

Tube Feeding Guide for the COVID-19 Emergency

Prepared by Stony Brook University Hospital Clinical Nutrition Team, April 7, 2020

Justification

To provide LIPs a guideline for initiating enteral feeding for the critically ill patient during the COVID-19 pandemic. Early nutrition support among critically ill patients, including those with respiratory failure, is associated with increased ventilator free days and more positive outcomes.^{i ii iii}

Procedure

Consider tube feeding for patients on mechanical ventilation or those not able to maintain adequate po intake. Before considering tube feeding, patient needs to be hemodynamically stable and tapering off vasoactive agents.

If enteral feeding is warranted, enter a nutrition consult. Guidelines below are provided if need to start tube feeding before nutrition consult completed.

If feeding pump availability is limited, prioritize assignment of pumps as follows:

- COVID-19 patients to optimize feeding tolerance and preserve personal protective equipment.
- Patients with a J-tube since intermittent feeding via bolus or gravity drip is not recommended.

ADULTS

- **If feeding pump available**
 - Access OVID tube feeding Power Plan
 - Select route - NG tube (if G-tube or J-tube present upon admission, use it)
 - Assess residuals – Check every 8 hours and hold tube feeding if > 250 ml
 - Select formula
 - Default – Vital 1.5; if not available Osmolite 1.2
 - With respiratory distress (pCO₂ > 50 mmHg) without signs of GI intolerance; appropriate for diabetics and if volume restriction necessary – Pulmocare 1.5
 - With renal failure/injury – Nepro 1.8 (with or without diabetes)
 - With diabetes and stable – Glucerna 1.2
 - When patient more stable – Jevity 1.5
 - Goal rate – 30-40 ml/hr (start at 20 ml/hr and advance by 10 ml every 4 hours as tolerated)
 - Duration – 24 hours
- **If feeding pump NOT available**
 - Access the COVID tube feeding Power Plan
 - Select route – NG tube (if G-tube present upon admission, use it; do **NOT** use J-tube for bolus or gravity drip feeding)
 - Assess residuals – Check every 8 hours and hold tube feeding if > 250 ml
 - Select formula:
 - Default - Vital 1.5 (**not with gravity drip**); if not available Osmolite 1.2
 - With respiratory distress (pCO₂ > 50 mmHg) without signs of GI intolerance; appropriate for diabetics and if volume restriction necessary – Pulmocare 1.5
 - With renal failure/injury – Nepro 1.8 (with or without diabetes); **not with gravity drip**

- With diabetes and when more stable – Glucerna 1.2
- When patient more stable – Jevity 1.5

If gravity drip do NOT use Nepro 1.8, Suplena 1.8, Vital 1.5 or TwoCal

- Delivery method without pump – gravity drip or bolus as per patient tolerance and available equipment (gravity drip feeding requires a gravity feeding bag with tubing set)
 - **if gravity drip: 3, 8-hour feedings a day**
 - initiation – 20 ml/hr or 5 drops/minute (160 ml/feeding)
 - advance as tolerated – 30 ml/hr or 7 drops/minute (240 ml/feeding)
 - advance as tolerated – 40 ml/hr or 9 drops/minute (320 ml/feeding)

Put appropriate volume of formula into bag based on rate (see chart below); set roller clamp for appropriate drips per minute based on rate (see chart below); each feeding should run for 8 hours; discard formula and bag after 8 hours. In between 3 feedings, formula bottle should be labeled with patient name, MRN, date and time bottle opened and refrigerated; discard after 24 hours.

- **if bolus: 4 feedings a day**
 - initial bolus, 80 ml/feeding
 - if tolerated, advance next feeding to 120 ml/feeding
 - if tolerated, advance next feeding to 160 ml/feeding

Put appropriate volume of formula into syringe based on volume (see chart below). In between the 4 feedings, formula bottle should be labeled with patient name, MRN, date and time bottle opened and refrigerated; discard after 24 hours.

