APOLLO^4

NEGATIVE PRESSURE ISOLATION HOOD

USE & SAFETY TIPS

Negative Pressure

Apollo hoods become a negative pressure chamber and evacuate contaminated air via suction inserted into side connection port.

The smoke evacuator (Buffalo) draws air at 240L/min, and is more effective at quick removal than wall suction (max 40L/min)

Suction should always be on and working while aersolizing procedure is occurring, and front drape down and sealed as best possible around patient.

Some room air entrainment is expected, but best if kept to a minimum to keep a negative pressure effect to maximize

Full PPE

Apollo hoods are designed to create an additional layer of HCP protection. Full PPE must still be worn without changes to protocol.

Monitoring & O2

All patients are required to have Oxygen and monitored with pulse oximetry while the hood is in operation.

Cautions

Fire Risk is mitigated by ensuring no combustibles (e.g., hand sanitizer, alcohols, etc) and no ignition sources (eg. electronics) in the hood while in operation.

One-time use

Apollo hoods are fully disposable- Please do Not try to return to a clean workroom.

Lightweight & Portable

< 5 lbs- easy removal and setup. Straps secure hood to any bed size or shape.

Quick Release

In the event of an emergency, or difficult airway, removal can occur rapidly via release of clips to bed straps.

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SCAN ME

Instructional Video

What is the Apollo?

The Apollo 4 is a Negative Pressure Isolation Hood (NPIH) used to reduce risk to Providers in infectious aerosolizing situations, including:

- Intubation / extubation
- Endoscopy, TEE
- Bronchoscopy
- Nebulizer treatments
- Open ETT suctioning
- Trach exchanges
- CPAP
- HFNC

How does it work?

Suction draws out contaminated air to a HEPA filter. Rapid air exchanges reduce aerolsolized particles by >99% in hood.

Negative pressure Isolation hoods act as a barrier to large droplets (splash protection) of infected secretions, as well as reducing fine particulate aerosols generated from infected patients.

How do I get one?

OR: Call an Anes Tech

SICU: Call Manager- TBD

MICU: Call Manager- TBD

ED: Call Manager- TBD

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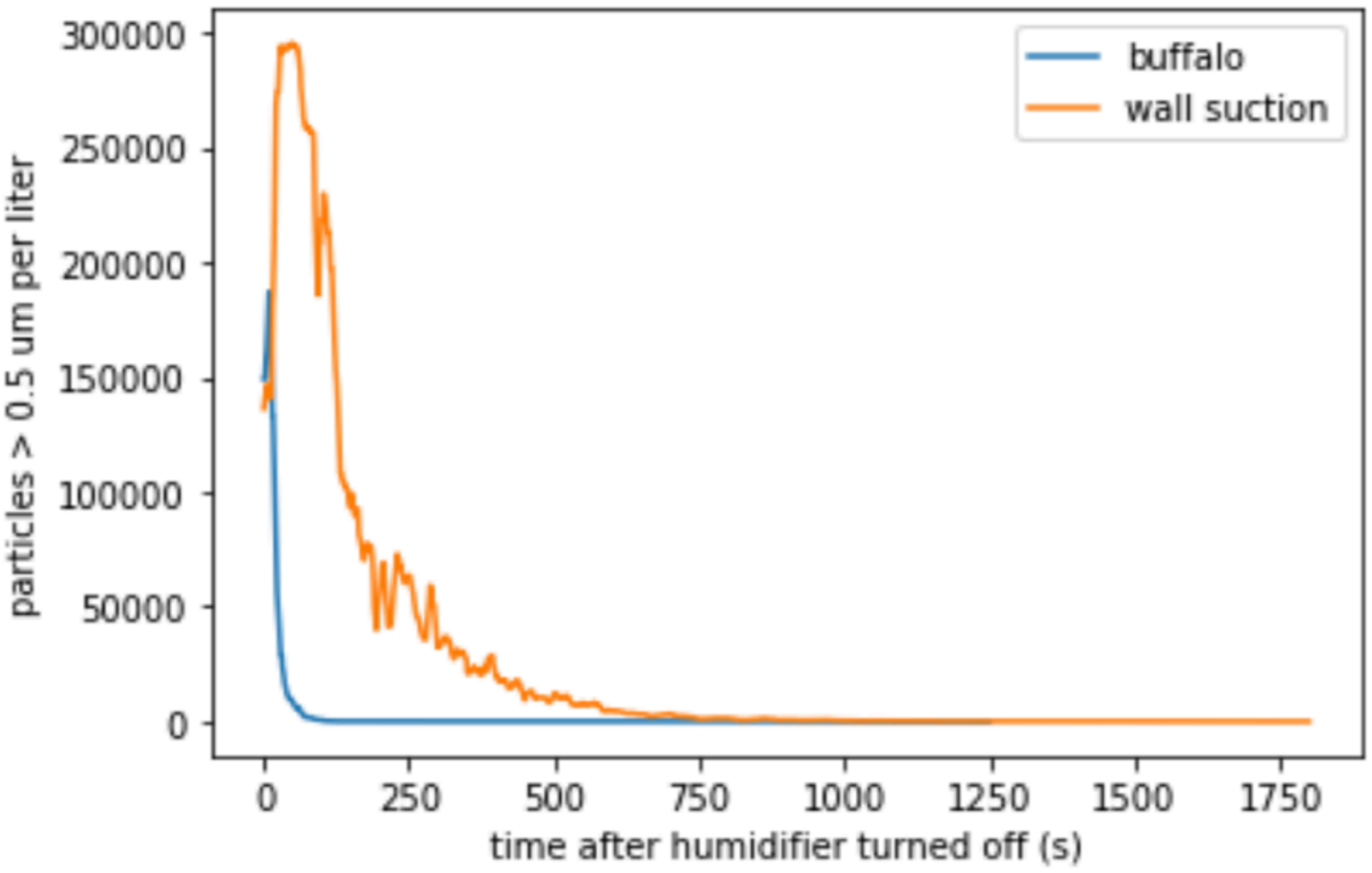
VALIDATION TESTING DATA



