website	www.anandind.com
	Cost (as purchased)	US\$18.00
Features That Count	Mask size	Low-birthweight neonate (0)
	Mask type	Round one-piece silicone
	Properly sized bag	Yes
	Pressure-relief valve/ position indication	Yes/no
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	Oxygen reservoir bag; oxygen tubing connector
	Features	Pressure-limiting valve Note: cannot lock down
	Packaging	Zippered bag with clear panel
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	54 cm H ₂ O
	Cleaning—effectiveness	①
	Disinfection—device durability	①
	Instructions—completeness	No instructions
	Instructions—ease of reading	No instructions
Usability	Ease of use/comfort	②
	Dissassembly/reassembly	②
	Device ergonomics	②

① Very good ② Good ③ OK ④ Fair ⑤ Poor

Apothecaries Sundries



Device Information	Model Number	RG401-S2
	Supplier	Apothecaries Sundries Mfg. Co. ASCO House, I-30(a) Kirti Nagar, New Delhi 110 015 INDIA
	Website	www.ascoindia.com
	Cost (as purchased)	US\$22.00
Features That Count	Mask size	Normal birthweight neonate
	Mask type	Round one-piece silicone
	Properly sized bag	Yes
	Pressure-relief valve/ position indication	Yes/no
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	Oxygen reservoir bag; oxygen tubing connector
	Features	Pressure-limiting valve Note: cannot lock down
	Packaging	Zippered bag with clear panel
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	40 cm H ₂ O
	Cleaning—effectiveness	①
	Disinfection—device durability	①
	Instructions—completeness	No instructions
	Instructions—ease of reading	No instructions
Usability	Ease of use/comfort	②
	Dissassembly/reassembly	②
	Device ergonomics	③ Note: larger bag may be difficult for small- handed users

① Very good ② Good ③ OK ④ Fair ⑤ Poor

Besmed Health



Device Information	Model Number	BE-1303
	Supplier	Besmed Health Business Corp. No. 2, Lane 106, Wu-Kong 3rd Road Wu-Ku Industrial Park, Taipei Taiwan, Republic of China
	Website	www.besmed.com
	Cost (as purchased)	US\$27.70 Plastic box available for US\$3.80
Features That Count	Mask size	Low-birthweight neonate (0)
	Mask type	Round one-piece silicone
	Properly sized bag	Yes
	Pressure-relief valve/ position indication	Yes/no
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	Oxygen reservoir bag; oxygen tubing connector
	Features	Pressure-limiting valve Note: cannot lock down
	Packaging	Plastic bag Optional plastic box
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	24 cm H ₂ O
	Cleaning—effectiveness	①
	Disinfection—device durability	①
	Instructions—completeness	③ No instructions specific to neonate
	Instructions—ease of reading	Very difficult
Usability	Ease of use/comfort	①
	Dissassembly/reassembly	②
	Device ergonomics	②

① Very good ② Good ③ OK ④ Fair ⑤ Poor

Enter Medical



Device Information	Model Number	ENT-1014
	Supplier	Enter Medical Corporation No. 16-1, Lane 564, Wen Hua San Road Gui Shan Xiang, Tao Yuan Hsien Taiwan, Republic of China
	Website	www.shineball.com.tw
	Cost (as purchased)	US\$15.00
Features That Count	Mask size	Normal birthweight neonate
	Mask type	Round one-piece silicone
	Properly sized bag	Yes
	Pressure-relief valve/ position indication	Yes/no
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	Oxygen reservoir bag
	Features	Pressure-limiting valve Note: cannot lock down
	Packaging	Plastic resealable bag
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	41 cm H ₂ O
	Cleaning—effectiveness	①
	Disinfection—device durability	①
	Instructions—completeness	No instructions
	Instructions—ease of reading	No instructions
Usability	Ease of use/comfort	②
	Dissassembly/reassembly	②
	Device ergonomics	②

① Very good ② Good ③ OK ④ Fair ⑤ Poor

Global Products



Device Information	Model Number	AN108
	Supplier	Global Products Corporation (GPC) Medical G3 Vikas Puri New Delhi 110018 INDIA
	Website	www.gpc-medical.com
	Cost (as purchased)	US\$12.40
Features That Count	Mask size	Low-birthweight neonate
	Mask type	Round one-piece silicone
	Properly sized bag	Yes
	Pressure-relief valve/ position indication	Yes/no
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	Oxygen reservoir bag; oxygen tubing connector
	Features	Pressure-limiting valve
	Packaging	Zippered bag with clear panel
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	43 cm H ₂ O
	Cleaning—effectiveness	①
	Disinfection—device durability	①
	Instructions—completeness	No instructions
	Instructions—ease of reading	No instructions
Usability	Ease of use/comfort	①
	Dissassembly/reassembly	②
	Device ergonomics	①

