

# TIPS AND PITFALLS OF MANAGING HYPOXEMIA IN COVID-19 PATIENTS OUTSIDE ICU



Royal Prince  
Alfred Hospital



Amber wards

RPA Virtual

Red wards

COVID-RSS

SHA

ICU

Respiratory Dept

Radiology



Emergency Dept

Hospital in the home

Nursing Administration

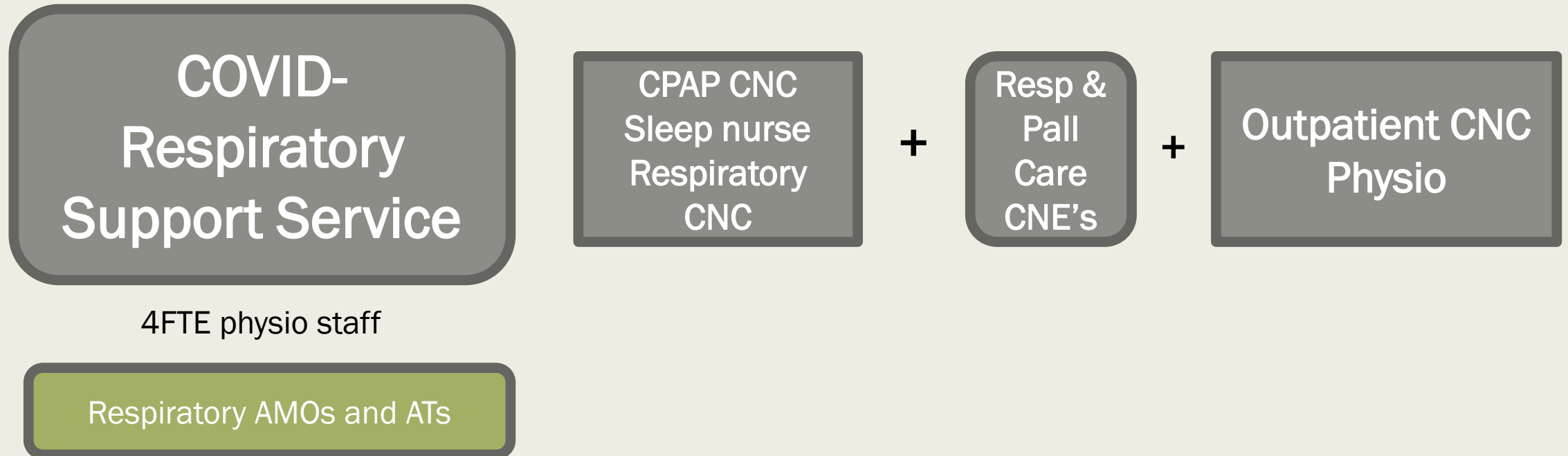
# Tip #1: Don't be the first ...

- Time to prepare/plan
  - Pull together equipment
  - Update and review of guidelines
  - Think about staffing
    - *HFNC 1:4*
    - *CPAP 1:2*
    - *From where?*



# Tip #2 Who will do the real work .....

- Staff training
  - COVID wards - managing O2 therapy
  - Limited/no experience with HFOT & PAP
  - Redirect respiratory resources



# COVID-RSS

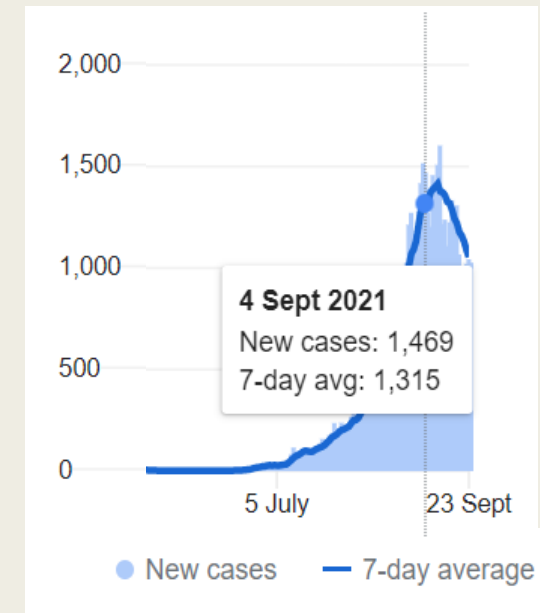
- 24/7 coverage of 3 COVID red wards
  - *2 respiratory (+1) /1 Geris*

## Role

- Set up, monitor and manage HFNC/CPAP
- Avoid need for ICU transfer
- Stabilise patients until ICU bed available
- Provide a therapy option beyond SOT for non-ICU pts
- Attend ICU assists
- Training ward staff in NIRS, proning
- Develop and disseminate guidelines
- Hospital-wide respiratory education
- Staff support → initiate HFOT
  - documents
  - CSA
  - Videos

# Tip #3 Strong collaboration with ICU


- First wave 2020 – all patients directed to ICU
- Second wave 2021
  - *Initial ICU reticence re ward care*
  - *Limited ICU beds/staff*
  - *Overwhelmed by ICU assists/CERS*
- Respiratory/ICU mutually developed guidelines HFOT & CPAP
- “Home” videos of HFOT and CPAP set up with intensivist
- Intensivist joined RSS am/pm shift handover
  - *Identifying at risk patients*
  - *Now 7pm meet and greet*



