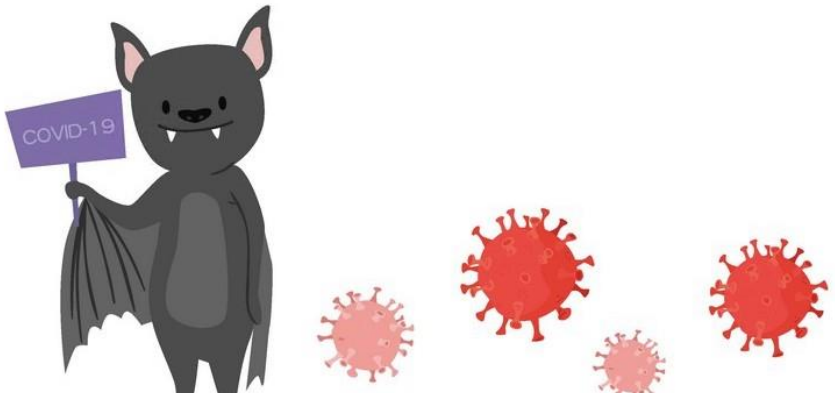


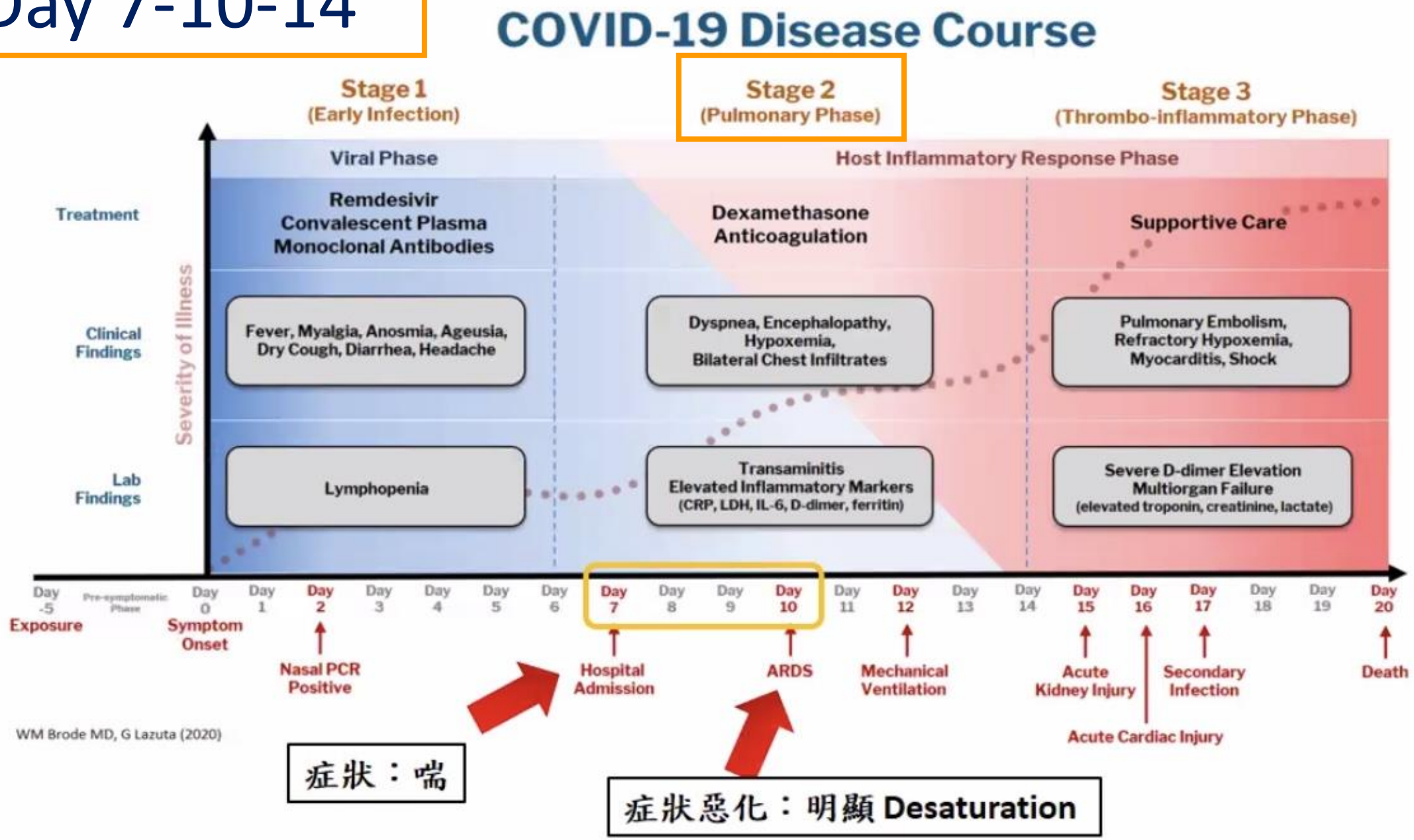
兒科新型冠狀病毒COVID-19感染之氧氣與呼吸治療

穆淑琪 MD, PhD
新光醫院
兒科/教學部

APPS 第六屆亞洲兒童胸腔醫學會年度大會
Sep.18-19,2021

新光醫療財團法人
新光吳火獅紀念醫院
SHIN KONG WU HO-SU MEMORIAL HOSPITAL

Day 7-10-14


COVID-19 Disease Course
Stage 1
(Early Infection)
Stage 2
(Pulmonary Phase)
Stage 3
(Thrombo-inflammatory Phase)
Viral Phase
Host Inflammatory Response Phase
Treatment
Remdesivir
Convalescent Plasma
Monoclonal Antibodies
Dexamethasone
Anticoagulation
Supportive Care
Clinical Findings
Fever, Myalgia, Anosmia, Ageusia, Dry Cough, Diarrhea, Headache
Dyspnea, Encephalopathy, Hypoxemia, Bilateral Chest Infiltrates
Pulmonary Embolism, Refractory Hypoxemia, Myocarditis, Shock
Lab Findings
Lymphopenia
Transaminitis
Elevated Inflammatory Markers
(CRP, LDH, IL-6, D-dimer, ferritin)
Severe D-dimer Elevation
Multiorgan Failure
(elevated troponin, creatinine, lactate)
Severity of Illness
Day -5
Pre-symptomatic Phase
Exposure
Day 0
Symptom Onset
Day 1
Day 2
Nasal PCR Positive
Day 3
Day 4
Day 5
Day 6
Day 7
Hospital Admission
Day 8
Day 9
Day 10
ARDS
Day 11
Day 12
Mechanical Ventilation
Day 13
Day 14
Day 15
Acute Kidney Injury
Day 16
Acute Cardiac Injury
Day 17
Secondary Infection
Day 18
Day 19
Day 20
Death
WM Brode MD, G Lazuta (2020)
症狀：喘
症狀惡化：明顯 Desaturation

Review covid-19 in Pediatric patients (1)

(1) Covid-19 pneumonia, GF Paris, **Italy**, Front Pediatr, 2020

(2) Respiratory therapeutic strategy, GP Rodovanski, **Brazil**, Curr Pediatr Rev, 2021

(3) Alveolar recruitment maneuvers-Prone position, YE Jang, **Korea**, British journal of anesthesia, 2020

(4) Awake prone, MM Alseoudy, , **Egypt**, Anesthesia report2020

Review covid-19 in Pediatric patients (2)

(5) Respiratory care different to adults, JLJ Hermandes,**Colombia**, Front Pediatr, 2021

(6) Respiratory care, S Gupta, **India**, J Pediatric Intensive Care, 2021

(7) HHHFNC vs. conventional ventilation in Respiratory failure, Rochwerg, **Canada**, Intensive Care, 2019----------SR/MA

REVIEW article

Front. Pediatr., 14 December 2020

https://doi.org/10.3389/fped.2020.616622

1

COVID-19 Pneumonia in Children: From Etiology to Management

1

Giuseppe Fabio Parisi[1], **Cristiana Indolfi**[2], **Fabio Decimo**[2], **Salvatore Leonardi**[1] and **Michele Miraglia del Giudice**[2*]

[1]Department of Clinical and Experimental Medicine, University of Catania, Catania, Italy

[2]Department of Woman, Child and Specialized Surgery, University of Campania "Luigi Vanvitelli" Naples, Italy