① Very good ② Good ③ OK ④ Fair ⑤ Poor

Hospital Equipment Manufacturing



Device Information	Model Number	70-555-03
	Supplier	Hospital Equipment Manufacturing Company 26, Deepak Building 13, Nehru Place New Delhi 110019 INDIA
	Website	www.hemcindia.com
	Cost (as purchased)	US\$14.00
Features That Count	Mask size	Low-birthweight neonate
	Mask type	Round one-piece silicone
	Properly sized bag	Yes
	Pressure-relief valve/ position indication	Yes/no
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	Oxygen reservoir bag; oxygen tubing connector
	Features	Pressure-limiting valve
	Packaging	Zippered bag with clear panel
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	42 cm H ₂ O
	Cleaning—effectiveness	①
	Disinfection—device durability	①
	Instructions—completeness	No instructions
	Instructions—ease of reading	No instructions
Usability	Ease of use/comfort	①
	Dissassembly/reassembly	②
	Device ergonomics	①

① Very good ② Good ③ OK ④ Fair ⑤ Poor

Kay and Company



Device Information	Model Number	None (Silicone 240 ml)
	Supplier	Kay and Company 25, Netaji Subhash Marg New Delhi 110002 INDIA
	Website	www.kaycoindia.com
	Cost (as purchased)	US\$21.00
Features That Count	Mask size	Low-birthweight neonate (0)
	Mask type	Round one-piece silicone
	Properly sized bag	Yes
	Pressure-relief valve/ position indication	Yes/yes
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	Oxygen reservoir bag; oxygen tubing connector
	Features	Pressure-limiting valve
	Packaging	Zippered bag with clear panel plus separate red drawstring bag
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	25 cm H ₂ O
	Cleaning—effectiveness	①
	Disinfection—device durability	①
	Instructions—completeness	⑤ (brief and incomplete)
	Instructions—ease of reading	Easy
Usability	Ease of use/comfort	①
	Dissassembly/reassembly	②
	Device ergonomics	①

① Very good ② Good ③ OK ④ Fair ⑤ Poor

Laerdal



Device Information	Model Number	846030 Neonatal/infant reusable manual resuscitator
	Supplier	Laerdal Medical AS Tanke Svilandsgt. 30, PO Box 377 4002 Stavanger NORWAY
	Website	www.laerdal.com
	Cost (as purchased)	US\$15 (additional US\$2.30 for a supplemental oxygen attachment)
Features That Count	Mask size	Normal and low-birthweight neonate (sizes 0 & 1)
	Mask type	Round one-piece silicone
	Properly sized bag	Yes
	Pressure-relief valve/position indication	Yes/yes
	Designed for assembly/disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	No additional components
	Features	Pressure-limiting valve
	Packaging	Resealable plastic bag inside cardboard box
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	38 cm H ₂ O
	Cleaning—effectiveness	2
	Disinfection—device durability	1
	Instructions—completeness	1
	Instructions—ease of reading	Fairly easy
Usability	Ease of use/comfort	1
	Dissassembly/reassembly	2
	Device ergonomics	1

1 Very good
2 Good
3 OK
4 Fair
5 Poor

Laerdal



Device Information	Model Number	820050 Paediatric Pocket Mask
	Supplier	Laerdal Medical Limited Laerdal House Goodmead Road Orpington, Kent, BR6 0HX UNITED KINGDOM
	Website	www.laerdal.co.uk
	Cost (as purchased)	US\$14.60
Features That Count	Mask size	Infant and child
	Mask type	Round one-piece silicone
	Properly sized bag	Not applicable
	Pressure-relief valve/ position indication	No
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	Nitrile gloves; antimicrobial hand wipe
	Features	Not applicable
	Packaging	Zippered nylon bag
	Single-use/multiuse	Labeled as single-use
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	Not applicable
	Cleaning—effectiveness	1
	Disinfection—device durability	1
	Instructions—completeness	2
	Instructions—ease of reading	Fairly Easy
Usability	Ease of use/comfort	4
	Dissassembly/reassembly	1
	Device ergonomics	4
Note	<p>This resuscitator was evaluated in 2003 under a different but similar protocol to the other resuscitators included in this guide.</p> <p>One-way valve can be purchased separately for use with other masks appropriately sized for neonates for US\$5.95.</p>	

