

# The Brook airway: a life-saving device

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The cardiopulmonary resuscitation (CPR) technique, as we know it today, was popularised during the 1960s. It had two components: mouth-to-mouth ventilation and closed chest compression. Mouth-to-mouth artificial breathing was not something new as

it was reported in the 18th century.<sup>1</sup> Its use faded away over the next two centuries because of the advent of the germ theory and the belief that expired air was unsuitable for resuscitation due to the presence of carbon dioxide and a low oxygen concentration.<sup>2</sup> In

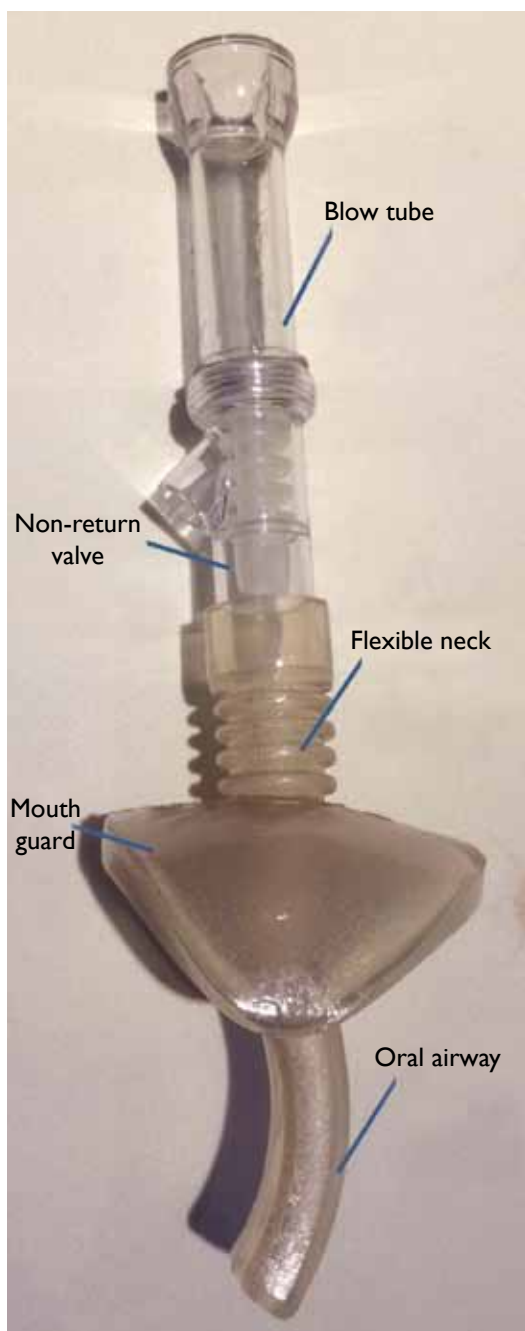


FIG. The Brook airway, shown here with its component parts, was donated by Dr Tak-fu Tse and Dr Tak-him Ko to the Hong Kong Museum of Medical Sciences in 2003

the 19th century, various manual methods of artificial ventilation were introduced and taught in first-aid courses. James Elam, an anaesthetist from the United States, was credited with reviving the use of mouth-to-mouth breathing in the 1950s. He demonstrated with experiments in the operating theatre that expired air could be used to maintain adequate arterial oxygen saturation.<sup>3</sup> Peter Safar, a contemporary of Elam, also demonstrated that even laymen could be taught to open the airway and provide adequate mouth-to-mouth ventilation in adults. He also found that the traditional manual methods of ventilation were ineffective to maintain oxygenation.<sup>4,5</sup> Thus, the stage was set to introduce the kiss of life. Mouth-to-mouth artificial ventilation in adults was endorsed by the American Medical Association in 1958. Meanwhile, a team from Johns Hopkins University wrote about the effectiveness of closed-chest compression in maintaining perfusion following cardiac arrest.<sup>6</sup> The term “cardiopulmonary resuscitation” was coined by the American Heart Association in 1962 and CPR training was gradually introduced.

Although the efficacy of mouth-to-mouth ventilation is not in doubt, it may not be acceptable to many. There are psychological barriers to applying the lips on a moribund person, especially when there may be vomitus and other secretions present. Some form of barrier device is thus desirable. Morris Brook (1911-1967), a general practitioner from Saskatoon, Canada, was involved in the resuscitation of a miner during a cave-in in 1957. This man was unconscious

and not breathing and Brook had to perform mouth-to-mouth respiration despite the presence of dirt, blood, and vomit on the victim. The victim was resuscitated successfully. This incident inspired Brook to invent a device that could circumvent this repulsive situation.<sup>7</sup> Brook was not aware then that Safar had already developed an S-shaped airway to facilitate mouth-to-airway ventilation.<sup>8</sup>

The Brook airway (Fig) was introduced around 1959 and could be clipped onto the helmets of miners. It consisted of an oral airway that helped to displace the tongue and maintain a patent airway. The flexible tube made ventilation feasible even in awkward positions. The non-return valve was designed such that exhaled air and contents of the stomach could escape via a separate exit without affecting the rescuer.<sup>9</sup> To help popularise and teach the use of his new airway, Brook developed a wooden ‘air passage demonstrator’ and a plastic mannequin as training aids. He also produced a documentary film ‘That They May Live’ to teach mouth-to-mouth respiration. The Brook airway was simple and had an additional advantage of being more flexible in use. It was sold to health care providers and the public in many countries in the 1960s and 1970s. It appears that the Brook airway was not widely used in Hong Kong, however, and was not standard equipment for our local ambulance service. In time, the widespread availability of resuscitation bags and other supraglottic devices (eg the laryngeal mask) made Brook’s airway obsolete.

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