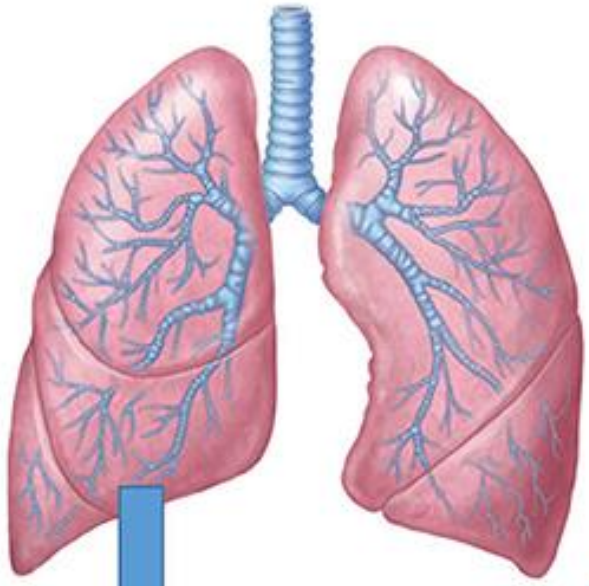
Catania，卡塔妮雅--意大利南部卡塔尼亞省的首府

拿坡里是義大利南部的第一大城市

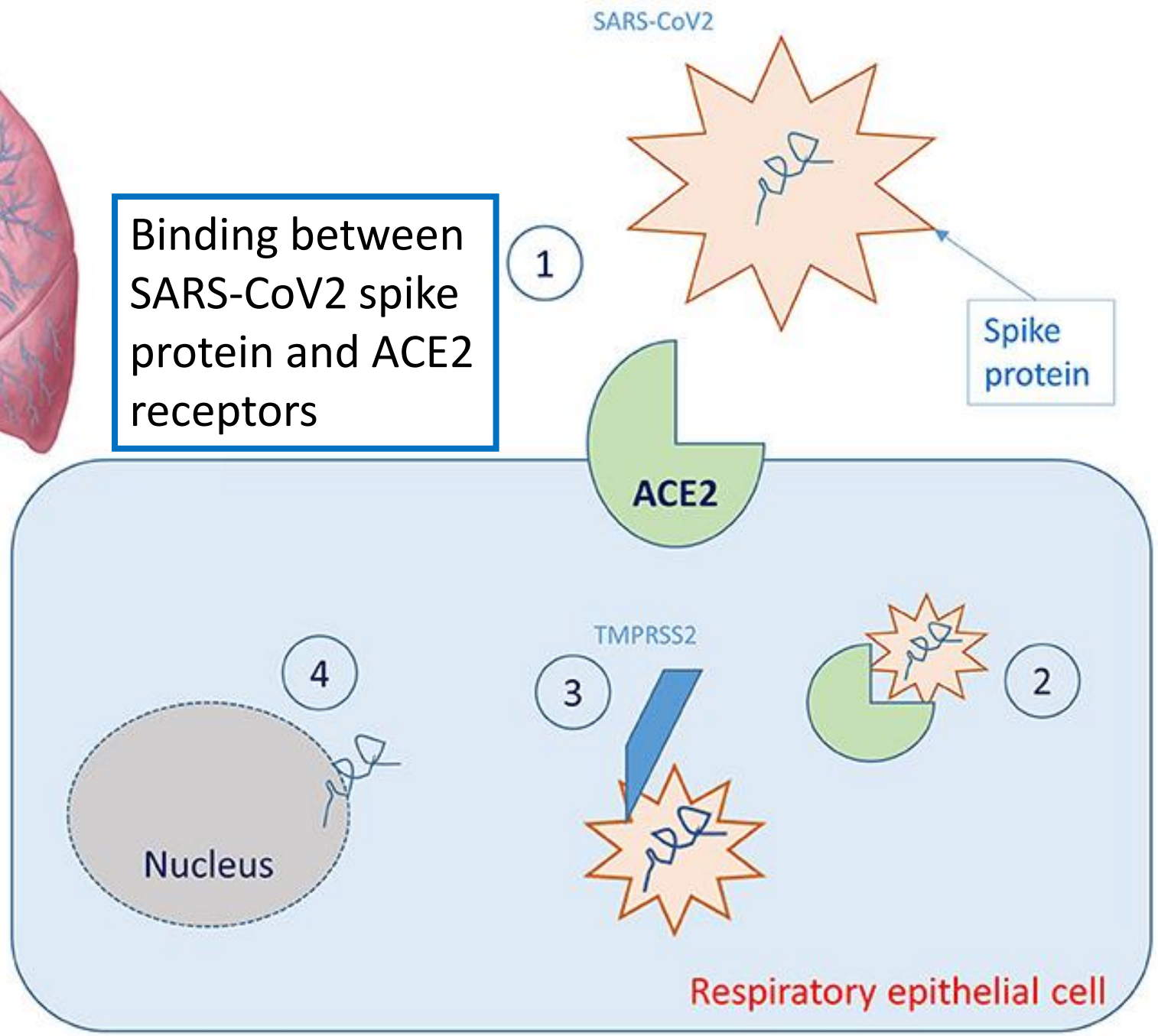
Table 1. Classification of COVID-19 in children.

Classification	Clinical features
Asymptomatic	Positivity of the RT-PCR buffer to SARS-CoV-2 or positive serology in the absence of any symptoms of illness.
Mild	Symptoms are mild and mainly affect the upper airways (nasal obstruction, sneezing) sometimes associated with fever, cough, and gastrointestinal symptoms.
Moderate	Symptoms are more critical fever and cough (mainly dry) are almost always present and are associated with breathing difficulties. It is characterized radiologically by lung anomalies compatible with interstitial pneumonia.
Severe	It is characterized by the presence of hypoxemia (SpO_2 < 92%) with signs of respiratory distress (tachypnea, groaning, wing flaps, sags), cyanosis, neurological signs and symptoms, refusal to eat, and signs of dehydration.
Critical	Disease progression with onset of respiratory failure requiring mechanical ventilation, signs of shock or multi-organ failure.

< 90% or < 92% or < 94% ?



Binding between SARS-CoV2 spike protein and ACE2 receptors



Potential factors protecting children against severe COVID-19

- Greater potential of the innate immune system
- Cross-reactivity between immune response to early childhood vaccines
- Reduced maturity and functionality of ACE2

Oxygen Therapy

- **SpO_2 <95%** without signs of respiratory distress---

  oxygen c nasal cannula or mask

  constant monitoring of vital parameters

Ventilation Support

- **High-flow nasal oxygen (HFNO) or non-invasive ventilation--CPAP**
- Risk of viral particle—**aerosol spread**
- World Health Organization (WHO)---HFNO in **single or negative pressure rooms**

Helmet CPAP

with positive end-expiration pressure (PEEP) 5 to 10 cmH_20

Respiratory Therapeutic Strategies in Children and Adolescents with COVID-19: A Critical Review

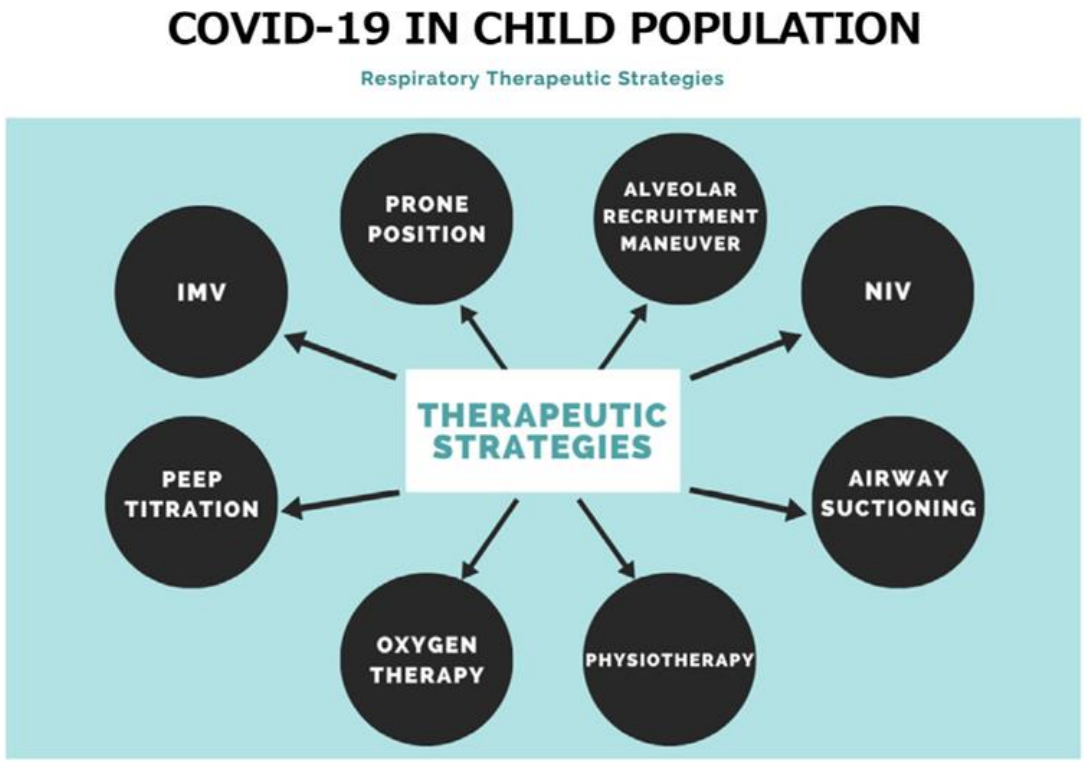
2

Giovana Pascoal Rodovanski [1], Susana da Costa Aguiar [2], Bruna Samantha Marchi [3], Patricia do Nascimento Oliveira [3], Livia Arcêncio [4], Danielle Soares Rocha Vieira [4], Cristiane Aparecida Moran [4]

Brazil,2021

Curr Pediatr Rev ,. 2021;17(1):2-14.

doi: 10.2174/1573396316999201123200936.