1 Very good
2 Good
3 OK
4 Fair
5 Poor

Ningbo David Medical



Device Information	Model Number	HF-I
	Supplier	Ningbo David Medical Device Co. Ltd #11 722 Lane Sangtian Rd. Ningbo, Republic of China
	Website	www.chinadavid.cn
	Cost (as purchased)	US\$26.00
Features That Count	Mask size	Normal and low-birthweight neonate
	Mask type	Round one-piece silicone
	Properly sized bag	Yes
	Pressure-relief valve/ position indication	Yes/no
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	Oxygen reservoir bag; oxygen tubing connector
	Features	Pressure-limiting valve
	Packaging	None
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	40 cm H ₂ O
	Cleaning—effectiveness	①
	Disinfection—device durability	①
	Instructions—completeness	③ No use instructions
	Instructions—ease of reading	Very difficult
Usability	Ease of use/comfort	①
	Dissassembly/reassembly	②
	Device ergonomics	② Requires firm pressure on mask

① Very good ② Good ③ OK ④ Fair ⑤ Poor

Shinmed



Device Information	Model Number	SW72302B
	Supplier	Shinmed (Shining World Health Care Co., Ltd.) 6F, No. 8, Lane 7, Wu-Chun Road, Wu-Ku Industrial Park Taipei County, 248 Taiwan, Republic of China
	Website	www.shinmed.com.tw
	Cost (as purchased)	US\$30.00
Features That Count	Mask size	Normal and low-birthweight neonate (0 & 1)
	Mask type	Round one-piece silicone
	Properly sized bag	Yes
	Pressure-relief valve/ position indication	Yes/yes
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	Oxygen reservoir bag; oxygen tubing connector
	Features	Pressure-limiting valve
	Packaging	Plastic box
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	40 cm H ₂ O
	Cleaning—effectiveness	①
	Disinfection—device durability	② Spring rusted during disinfection
	Instructions—completeness	③ No instructions specific to neonate
	Instructions—ease of reading	Fairly difficult
Usability	Ease of use/comfort	③ Stiff bag
	Dissassembly/reassembly	②
	Device ergonomics	①

① Very good ② Good ③ OK ④ Fair ⑤ Poor

Sturdy Industrial



Device Information	Model Number	SR-003 Topster
	Supplier	Sturdy Industrial Co., Ltd. No. 168, Sec. 1, Jungshing Rd. Wugu Township, Taipei Country, 248 Taiwan, Republic of China PO Box 1-027 Wugu, Taiwan, Republic of China
	Website	www.sturdy.com.tw
	Cost (as purchased)	US\$13.50
Features That Count	Mask size	Low-birthweight neonate (0)
	Mask type	One-piece silicone
	Properly sized bag	Yes
	Pressure-relief valve/ position indication	Yes/yes
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	Oxygen reservoir bag; oxygen tubing connector; 40-, 50-, 60-mm airways
	Features	Pressure-limiting valve
	Packaging	Cardboard box
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	39 cm H ₂ O
	Cleaning—effectiveness	①
	Disinfection—device durability	② Spring rusted during disinfection
	Instructions—completeness	②
	Instructions—ease of reading	Fairly difficult
Usability	Ease of use/comfort	② Stiffer bag
	Dissassembly/reassembly	②
	Device ergonomics	①

① Very good ② Good ③ OK ④ Fair ⑤ Poor

Tekno



Device Information	Model Number	Tube and mask
	Supplier	F2H (Frontiers For Health) Jl. Cilaki 35 Bandung 40114 INDONESIA
	Website	Not applicable
	Cost (as purchased)	US\$9.00
Features That Count	Mask size	Normal birthweight neonate
	Mask type	Round two-piece mask with silicone face piece
	Properly sized bag	Not applicable
	Pressure-relief valve/ position indication	No
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	No additional components
	Features	None
	Packaging	Sealable plastic bag
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	None
	Cleaning—effectiveness	①
	Disinfection—device durability	①
	Instructions—completeness	Instructions in Indonesian; line drawings; training information
	Instructions—ease of reading	Not evaluated due to language
Usability	Ease of use/comfort	③
	Dissassembly/reassembly	②
	Device ergonomics	③