- Refer to chart below for calories delivered based on volume and caloric density of formula

Summary of Calories Provided, kcal/day (Adults)									
	Rate, (ml/hr)	Rate, (drops/hr)*	Rate, (drops/min)*	Hang Time (hrs)	Volume delivered, ml/feeding	Volume delivered, ml/day	Calories Delivered, kcal/day based on Caloric Density of Formula		
							if caloric density 1.2 kcal/ml	if caloric density 1.5 kcal/ml	if caloric density 1.8 kcal/ml
Pump Assisted Continuous 24 hour Feeding									
Initiation	20	n/a	n/a	24	n/a	480	576	720	864
1st Advance	30	n/a	n/a	24	n/a	720	864	1080	1296
2nd Advance	40	n/a	n/a	24	n/a	960	1152	1440	1728
Gravity Drip - 3, 8-hour feedings									
Initiation	20	280	5	8	160	480	576	720	864
1st Advance	30	420	7	8	240	720	864	1080	1296
2nd Advance	40	560	9	8	320	960	1152	1440	1728
Intermittent Bolus Feedings, 4 per day									
Initiation						80	384	480	576
1st Advance						120	576	720	864
2nd Advance						160	768	960	1152
* For gravity drip, assume 14 drops/ml									
** During COVID-19 emergency we are extending hang time of open tube feeding systems to 8 hours as per manufacturer recommendations									

PEDIATRICS (over 1 year of age) – start trickle feed until nutrition consult completed

- **If feeding pump available**
 - Access the COVID tube feeding Power Plan
 - Select route - NG tube (if G-tube or J-tube present upon admission, use it)
 - Assess residuals – Check every 8 hours and hold tube feeding if > 250 ml
 - Select formula - Pediasure 1.0 with Fiber

- Initiation rate – 5 to 10 ml/hr and if tolerated advance to 15ml/hr after 4 hours (Goal rate to be recommended by RD upon consult or by MD.)
- Duration – 24 hours
- **If feeding pump NOT available – intermittent feedings**
 - Access the COVID tube feeding Power Plan
 - Select route – NG tube (if G-tube present upon admission, use it; do **NOT** use J-tube for bolus or gravity drip feeding)
 - Assess residuals – Check every 8 hours and hold tube feeding if > 250 ml
 - Select formula – Pediasure 1.0 with Fiber
 - Delivery method without pump – gravity drip or bolus as per patient tolerance and available equipment (gravity drip feeding requires a gravity feeding bag with tubing set)
 - **if gravity drip: 3, 8-hour feedings a day**
 - initiation - 15 ml/hr or 4 drops/minute (120 ml/feeding)
 - advance as tolerated – 20 ml/hr or 5 drips per minute (160 ml/feeding)
 - Put appropriate volume of formula into bag based on rate (see chart below); set roller clamp for appropriate drips per minute based on rate (see chart below); each feeding should run for 8 hours; discard formula after 24 hours.
 - In between 3 feedings, formula bottle should be labeled with patient name, MRN, date and time bottle opened and refrigerated; discard after 24 hours.
 - **if bolus: 4 feedings a day**
 - initial bolus, 60ml/feeding
 - if tolerated, advance next feeding to 100 ml/feeding
 - In between the 4 feedings, formula bottle should be labeled with patient name, MRN, date and time bottle opened and refrigerated; discard after 24 hours
- Refer to chart below for calories delivered based on volume

Summary of Calories Provided, kcal/day (Pediatrics)							
	Rate, (ml/hr)	Rate, (drops/hr)*	Rate (drops/min)*	Hang Time (hrs)**	Volume delivered, ml/feeding	Volume delivered, ml/day	Calories Delivered, kcal/day
Pump Assisted Continuous 24 hour Feeding							
Initiation	10	n/a	n/a	24	n/a	240	240
Advance	15	n/a	n/a	24	n/a	360	360
Gravity Drip - 3, 8-hour feedings							
Initiation	15	210	4	8	120	360	360
Advance	20	280	5	8	160	480	480
Intermittent Bolus Feedings, 4 per Day							
Initiation					60	240	240
Advance					100	400	400
<i>* For gravity drip, assume 14 drops/ml</i>							
<i>** During COVID-19 emergency we are extending hang time of open tube feeding systems to 8 hours as per manufacturer recommendations</i>							

ⁱ Bendavid I, et al. Nutrients. 2019;11(1):106-115.

ⁱⁱ Nicolo, et al. JPEN. 2016;40(1):45.

ⁱⁱⁱ McClave SA, et al. JPEN. 2016;40(2):159.