IMV = Invasive Mechanical Ventilation; NIV = Non-Invasive Ventilation.

Respiratory strategies

- **Original studies--six databases**
- Most frequently interventions

  Oxygen therapy

  Invasive (IMV)

  Non-invasive (NIV) ventilation

- Based on **experiences**

- **Oxygen therapy—**

  nasal catheter---the most recommended strategy for hypoxemia

  high-flow nasal cannula (HFNC)

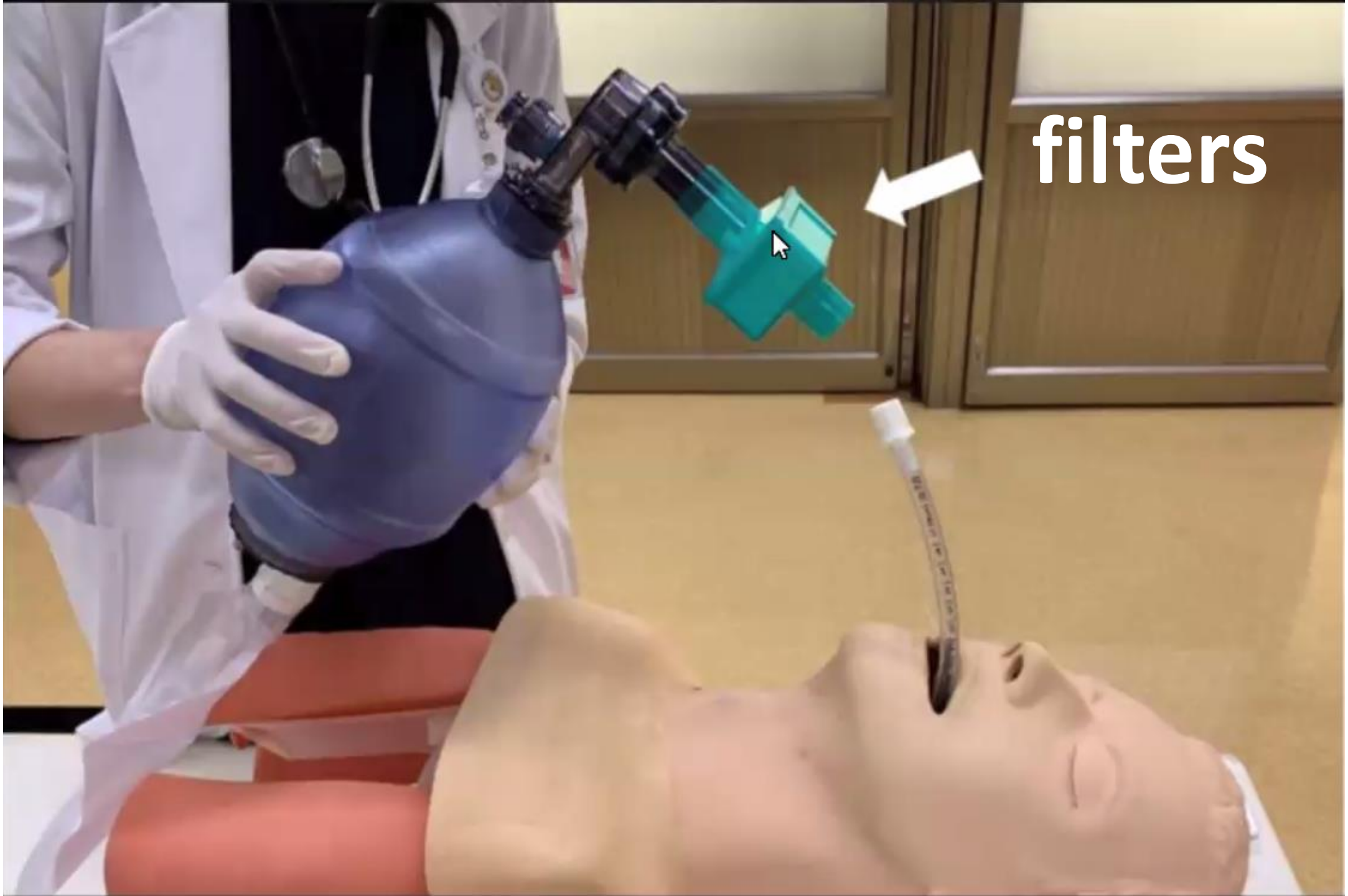
  --dispersion of aerosols

- Most recommendation--**Lung protective IMV**---

  use of bacteriological or **viral filters**

  PEEP titration

- Few recommendation--**Alveolar recruitment maneuvers**--- not consensual
- Airway suctioning with a **closed-circuit**
- **prone positioning** and physiotherapy


filters

Conclusion

- Oxygen therapy---- essential in the treatment of hypoxemia
- IMV should not be delayed
- Protective strategies----for adequate pulmonary ventilation

Alveolar recruitment maneuvers (ARM)

Korea

3

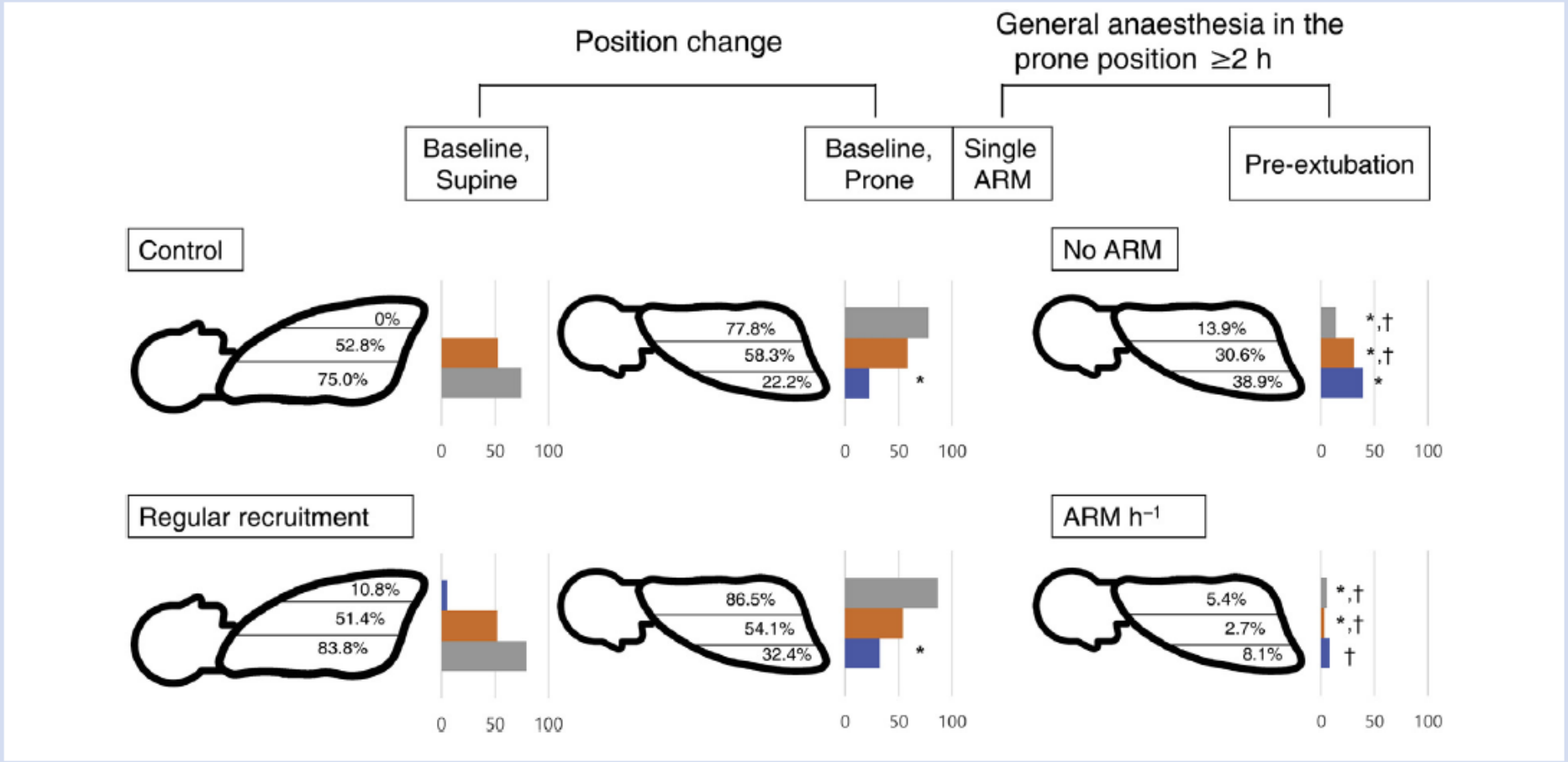


Fig 3. Regional lung atelectasis assessed by ultrasonography. The incidence of significant atelectasis according to the anterior (grey), lateral (orange), and posterior (blue) regions of the chest divided by the anterior and posterior axillary lines. ARM, alveolar recruitment manoeuvre. *P<0.025 compared with the baseline, supine position; †P<0.025 compared with the baseline, prone position.