① Very good ② Good ③ OK ④ Fair ⑤ Poor

Zeal Medical



Device Information	Model Number	BlowSafe Mouth to Mask
	Supplier	Zeal Medical 4/19-A, Piramal Nagar Indl.Est, SV Road, Goregaon(W) Mumbai 400062 INDIA
	Website	www.zealmedical.com
	Cost (as purchased)	US\$15.00
Features That Count	Mask size	Normal birthweight neonate
	Mask type	Round one-piece silicone
	Properly sized bag	Not applicable
	Pressure-relief valve/ position indication	Yes/no
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	No additional components
	Features	Pressure-limiting valve Note: cannot lock down
	Packaging	Zippered bag
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	20 cm H ₂ O
	Cleaning—effectiveness	①
	Disinfection—device durability	①
	Instructions—completeness	No instructions
	Instructions—ease of reading	No instructions
Usability	Ease of use/comfort	③
	Dissassembly/reassembly	②
	Device ergonomics	③

① Very good ② Good ③ OK ④ Fair ⑤ Poor

Devices Over US\$30

BLS Systems Med-Rescuer® BVM



Device Information	Model Number	4025
	Supplier	BLS Systems Limited 1124 South Service Road West Oakville, Ontario L6L 5T7 CANADA
	Website	www.blssystemsLtd.com
	Cost (as purchased)	US\$45.00
Features That Count	Mask size	Low-birthweight neonate (0)
	Mask type	Round one-piece silicone
	Properly sized bag	Yes
	Pressure-relief valve/ position indication	Yes/no
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	Oxygen reservoir bag; oxygen tubing connector
	Features	Pressure-limiting valve
	Packaging	Plastic drawstring bag
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	36 cm H ₂ O
	Cleaning—effectiveness	①
	Disinfection—device durability	①
	Instructions—completeness	② (not specific for infant resuscitation)
	Instructions—ease of reading	Difficult
Usability	Ease of use/comfort	②
	Dissassembly/reassembly	②
	Device ergonomics	②

① Very good ② Good ③ OK ④ Fair ⑤ Poor

P.J. Dahlhausen



Device Information	Model Number	CH436-51.5000.00.100
	Supplier	P.J. Dahlhausen & Co. Emil-Hoffmann-Str. 53 50996 Köln GERMANY
	Website	www.dahlhausen.de
	Cost (as purchased)	US\$122.55
Features That Count	Mask size	Normal and low-birthweight neonate included
	Mask type	Round one-piece silicone
	Properly sized bag	Yes
	Pressure-relief valve/ position indication	Yes/cannot disable
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	No additional components
	Features	Pressure-limiting valve
	Packaging	Disposable bag inside cardboard box
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	23 cm H ₂ O
	Cleaning—effectiveness	2
	Disinfection—device durability	1
	Instructions—completeness	1 (in English and German)
	Instructions—ease of reading	Fairly difficult
Usability	Ease of use/comfort	3
	Dissassembly/reassembly	3
	Device ergonomics	2

1 Very good **2** Good **3** OK **4** Fair **5** Poor

Blue Cross



Device Information	Model Number	IBW-01
	Supplier	Blue Cross Emergency Co. 3-12-9, Hongo, Bunkyo-ku Tokyo 131-0033, JAPAN
	Website	www.bluecross-e.co.jp
	Cost (as purchased)	US\$95.99
Features That Count	Mask size	Normal birthweight neonate
	Mask type	Round two-piece Clear hard plastic top Opaque silicone face seal
	Properly sized bag	Yes
	Pressure-relief valve/ position indication	No
	Designed for assembly/ disassembly	Yes
	Standard mask connections	Yes
Device Features	Components	Open-end oxygen reservoir
	Features	None
	Packaging	Plastic resealable bag inside cardboard box
	Single-use/multiuse	Multiuse
Laboratory Evaluations	Pressure-limiting valve (@ 15 L/min air flow)	N/A
	Cleaning—effectiveness	③
	Disinfection—device durability	③
	Instructions—completeness	② (indicates that 50 cm H ₂ O pressure should be generated)
	Instructions—ease of reading	Standard
Usability	Ease of use/comfort	③
	Dissassembly/reassembly	③
	Device ergonomics	③

① Very good ② Good ③ OK ④ Fair ⑤ Poor

Notes

Notes

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