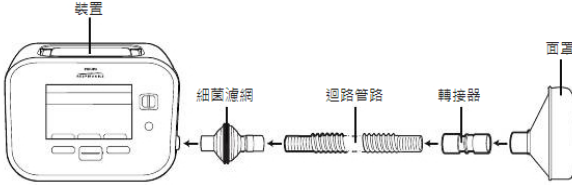


台北榮民總醫院 呼吸治療科 技術評核表  
**06 MI-E Protocol (01)**  
**Mechanical insufflation-exsufflation (MI-E)**

受評者姓名:

評核日期 (yyyy-mm-dd): (    -    -    )

評估項目	操作過程	狀態	
		通過	未通過
一、治療前準備：能說出或執行			
1. 適應症(特殊情況下執行此項目) For use with patients unable to cough or clear secretions effectively due to reduced peak expiratory flow.	1. Neuromuscular Disorders 2. Cystic Fibrosis 3. Spinal Cord Injuries 4. Certain Respiratory Conditions 5. Postoperative Care 6. Chronic Obstructive Pulmonary Disease (COPD)		
2. 禁忌症	(1) Undrained pneumothorax (2) Any patient with a history of bullous emphysema (3) Susceptibility to pneumothorax or pneumomediastinum (4) Recent barotraumas		
3. COMPLICATIONS	Fear, pain and poor technique will lead to poor synchrony with the machine		
4. 準備作業 (1) Discuss use and rationale of the Cough Assist Devices with Consultant. (2) Gain consent from the patient and document. (3) Explain procedure to patient and let them experience the feeling of the mask to their face with the machine switched off. (4) With a tracheostomy (or endotracheal tube) let the patient experience an insufflation and the feeling of pressure delivered. (5) Start with a low pressure insufflation or positive pressure until the patient has accommodated and gradually build up.	 <p>The diagram illustrates the mechanical insufflation-exsufflation (MI-E) setup. It shows a rectangular device on the left with a screen and buttons. A tube labeled '細管連網' (fine mesh tube) connects the device to a '迴路管路' (loop tube). This loop tube is connected to a '轉接器' (adapter), which is then connected to a '面罩' (mask).</p>		
二、呼吸器設定步驟:			
(1) 吸入壓力應設置: +10~15 cmH <sub>2</sub> O (2) 呼氣壓力應設置: -10~-15 cmH <sub>2</sub> O (3) 將設備的吸氣流速設置為低速。	*讓病人對設備進行初步熟悉和適應。		

2. 開始治療	<p>(1)按下“治療”按鈕開始治療。</p> <p>(2)將適當的接口放在病人的位置。開始時進行單次咳嗽週期，讓病人適應設備。</p> <p>(3)一個咳嗽週期包括一次吸氣，一次吐氣。</p> <p>(4)然後如果需要，可以按下暫停。</p> <p>(5)將手動開關切換到吸氣位置，保持 1 到 3 秒。(6)立即將手動開關切換到吐氣位置，保持 0.5 到 2 秒，然後開關調節到中間位置。</p> <p>(7)確認病人對這個動作的舒適和耐受性。</p> <p>*根據病人的呼吸節奏和速度調整時機以協調治療。</p>																		
3. 治療療程中，對於兒童病人，繼續進行 3 到 6 個咳嗽週期，對於成人則是 4 到 6 個周期。如果有需要，可以在咳嗽週期之間做 2 到 5 秒的暫停休息。	*確認病人仍然能夠忍受這些動作。在治療療程重複之前，可以使用 30 到 60 秒的休息時間。在休息期間，如果需要，將病人恢復到正常的氧氣或通氣設置。針對不同病人的每次治療，對於兒童病人，至少執行 3 到 5 個循環，對於成年人，執行 4 到 6 個循環。																		
4. 逐步提高吸氣和呼氣的壓力。如果需要，調整吸入的氣流，以確保病人感到舒適。不斷關注病人的感受和忍耐度。正壓程度可以通過觀察胸腔擴張情況和聆聽兩側呼吸音的方式來確定。	*顯示數值的潮氣容積可以用來調整吸氣壓力，確保吸入體積足夠。同時，顯示的最大咳嗽流速數值也可以用來調整呼氣壓力，並幫助引導病人的咳嗽力道。一般而言，吸氣和呼氣壓力在 $\pm 40 \text{ cm H}_2\text{O}$ 的範圍內，效果最佳，而且通常容易被病人所接受。																		
5. 在可能的情況下，尋求病人關於壓力、吸氣和呼氣時間的反饋。	例如，可以使用舉手或點頭的手勢，表示是否應增加或減少壓力或時間。																		
6. 時間與壓力之設定	<table border="1" data-bbox="695 1357 1273 1641"> <thead> <tr> <th>設定</th> <th>兒童</th> <th>成人</th> <th></th> </tr> </thead> <tbody> <tr> <td>吸氣期 sec.</td> <td>0.5~1.5</td> <td>1.5~3</td> <td>應持續維持，直到胸廓擴張</td> </tr> <tr> <td>呼氣期 Sec.</td> <td>0.5~1.5</td> <td>1.5~3</td> <td>應限制在胸廓回彈時間內</td> </tr> <tr> <td>壓力 cmH<sub>2</sub>O</td> <td><math>\pm 30 \sim \pm 40</math></td> <td></td> <td></td> </tr> </tbody> </table>	設定	兒童	成人		吸氣期 sec.	0.5~1.5	1.5~3	應持續維持，直到胸廓擴張	呼氣期 Sec.	0.5~1.5	1.5~3	應限制在胸廓回彈時間內	壓力 cmH <sub>2</sub> O	$\pm 30 \sim \pm 40$				
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7.若 MI-E 經由氣管內管為介面，建議提高壓力至 $\pm 50 \text{ cmH}_2\text{O}$ ，以達到足夠的尖峰吐氣流速，才能得到與面罩 $\pm 40 \text{ cmH}_2\text{O}$ 相等的治療效果。																			
三、臨床療效觀監測																			
1.Ask the patient about their cough	<p>(1) Do they feel they can cough and clear effectively?</p> <p>(2) Is it effective when they are well only?</p>																		
2.Inspiratory phase	(1)Look for good rise and fall of the chest and abdomen																		

	(2)Is there any paradoxical effort?		
3.Glottic closure	(1)Listen for the expulsive component (2)Can the patient phonate e, e, e, e, e clearly?		
4.Expiratory phase	(1)Observe the abdominal contraction and effort		
5.Audible	(1)How strong does the cough sound (2)Do you think you the patient can clear their secretions?		
6.Measurable	(1)Measure the cough peak expiratory flow with a flow meter attached to a mask (2) > 360L/min in anyone over 12 years old is normal		
評核者簽名:			

影片 QR code : (分段拍攝)

撰寫人 (醫師 柯信國 主任 / 呼吸治療師 陳紀吏、廖天華 )

參考資料:(最多 5 篇)

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