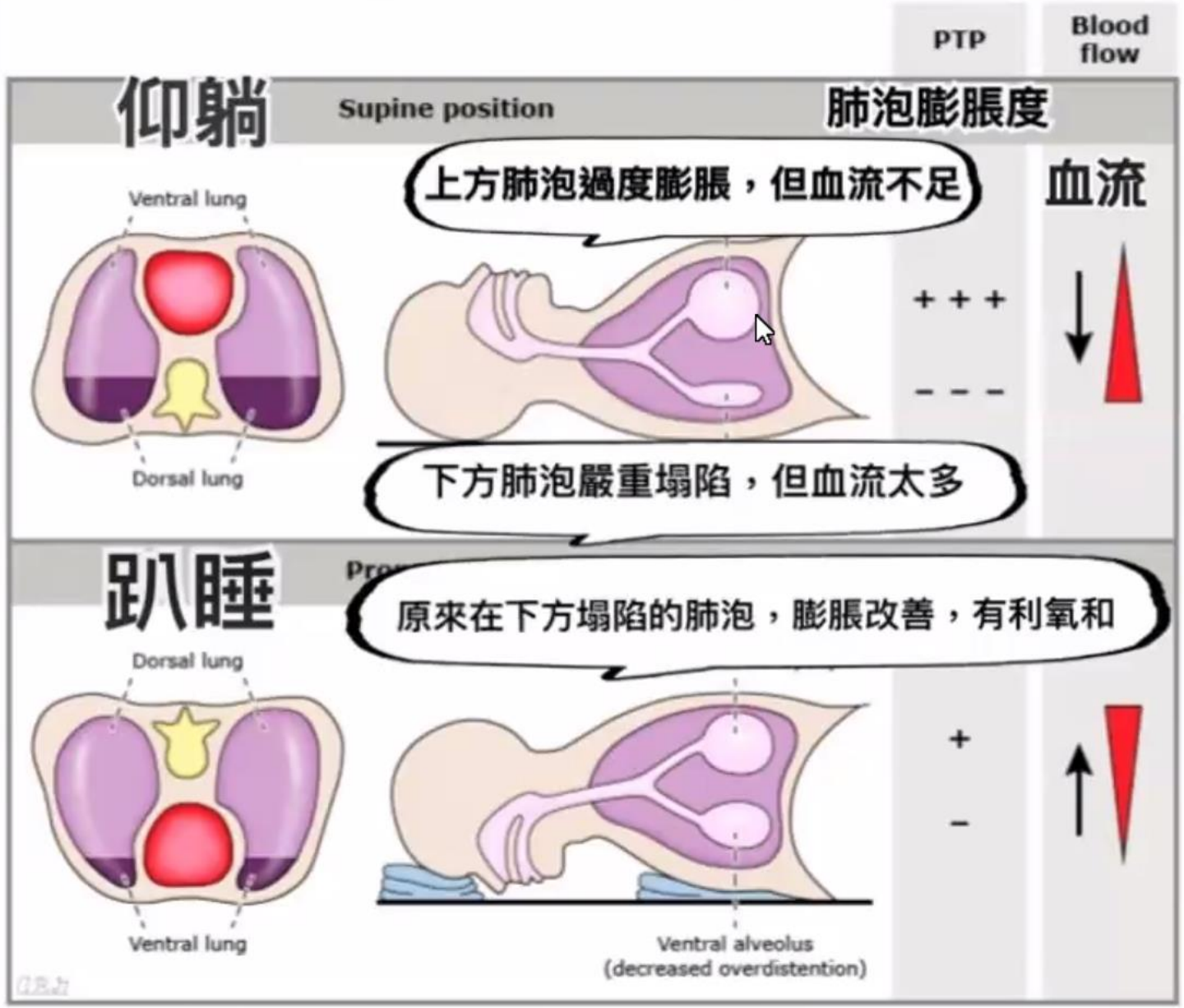
Effect of regular alveolar recruitment on intraoperative atelectasis in pediatric patients ventilated in the prone position: a randomised controlled trial

Young-Eun Jang, Sang-Hwan Ji, Eun-Hee Kim, Ji-Hyun Lee, Jin-Tae Kim and Hee-Soo Kim

British Journal of Anaesthesia, 124 (5): 648e655 (2020)
doi: 0.1016/j.bja.2020.01.022

Korea, 2020

AWAKEN PRONE

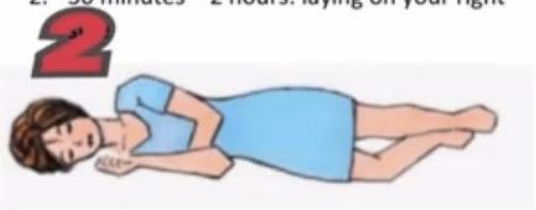


HOTOS

每個姿勢輪流躺30分鐘到2小時

1 30 minutes – 2 hours: laying on your belly

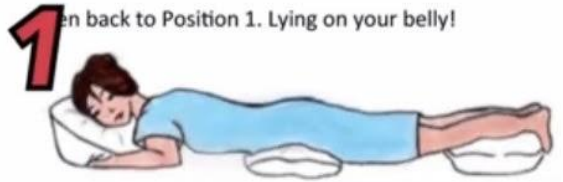
2. 30 minutes – 2 hours: laying on your right



3. 30 minutes – 2 hours: sitting up

4 30 minutes – 2 hours: laying on your left side

n back to Position 1. Lying on your belly!



Awake proning in 5 steps

1 Prepare
Explain the procedure to the patient and family and obtain consent. Gather as many pillows, towels and blankets as possible. Ensure at least 2 people are present to assist if required.

2 Position
*Lay the bed flat. Ask the patient to turn themselves onto their tummy and provide assistance. Position a **first pillow** under their chest or chest and abdomen and a **second pillow** or a rolled towel under their forehead, leaving a gap to accommodate the face mask. Ask the patient to orient their head in whatever position they find most comfortable.*

3 Oxygen supply & interface
Adjust the oxygen tubing so it is free at sight. Ensure that the reservoir bag is fully inflated, and the mask is not being pushed against the patient's face (may require additional padding)

4 Optimize position
Position the remaining pillows / bedding to minimise pressure on body parts and to maximize patient comfort. The knees should be slightly flexed and the arms supported at a comfortable angle, the elbow should be at an angle of ~80 degrees. The upper arm and shoulder in horizontal line. It is important to encourage the patients to reposition themselves when required or to call for help when they feel uncomfortable (give them a way to summon attention).

5 Monitor
Monitor oxygen saturation, respiratory rate and patient comfort. Target SpO_2 > 90% (>92% in pregnant patients).

