

S: Guidance for use of powered air purifying respirators (PAPR), reusable elastomeric respirators and respirators with exhalation valves during surgical and other sterile procedures.

B: The COVID-19 pandemic has created exceptionally high demand for PPE, contributing to international shortages. YNHHS is now issuing N95 respirators from a variety of manufacturers and is increasing the availability of other equally effective filtering facepiece respirators (FFR)-reusable elastomeric respirators and PAPR. While most N95 respirators provide some degree of filtration of exhaled breath, some PAPR, elastomeric respirators and N95 models with exhalation valves do not filter exhaled breath.

PAPR head gear:

1. Face piece – provides coverage to the head and face. Some face piece models include integrated filters which filter the user's exhaled breath (these are not currently available in YNHHS, but may be available in the future).



2. Hood – provides coverage to the head and face and has a shroud attached which covers the shoulders upper chest and back areas.



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A: PAPR, N95 respirators with an exhalation valve and elastomeric respirators with exhalation valves are important components of the Yale New Haven Health System's respiratory protection program. These devices may only be used with specific restrictions to avoid potential contamination of the surgical/procedure field and/or sterile instruments.

R: For staff directly involved in a sterile procedure where respirator use is required;

1. In the Operating Room when the sterile instrument table is uncovered, respiratory PPE containing an exhalation valve (such as a valved-N95 or elastomeric respirator) is not to be used unless a non-valved respirator is unavailable. If a valved respirator is used, a face mask is to be worn over the exhalation valve for the duration of the sterile procedure.
2. For percutaneous sterile procedures (i.e., via needle puncture) performed in procedure rooms (including Interventional Radiology and Cardiology), an elastomeric respirator may be used with a face mask over the exhalation valve for the duration of the sterile procedure.
3. A PAPR may be worn by staff performing sterile procedures, only if other respirators are not available or feasible for use.
4. When a PAPR is worn during a sterile procedure, the use of a hood or a facepiece with integrated filtration is to be used rather than a facepiece lacking filtration. If a hood is worn, the shroud of the hood is to be worn under the surgical gown.
5. If a PAPR used during a sterile procedure is lacking an integrated filtration or hood with a shroud, a face mask must be worn underneath the PAPR.
6. Staff using a PAPR during a sterile procedure are to follow the SOP for use (see below).

References:

CDC. Elastomeric Respirators: Strategies During Conventional and Surge Demand Situations Conventional, Contingency, and Crisis Strategies.

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/elastomeric-respirators-strategy/index.html>

Howard RA, et al. Sterile field contamination from powered air-purifying respirators (PAPRs) versus contamination from surgical masks. *Am J Infect Control* 2020;48:153-156.

Kim Y, Hale M. Pilot Study to Examine the Use of a Powered Air Purifying Respirator (PAPR) in the Operating Room. *Am J Infect Control* 2017;45(6):S84.

Yale New Haven Health

Use of PAPR in the Operating Room and for Other Sterile Procedures Standard Operating Procedure

Original: 07/2020

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Approved by: Infection Prevention

Purpose:

To provide the procedures for use of powered air purifying respirators (PAPR) during surgical and sterile procedures.

Background:

The COVID-19 pandemic has created exceptionally high demand for PPE, contributing to international shortages. YNHHS is now issuing PAPR in addition to N95 respirators. While N95 respirators provide some degree of filtration of exhaled breath, some PAPR do not filter exhaled breath.

Definitions:

PAPR head gear

1. Face piece – provides coverage to the head and face



2. Hood – provides coverage to the head and face and additionally has a shroud attached that covers the shoulders upper chest and back areas



Standard Operating Procedure:

1. Device selection
 - a. A hooded PAPR is favored over a PAPR with a face piece, if available
 - b. Use of a PAPR with integrated filtration is favored over use of a PAPR without integrated filtration
 - c. If only a PAPR lacking integrated filtration is available and other acceptable respirators are not available, a face mask is to be worn beneath the facepiece

2. Donning the PAPR
 - a. Don a face mask if the PAPR lacks integrated filtration.
 - b. Don the hood or facepiece.
 - c. Ensure the belt with the fan unit is positioned to ensure the air intake will not be blocked by the gown
 - d. Turn the fan on
 - e. Perform scrub
 - f. Don sterile gown with assistance, ensuring the shroud (if worn) is under the gown and the air intake is not obstructed
 - g. Ensure double gloves are donned

3. Doffing and disinfecting
 - a. Doff gown and outer gloves
 - b. Use alcohol-based hand rub to disinfect the inner gloves
 - c. Doff hood and remove fan/motor belt
 - d. Disinfect hood/facepiece and PAPR hose using a disinfectant wipe according to manufacturer's instructions
 - e. Doff gloves and perform hand hygiene
 - f. Store the PAPR per departmental protocol