# Tip # 4 Proning is your friend


- Very powerful tool to improve SpO<sub>2</sub>
- Staff training and assistance
- Patient support
  - *Korean, Greek, Portuguese, Chinese (simplified and traditional), Greek, Italian*

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您的醫療團隊要求您俯臥（趴著）  
這將有助於讓更多的空氣進入肺部的所有區域，並有助於您的康復  
請不要保持任何會引起不適/疼痛的姿勢—根據需要重新調整姿勢並使用枕頭來幫助

**COVID-19的清醒俯臥**  
我們的目標是每天總共花 8 小時俯臥，每一次俯臥最多持續 2 小時



俯臥  
2 小時後如果您需要從俯臥位休息，請選擇以下姿勢之一休息 30 分鐘

左側臥      坐直      右側臥

當您覺得準備好了，您可以回到俯臥位重複這個循環

請盡量避免以仰臥位躺著的時間

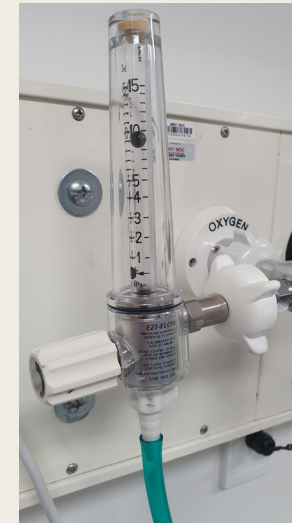
Last reviewed: September 2021  
Reference: Bentley SK, Iavicoli L, Charkas D, et al. Guidance and Patient Instructions for Prone and Repositioning of Awake, Nonintubated COVID-19 Patients. Acad Emerg Med. 2020;27(8):787-791.

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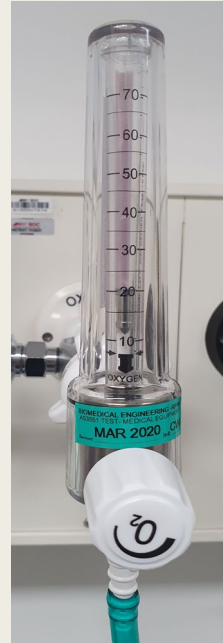


# Pitfalls

- Extended use in patients as a ceiling of care
  - HFNC then CPAP*
  - CPAP less comfortable but more effective*
  - Clear endpoint; Pall care input*
- The right equipment for the job
  - Flow rates 50-60L/min often needed*



15L/min



70L/min

		AIRVO Flow Setting (L/min)						
		15	20	25	30	35	40	45
O <sub>2</sub> Flow (L/min)	1	26	25	24	24	23	23	23
	3	37	33	30	29	28	27	26
	5	46	41	37	34	32	31	30
	7	50	48	43	40	37	35	33
	10	55	53	48	46	44	41	39
	15	63	59	55	52	49	47	45
		O <sub>2</sub> concentration (%)						

	Machine airflow/pressure	Wall oxygen meter	Max FiO2	ICU assist trigger
Patients on 6L HM with SpO2<92%/increased WOB require review by the respiratory team to be considered for initiation of HFNP or CPAP.				
ICU triage should be made aware of all patients requiring these therapies				
Initial HFNP settings	30L/min	<15L	50-60%	SpO2 <92% or increased WOB
CPAP settings	CPAP 10cmH2O	NA	60%	SpO2 <92% or increased WOB
Palliative settings	Any	Any	Any	NA
After discussion between ICU and the respiratory team, patients may remain on the wards and start on higher settings:				
Higher HFNP settings	Up to 60L/min	15-70L/min	60%	SpO2 <92% or increased WOB
Higher CPAP settings	CPAP >10cmH2O	NA	60%	SpO2 <92% or increased WOB
Any patient requiring an FIO2 >60% should be transferred to ICU, unless deemed appropriate to stay on the ward by the respiratory team				



- Connected to wall O2
- FiO<sub>2</sub> 100%
  - CPAP or NIV

Lebret (2021): Six of 10 patients reported needed O2 flow rates  $\geq 50$  L/min to maintain SpO2 > 90% using a simple CPAP device



## COVID-RSS activity to date

**5/9 – 26/9: 41 patients**

Number placed on HFOT – 38/41

Number placed on CPAP – 9/41

Number t/f to ICU - 13

NFR/not for ICU - 15

Number died on ward – 3



	Benchtop <sup>1</sup>				Person <sup>1,2</sup>				Person with sensor at mask <sup>1,2</sup>			
Back of device	O2 added in circuit				O2 added in circuit				O2 added in circuit			
	RA	5L/min	10L/min	15L/min	RA	5L/min	10L/min	15L/min	RA	5L/min	10L/min	15L/min
RA	21				21							
10L/min	34				32							
15L/min	43	56	66	74	40	50	60	69	40	49	58	62
20L/min	51	60	69	75	43	50	62	68	48	57	59	62
25L/min	60	69	78	84	44	52	68	72	52	59	63	68
30L/min	73	82	84	84	50	68	72	72	60	65	68	71