Drawing Marco Rosell

2021/06/18 12:30

回應人力成本！健保署增「俯臥通氣治療」申報代碼

俯臥通氣治療 須3-5人共同協助

健保署解釋，俯臥通氣治療，是利用物理學方式改善病人低血氧、促進氧氣交換、提升氧合能力，亦為ARDS患者重要治療方式，臨床上為確保重症病人安全，防止管路滑脫，俯臥式擺位通常由3～5位醫護人員共同協助完成，為高人力成本的治療項目，尤其是COVID-19個案，醫護人員需穿著防護裝備執行治療，承受高風險及高壓力，所需耗用人力心力程度更高。

回應人力成本 增健保申報代碼

健保署指出，為回應照護所需人力成本，健保署於正式納入健保給付前，因應治療COVID-19合併有ARDS之重症個案所需，針對前述入住加護病房且插管使用呼吸器之病人新增本項申報代碼，追溯自費用年月110年5月1日起支付4,938點 / 每日（1點1元），全力支持重症醫療人員照護病人。

2021/05/01
4938點/天

By Dr. Chen SH

Egypt 4

Anaesthesia Reports 2020, 8, 183–186 doi:10.1002/anr3.12084

Case Report

Awake proning of a 2-year-old extubated child with severe COVID-19 pneumonitis

M. M. Alseoudy,[1] **M. A. Abo Elfetoh**[2] and **A. K. Alrefaey**[1]

1 Lecturer, 2 Assistant Lecturer, Department of Anaesthesia and Intensive Care Medicine, Faculty of Medicine, Mansoura University, Mansoura, Egypt

Prone positioning

- **Prone (4 h)----supine (1 h)---**cyclic rotation for 4 days
- **Dramatic increase** in peripheral oxygen saturations to 97%
- Decreased work of breathing
- Pediatric patient---potential adjuvant for respiratory therapy

  either **before, during or after** invasive ventilation
- Awake prone position---option for COVID-19 in pediatric patients
- **Cooperation**

frontiers in Pediatrics

MINI REVIEW
published: 29 March 2021
doi: 10.3389/fped.2021.622240

Check for updates

March, 2021

5

Colombia

COVID-19 in Children: Respiratory Involvement and Some Differences With the Adults

Jenny Libeth Jurado Hernández[1*] *and Iván Francisco Álvarez Orozco*[2]

[1] *Department of Pediatric Pulmonology, Fundación Neumológica Colombiana, Bogotá, Colombia,* [2] *Department of Pediatric Pulmonology, Neumocenter, Valledupar, Colombia*

Key points in respiratory management of Covid-19 in Children

Oxygen therapy (according to patient's evolution).

- Low flow system: mild hypoxemia.
- High flow system: moderate to severe hypoxemia

  precautions---

  reduce risk of dispersing contaminating aerosols

Invasive mechanical ventilation

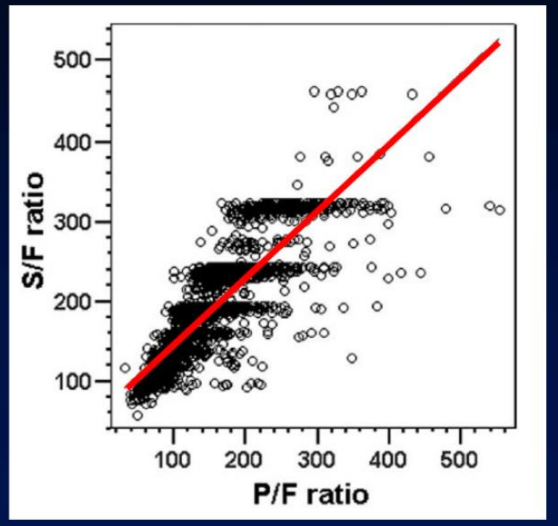
- if respiratory failure

  or persistent hypoxemia

Pa02/Fi02 < 200 or

Sat 02 /Fi02 < 264

SpO2/FiO2 (SF ratio) *vs.* PaO2/FiO2 (PF ratio)



- S/F = 64 + 0.84*(P/F)
- Based on this equation:

PaO_2/FiO_2	≥ 300	200	150	< 100
SpO_2/FiO_2	315	235	190	150
FiO_2	0.30	0.40	0.50	0.60
SpO_2 (%)	> 94	94	95	< 90

CHEST 2007; 132:410–417

- Increased need for oxygen or

  worsening tachypnea in patient on high-flow nasal cannula

Protective mechanical ventilation

Initial parameters

- Tidal volume (TV): 4–8 ml/ kg-- low tidal volume

  plateau pressure -- 30 cm H20, decrease TV

- Respiratory rate: 22–30 bpm (1 month to 2 years)

  18–24 bpm (2–4 years)

  14–20 bpm (> 8 years)

- Inspiration/expiration ratio (I: E ratio):1-2

- End-expiratory pressure (PEEP): titrate according to oxygenation, arterial gases and CXR.

  increase of 2 cm H_2O as required

5
30
25
20
15

Fraction of inspired O_2 (FiO_2)

start at 100%

rapidly reduce to less than 60% in the first 2–6 h

Prone position---moderate to severe ARDS

Glucocorticoids---as adjunctive therapy

- Prednisolone: 1 mg/kg orally or NG once daily (maximum dose 40 mg).
- Dexamethasone: 0.15 mg/kg

  orally, intravenously (IV), or nasogastrically once/day

  (maximum dose 6 mg).
- Methylprednisolone: 0.8 mg/kg IV once daily (maximum dose 32 mg).
- **Hydrocortisone**: ≥1 month: 1.3 mg/kg IV every 8 hours

  (maximum dose 50 mg; maximum total daily dose 150 mg)

  neonates: 0.5 mg/kg IV every 12 h for 7 days followed by

  0.5 mg/kg IV once daily for 3 days

J Pediatric Intensive Care, 2021

Published online: 2021-02-11

Review Article

Respiratory Care in Children with COVID-19

6

Shalu Gupta[1] Suresh K. Angurana[2] Virendra Kumar[3]

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[2] Department of Pediatrics, Advanced Pediatrics Centre (APC), Postgraduate Institute of Medical Education and Research, Chandigarh, India
[3] Department of Pediatric, Lady Hardinge Medical College and Kalawati Saran Children's Hospital, New Delhi, India

Address for correspondence Shalu Gupta, MD, DM, Division of Pediatric Emergency and Critical Care, Department of Pediatrics, Lady Hardinge Medical College and Kalawati Saran Children's Hospital, New Delhi 110001, India (e-mail: sguptabhu@gmail.com).

J Pediatr Intensive Care

India

- **Intubation and mechanical ventilation**

  limit exposure to aerosols

- **Lung-protective** mechanical ventilation strategies

  adequate sedation, analgesia, and neuromuscular blockers

Respiratory Support in Children with COVID-19

children are less commonly affected by COVID-19

severity of disease is less

mortality is <1%.

Supplemental Oxygen

In adults with COVID-19

Oxygen supplementation---SpO2 is <92%

acute hypoxemic respiratory failure on oxygen, the saturation

should be maintained no higher than 96%.

In children with COVID-19 with respiratory distress and/or SpO2 <90% 

low flow oxygen

nasal prongs (1–5 L/min)

nasal cannula

face-mask

venturi mask

Non-rebreathing mask

bubble continuous positive airway pressure (bCPAP)

High-flow oxygen

aerosol generation

triple layer surgical mask over the nasal prongs or nasal cannula

世界各國學會機構對HFNC建議指引

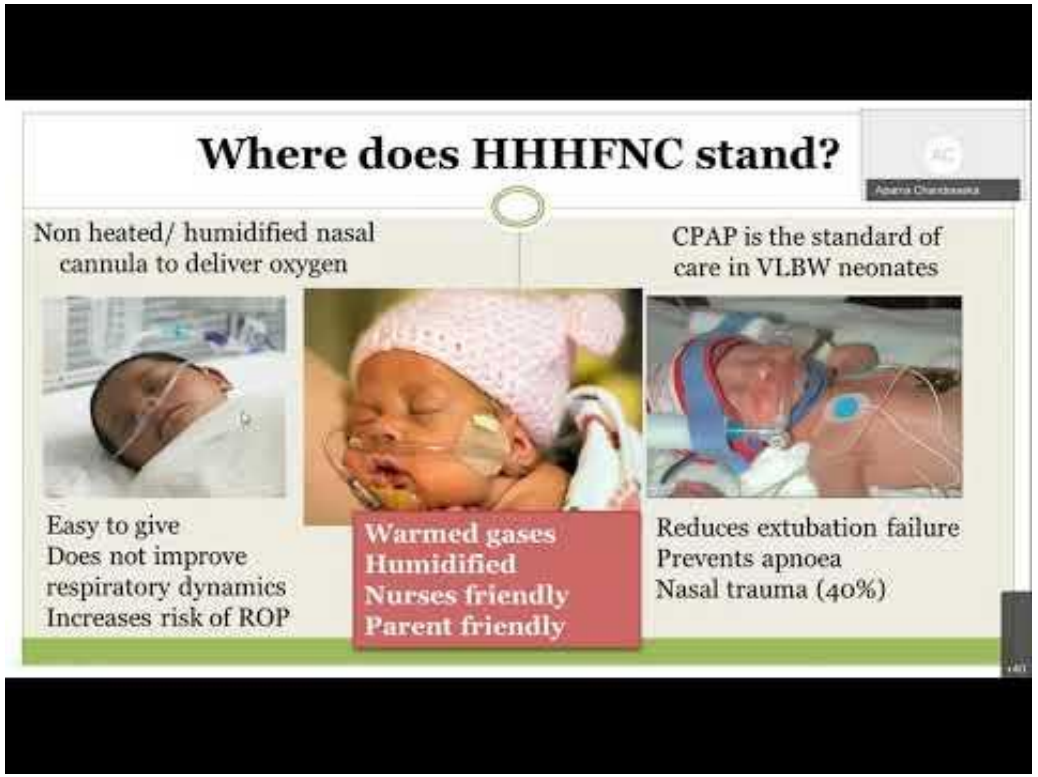
2021

Organization/country	Recommendation	Comment
AAMR, Argentina [33]	HFNC	Pro
ANZICS (Australia/New Zealand) [35]	HFNC	Suggest
AIPO (Italy) [36]	Helmet CPAP	-
CTS (China) [37]	HFNC	Pro
ESICM/SCCM (EU/US) [38]	HFNC	Pro
German recommendations for critically ill patients with COVID-19 (Germany) [39]	Helmet NIV	Restricted
Irish Thoracic Society, (Ireland) [33]	HFNC	Pro
National Healthcare System Guidelines, (UK) [40]	CPAP	HFNC contra indicated, no benefit but risk
SEPAR (Spain) [41]	HFNC	Maintain > 2-m distance
SPP (Portugal) [42]	HFNC	Pro
US Department of Defense COVID management guidelines [33]	HFNC	Pro
US Surviving Sepsis Campaign/SCCM [33]	HFNC	HFNC next modality for patient's not tolerating supplemental O_2
WHO [43••]	HFNC	Not for: COPD, cardiopulmonary edema, hemodynamic instability