Particle Testing

The Apollo hood has been tested at MGH in the lab which demonstrated >99% of aerosolized particles >5 um were removed in <79 seconds after Buffalo smoke evacuator (suction) was initiated at 80% power (rated at 240L/min) to test condition for single aerosolizing procdure.

As depicted in this graph, the wall suction (rated at 40L/min) took approximately 12 minutes to achieve the same particle removal. Both methods were effective while simulating patient conditions.

CPAP testing, where continual aerosol is generated and flows are considered most challenging (openingly running at >100 l/min) the reduction of >90% of particles was rapidly achieved with this suction plan utilizing the smoke evacuator.

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STANDARD OPERATING PROCEDURE

Under no circumstances will use of the hood change Full PPE required for COVID + / risk patients.
Negative pressure isolation hood (NPIH) is for added safety (eg. added layer of protection to droplets and aerosol exposure)
All hood use requires: 1) Oxygen to patient in some form, 2) Oxygen monitoring (eg, pulse oximetry), and 3) No fire ignitions sources or combustibles to be used in hood for fire risk mitigation. See further details in Apollo educational materials.

SETUP and USE. In this order:

- **Place Hood**. Hood may be placed on bed prior to patient arrival, or after by lifting patient head and sliding into place. At least one strap must used to secure the hood to the bed, and 2 straps if head of bed is planned to be elevated at any time.
- **Place procedure instruments in hood & monitors on patient** (e.g., intubating equipment, ventilator tubing, etc. though the FRONT of the hood under drape- do NOT attempt to place them though the arm ports- can restrict movement needed for intubation). Monitors may be placed prior to hood if desired, but always exiting front of hood. No equipment should pass through arm ports (hands only), as that may restrict arm movement. No IV lines or invasive tubes should pass through arm ports, as this risks inadvertent dislodgment in the event the hood needs to be removed emergently.
- **Lower drape** to enclose space, tuck in plastic around patient body, place blanket over chest drape edge to help seal chamber as much as possible. Some minor entrainment of room air is acceptable.
- **Turn on suction** prior to beginning aerosolizing procedure (see table below for which suction is acceptable)
- **Do procedure**- (e.g. intubation, initiate CPAP, etc.). Emergency note: can pull drape up or remove entire hood immediately (<5 seconds) if difficult airway or code. Remember, the hood is for *added* safety, not essential PPE like N95 mask, etc.
- Ideal usage: Leave drape down during aerosolizing procedure, and then afterwards until air is cleared (12 min for single wall suction or 2 min with buffalo evacuator suction at 80% power). Front drape can then be raised.
- **Disposal**: Apollo hood is for single patient use, 100% fully disposable, including straps, and should NOT be returned to any clean work rooms. Bagging for disposal should be done by 2 personnel wearing full PPE, one holding the bag open, and the other placing the hood into the bag after having pushed front drape into hood. Bag should be tied and disposed of per wasted management. Red Biohazard bags are only required when blood or body fluids are visibly contaminating surfaces.

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Acceptable suction choice

All wall suction requires a HEPA filter.
Smoke evacuator (Buffalo suction) has internal filters incorporated that last 18 hrs

	Wall Suction at Max (40L/ min)	Buffalo suction set at 80% power	Comments
Intubation / extubation	●	●	
TEE or EGD (intubated patient)	●	●	
Nebulizer treatment	●	●	
Bronchoscopy / BAL	●	●	
CPAP/BIPAP		●	Baffalo suction >80% required
HFNC		●	Baffalo suction >80% required

Summary: Buffalo suction is preferred method for ALL aerosolizing procedures.
Only when not available is it suggested to use wall suction in limited scenarios below.

Explanatory Note: Suction is to be on continuously during each of the procedures. The higher the inflow of oxygen into the hood, or the greater the aerosolization of the procedure, the more the Buffalo powered suction will successfully maintain negative pressure and evacuate aerosols in the immediate environment compared to wall suction. When in doubt, use the Buffalo suction whenever available. Buffalo power setting at 80% draws 240L/min with larger smoke evacuator hose, compare to wall suction which typically reaches a max of 40L/min.

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