Curr Anesthesiol Rep 2021 Mar 2;1-6

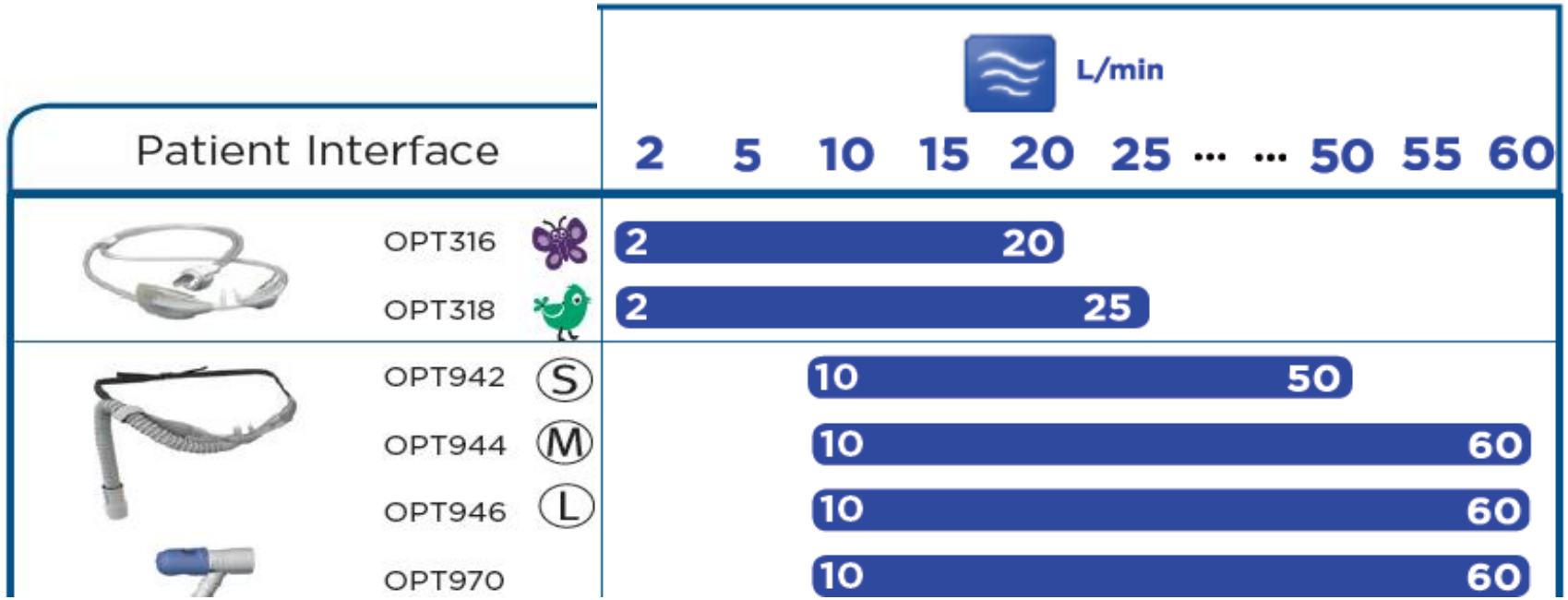
Why should we choose HHHFNC

- **Similar efficacy and safety** as NCPAP
- **Cannula/nostril diameter ratio** is **about 0.5**
- Convenient to establish a respiratory support
- **Friendly** for clinical staffs and parents
- Easier to hug the baby – **kangaroo care**
- Less invasive than NCPAP's prong
- **Minima nasal trauma and irritation**




新生兒/兒科加護
病房之生活日常

Age	Body weight	Flow rate range
< 1 m	< 4 kg	5-8 L/min
1 m–1 yrs	4-10 kg	8-20 L/min
1-6 yrs	10-20 kg	12-25 L/min
6-12 yrs	20-40 kg	20-30 L/min
12-18 yrs	> 40 kg	25-50 L/min



Initial setting: (above 10 kg)
10 L/min ± 0.5 L/kg/min

Maximum:
A flow of 2 L/kg/min

Set flow range
For example…
20 kg = 15 to 40 L/min

Chao, KY

賈永婕的跑跳人生
6月12日下午4:15 ·

救命神器HFNC 就要來了💪 請再等我一下
這是一個因為愛心便當開始的故事❤️星期四我記得中午當我送完愛心便當給萬芳醫院，回到家吃完水餃，喘口氣滑滑手機！這時收到一個臉書朋友的訊息！
嗨！永婕
我姊姊是一位南部醫院的護理主任在護理界30多年她有一個訊息想請我轉達
👇👇👇👇
醫院現在最缺的是高流量氧氣鼻導管全配系統（HFNC），醫護人員簡稱「救命神器」，一台全配定價27萬，這一台現在全台醫院都在搶，但是公立醫院還要需要招標緊急採購程序才能買，一般呼吸器是面罩式，病人不能俯臥（肺炎病人需要俯臥姿位引流），也沒辦法吃東西。這個是鼻導管高流 病人可以自行進食。這台機器同時也可以降低護理人員的感染機率，對一線醫護來說，除了食物的打氣，這台救命神器是他們目前最需要的。提供你參考，如果行有餘力，其實號召藝人捐贈救命神器給一線公立醫院是最實際的。（不是強迫喔，只是提供參考，就是除了便當以外，我們可以做什麼～）
好👌我一定要做些什麼！
第一時間我立刻求證身邊所有的醫生朋友請問這台機器真的是救命神器嗎？
台大醫院急診室第一個回覆我說是真的，而且我們台大很需要，非常需要！如果有可以送來台大嗎？
什麼？不只公立醫院缺？連台大都缺？我心都碎了！
我去爬文Icu醫生陳志金的文知道這台機器可以減少重症病患插管的可能，增加存活率！
再接下亞東、榮總、慈濟來！的訊息是真的是救命神器我們急迫需要……天啊！
我找到原廠廠商，問到台灣有現貨！
所以我們直接買機器捐物資給醫院，直接又快速！現在就是在搶時間跟時間賽跑！

藝人賈永婕近日募資9,234萬購買342台「救命神器」HFNC（高流量氧氣鼻導管全配系統），親自配送到各大醫院，善舉大獲台灣人讚賞。她今（16日）下午開直播分享這幾天的心得，吸引萬人觀看。她直播時氣氛暖心歡樂，但提到有網友質疑她行善的最終目的是要「分裂台灣」，賈永婕嚴肅表示，她從頭到尾都是「順時中」、愛台灣、同島一命，不了解為何有人要質疑她。

賈永婕分享過去幾天集資買HFNC過程，她形容自己就是個瘋子，將子彈送到最前線給戰士，感謝眾多神隊友義氣相挺。昨天有網友在她臉書留言指她是「被派出來攻打民進黨

HHHFNC=救命神器？是covid-19呼吸治療的王道？

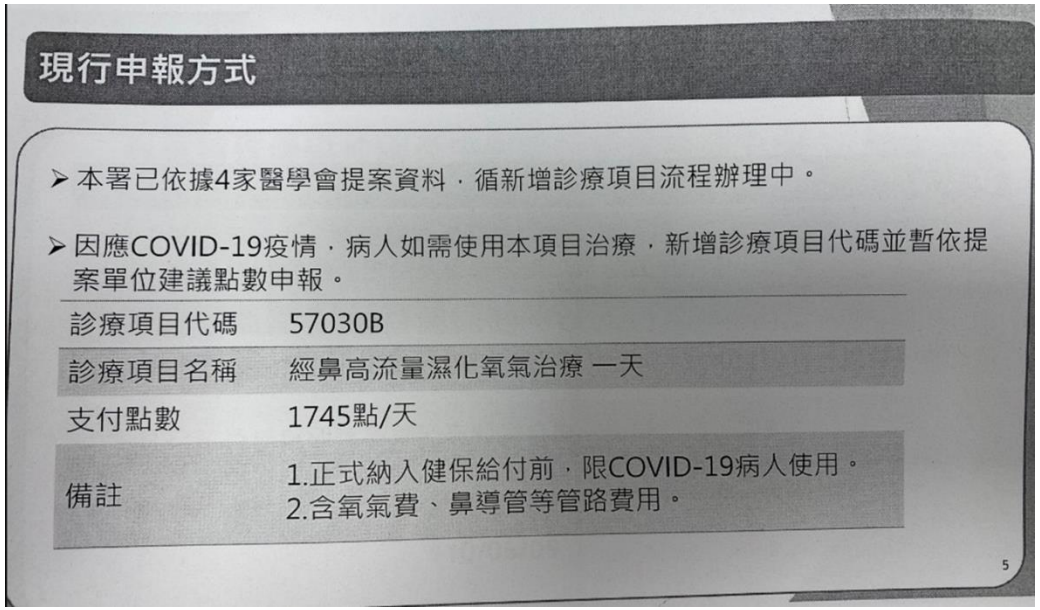
因應COVID-19疫情，新增「經鼻高流量濕化氧氣治療」申報代碼，並放寬「體位引流」申報次數限制

- 資料來源：中央健康保險署
- 建檔日期：110-06-10
- 更新時間：110-06-10

為因應治療COVID-19(新冠肺炎)個案所需，國際經驗及實證上顯示「經鼻高流量濕化氧氣治療」（High Flow Nasal Cannula, HFNC）及「俯臥式擺位」（Awake prone）為具效益之治療方式，中央健康保險署李伯璋署長表示，只要防疫所需，健保一定會積極配合解決，將新增「經鼻高流量濕化氧氣治療」申報代碼，並放寬「體位引流」申報次數限制，COVID-19之治療費用會由政府公務預算支應。

57030B
1745點/天

因應COVID-19疫情，新增「經鼻高流量濕化氧氣治療」申報代碼，並放寬「體位引流」申報次數限制- 衛生福利部
NIV 900點， invasive 1800點
;Nasal high flow1745點



相較於傳統氧氣治療，HFNC可提供病人相對穩定且精準控制溫濕度的高濃度氧氣，並減少空氣逸散，且依國際經驗及實證上顯示可避免COVID-19病人插管，減少呼吸器使用。健保署已依相關專科醫學會建議，循新增診療項目流程辦理徵詢專業意見，於正式納入健保給付前，因應COVID-19疫情需要，健保署新增本項申報代碼，支付1,745點 / 每日，支持醫院提供確診病人高效益的治療方式，降低重症比率，提升病人治癒率。

至於俗稱「超人姿勢」的俯臥式擺位，可以增加肺部擴張、減少肺部和心臟的壓迫，促進氧氣交換效率，減少病人呼吸器、氧氣使用時間，降低高濃度氧氣的肺損傷後遺症。健保署表示，「體位引流」為現行健保給付項目，原規定每日申報二次，為因應COVID-19疫情所需，重症病人須仰賴第一線醫護人員協助翻身、擺位，為回應照護所需人力負擔，健保署放寬本項目之申報次數限制，全力支援醫院照護病人。

High flow nasal cannula compared with conventional oxygen therapy for acute hypoxemic respiratory failure: a **systematic review and meta-analysis**

- March 2019 Intensive Care Medicine 45(7)

  DOI:10.1007/s00134-019-05590-5

7

- Bram Rochwerg McMaster University
- David Granton University of Toronto
- D. X. Wang, Yigal Helviz Shaare Zedek Medical Center Jerusalem

Jerusalem

systematic review and meta-analysis

- **12** randomized controlled trials (RCTs; **1,989 patients**)
- HFNC in patients with respiratory failure.

---**reduce invasive ventilation** (relative risk [RR] = 0.85; 95% confidence interval [CI]: 0.74–0.99)

---**escalation of oxygen therapy** (RR = 0.71; 95% CI: 0.51–0.98)

- No difference in **mortality** was seen between patients receiving HFNC vs. conventional oxygen therapy

Noninvasive mode of ventilation (HFNC or NIV)

- **mild ARDS without hemodynamic instability**
- **closely monitored for a possible deterioration**
- **early intubation**

  single patient rooms with negative pressure

  double lumen tubing

  viral filter at expiratory limb

微負壓：排出的空氣沒有淨化。
負壓隔離：抽出的空氣淨化後再排出
若有飛沫氣溶膠傳播嫌疑，則微負壓排氣口附近的病毒濃度堪憂

Endotracheal Intubation

- Children with worsening clinical status--- **early intubation**

  respiratory fatigue

  hemodynamic instability

  PaO2/FiO2 <300

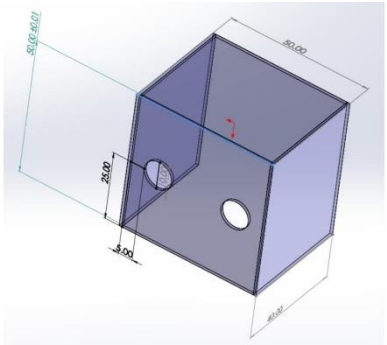
  altered mental status

Endotracheal Intubation

- **video-guided** laryngoscopy
- risk of **viral transmission**
- in **negative pressure** room or in **single-patient** well-ventilated room
- Use full Personal protective equipment **(PPE)**
- disposable tubing with **viral filter** between expiratory limb of the circuit and machine
- **limit the number** of staff to three-four (intubator, airway assistant, nurse for administering medication, and team leader

Endotracheal Intubation

- **Transparent aerosol entrainment box** or plastic sheets
- **Pre-oxygenation**---
  non-rebreathing mask
  tight-fitted face mask and bag with high-efficiency particulate air **(HEPA) filter** between face mask and bag
- positive pressure breaths---
  tight mask seal--two-hand technique by one HCP and bagging by other



Taiwanese doctor invents device to protect US doctors against coronavirus

Taiwanese doctor creates 'Aerosol box' that shields doctors against coronavirus while intubating patients

By Keoni Everington, Taiwan News, Staff Writer
2020/03/23 10:08

Lai demonstrating device. (CNA photo)

TAIPEI (Taiwan News) — A Taiwanese doctor on Saturday (March 21) released the design for a device

Endotracheal Intubation

- **cuffed or micro cuffed** endotracheal tube
- **rapid sequence induction** with muscle relaxants
- **immediately inflate** the cuff
- **connect** the endotracheal tube to the already set ventilator
- **closed in-line suction**
- viral **filter** between endotracheal tube and circuit

- **end-tidal carbon dioxide** detection
- **lung ultrasound** should be used to confirm endotracheal tube placement
- In case of circuit disconnection---**clamped ET tube**

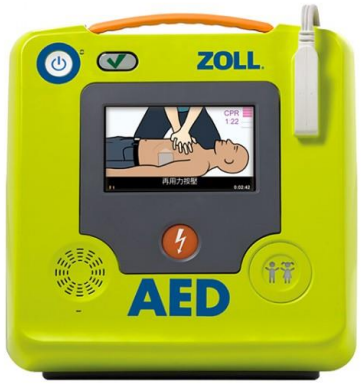
希望救回更多病人！五月天暖捐雙北14家醫院66台呼吸器

五月天低調做公益。圖 / 相信音樂提供

2021-06-09 10:03 聯合報 記者林士傑 / 即時報導

五月天先前免費授權「勇敢」給長庚醫院使用，替醫護人員打氣，昨有網友發文感謝旗下包含五月天、李宗盛、劉若英、鼓鼓的相信音樂捐給雙北66台呼吸器，感動喊話：「感謝你們！有你們真好！」

該名網友表示經許多急診前線的人建議要備著呼吸器，協調廠商訂了100台呼吸器，中間過程不算順遂，幸而最後在所有人的努力之下順利捐出，對方說接到相信音樂致電，通知捐出66台ZOLL呼吸器、提供給雙北14家醫院，「我邊哭邊接這通電話，希望這份愛心可以救回更多病人。」網友推測若是一般等級的話，66台呼吸器費用約600萬左右，但目前短缺的應是加護病房等級，這樣66台費用近2千萬。



Nebulization

- generates aerosols---avoided
- Bronchodilators---metered dose inhaler with spacer

妹妹-----3歲

6/3 Lab data

==========

WBC 7.0 10^3/uL
RBC 4.60 10^6/uL
Hb 12.3 g/dL
Ht 36.3 %
MCV 78.9 fL
Platelet 324 10^3/uL
ANC(absolute Neu.#) 2.71 10^3/uL
Segmented Neutro. 39.0 %
Lymphocyte 52.7 %
Band 0.0 %

==========

ALT (GPT) 14 U/L
Creatinine 0.30 mg/dL *L
CRP 0.57 mg/dL

==========

姊姊-----4歲6個月

==========

WBC 7.8 10^3/uL
RBC 4.45 10^6/uL
Hb 12.3 g/dL
Platelet 290 10^3/uL
ANC(absolute Neu.#) 3.86 10^3/uL
Segmented Neutro. 49.6 %
Lymphocyte 31.5 % *L
Band 0.0 %

==========ALT

(GPT) 12 U/L
Creatinine 0.42 mg/dL *L
CRP 0.47 mg/dL

==========

6/11 COVID-19(二採)

妹妹-----3歲

檢驗值

檢驗項目名稱	檢驗值	檢驗值單位	最小參考值	最大參考值
Specimen type	Nasopharyngeal			
Novel coronavirus RT PCR	Negative			
陽性報告註記				
Ct 值				

姊姊-----4歲6個月

檢驗值

檢驗項目名稱	檢驗值	檢驗值單位	最小參考值	最
Specimen type	Nasopharyngeal			
Novel coronavirus RT PCR	Positive			
陽性報告註記	飛沫接觸隔離			
Ct 值	26.26			

6/15 COVID-19(三採)

妹妹-----3歲

檢驗值

檢驗項目名稱	檢驗值	檢驗值單位	最小參考值	最大參
Specimen type	Nasopharyngeal			
Novel coronavirus RT PCR	Positive			
陽性報告註記	飛沫接觸隔離			
Ct 值	29.59			

姊姊-----4歲6個月

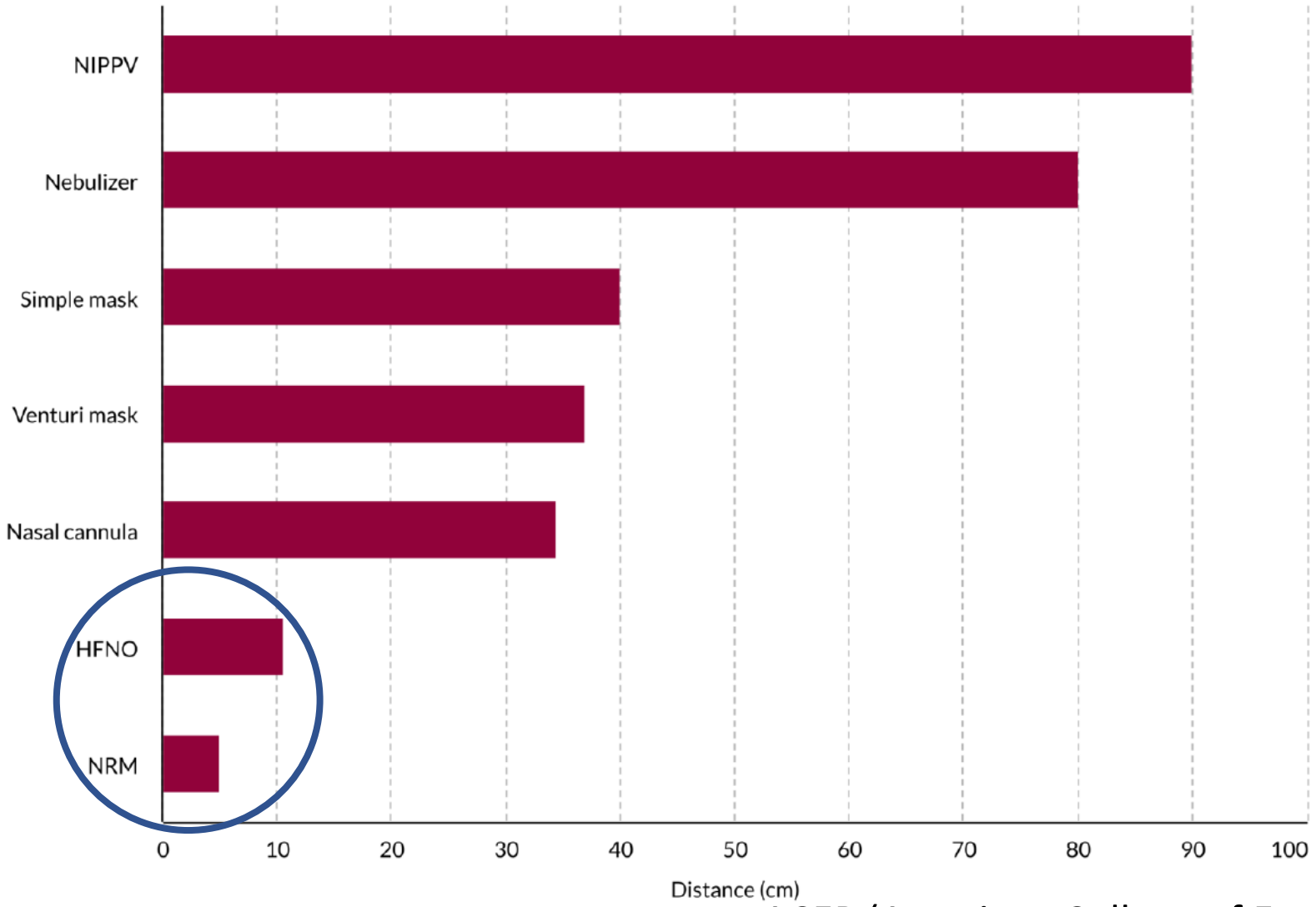
檢驗值

檢驗項目名稱	檢驗值	檢驗值單位	最小參考值	最大參
Specimen type	Nasopharyngeal			
Novel coronavirus RT PCR	Positive			
陽性報告註記	飛沫接觸隔離			
Ct 值	26.26			

Take Home Message

GOAL OF OXYGENATION
92~96%

各種呼吸治療造成飛沫傳播的比較

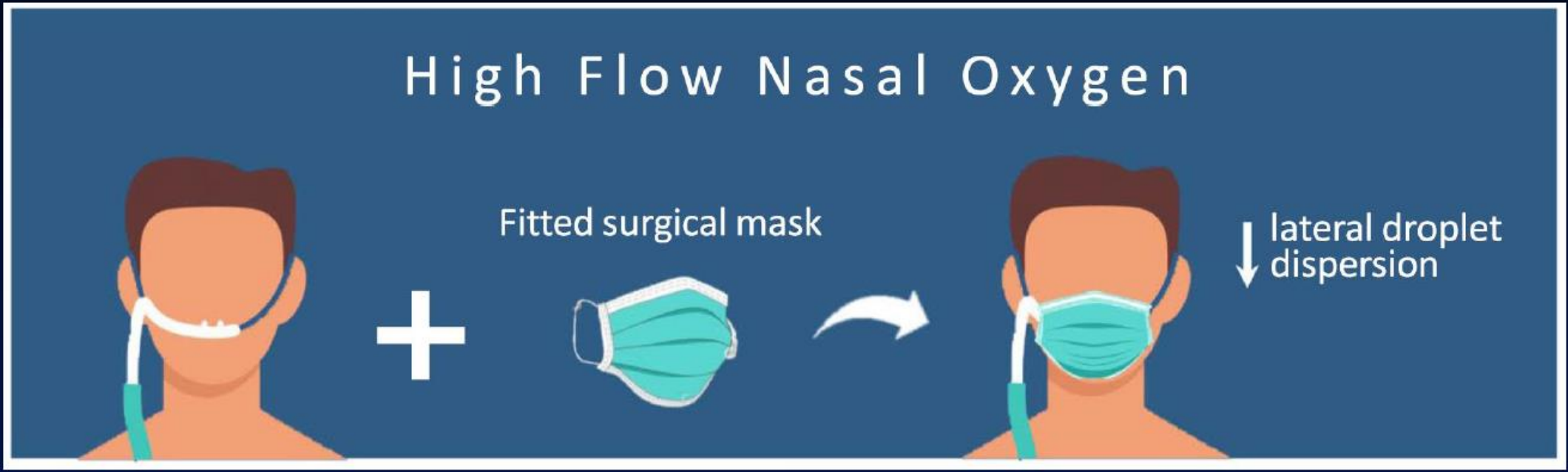


ACEP (American College of Emergency Physicians) field guide

Ward Management Protocol

- Keep SpO2 > 94%
- Oxygen support (N/C, mask, NRM, HFNC),
  - 不建議使用 NIPPV -→ 飛沫範圍太大
- **Prone position**
  - 無法完全配合者至少鼓勵側臥

建議高流量氧氣鼻導管加上外科口罩



Azoulay_critical care2020


第六屆亞洲兒童胸腔醫學會年度大會
日期:2021/9/18-19
地點:高雄醫學大學附設醫院


VACCINE
250萬劑疫苗
AIT
American Institute in Taiwan

感謝您的聆聽


Corona Extra
Corona Extra
Corona Extra
IMPORTED BEER FROM MEXICO