

OSCMS - Gowns

3/26/20 - This paper has a ton of information on materials and design that I haven't been able to comb through : [May-Plumlee, T. and Pittman, A., 2002. Surgical gown requirements capture: a design analysis case study. Journal of Textile and Apparel Technology and Management, 2\(2\), pp.1-10.](#)⁵²

The Problem:

Healthcare workers are exposed to infectious body fluids when working in close proximity to patients. Coughing, sneezing, and retching can expel droplets, which can transmit disease if the healthcare worker's clothing comes into contact with these fluids. A protective gown covers the healthcare worker's clothing so as to reduce the risk of direct contact with contaminated fluids.



Current US Resources:

Worst Case Expectation:

Why We'll Need It:

- The U.S. Food and Drug Administration (FDA) recognizes that the need for personal protective equipment (PPE), such as surgical masks, surgical and isolation gowns, and surgical suits, may outpace the supply available to healthcare organization during the Coronavirus Disease 2019 (COVID-19) outbreak.

Why We Won't Need It:

Engineering Requirements:

Fabric

Gowns for patients:

Gown fabric needs to be the right mix of cotton/synthetic so it launders well but doesn't make tons of static. Static sparks are an issue for hospitals due to fire hazard and high O2 concentration.

- Nonsterile, disposable patient isolation gowns, which are used for routine patient care in healthcare settings, are appropriate for use by patients with suspected or confirmed COVID-19.

Gowns for Healthcare Personnel: **Class 2 Gowns**

The choice of gown should be made based on the level of risk of contamination.

- Certain areas of surgical and isolation gowns are defined as “**critical zones**” where direct contact with blood, body fluids, and/or other potentially infectious materials is most likely to occur. ([ANSI/AAMI PB70](#))
- Medium to high risk of contamination and need for a large critical zone, isolation gowns that claim moderate to high barrier protection ([ANSI/AAMI PB70 Level 3 or 4](#))
- For healthcare activities with low, medium, or high risk of contamination, surgical gowns ([ANSI/AAMI PB70 Levels 1-4](#)) These gowns are intended to be worn by healthcare personnel during surgical procedures.
- If the risk of bodily fluid exposure is low or minimal, gowns that claim minimal or low levels of barrier protection ([ANSI/AAMI PB70 Level 1 or 2](#)) can be used. These gowns should not be worn during surgical or invasive procedures, or for medium to high risk contamination patient care activities.

Assembly/Fabrication Requirements:

- Single use, disposable
- Calf length

Projects/Resources:

- [FDA Guidance Regarding Use of Gowns in Healthcare](#), discussing the need for liquid barriers in gown materials and defining classes of gowns
- <https://www.fda.gov/medical-devices/general-hospital-devices-and-supplies/personal-protective-equipment-infection-control>
- <https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirator-use-faq.html>
- https://my.aami.org/aamiresources/previewfiles/pb70_1206_preview.pdf
- <https://www.cdc.gov/niosh/npptl/topics/protectiveclothing/>
- [A Review of Isolation Gowns In Healthcare](#), a discussion on the purpose and construction of isolation gowns.
- <https://www.fda.gov/medical-devices/letters-health-care-providers/surgical-mask-and-gown-conservation-strategies-letter-healthcare-providers>

Reviewed Designs:

This section is for product designs (links to instructions or downloadable packages) that have been reviewed and approved by medical professionals. When adding a design to this list, please include the (approximate) date of approval, the group or organization that reviewed it, and any modifications they recommend.

Project Name: Manila Protective Gear's Isolation Suit

Design link: <https://drive.google.com/open?id=1-Xr-67gs2qw0o44-hy-INb89I9m-wcLD>

- Reviewed: 3/25/2020
- Reviewed by: OSCMS Medical Review Team
- Notes: *This design produces a working isolation suit if seams are sealed. The recommended material is Tyvek 1433R. Sewing seams make the garment more permeable because of needle holes; an only-sewn suit should not be used to treat active patients. Please read through the techpack for full construction details based on what kind of machine you have accessible. Dupont has a [guide for seaming & sealing Tyvek to itself](#) in order to make sealed seams. Heat sealing the outer edge at 120-130°C before sewing would result in more-sealed, more-robust seams.*

Not Recommended:

This section is for product designs and ideas that are explicitly NOT recommended by medical professionals for reasons of safety or feasibility. If you see an idea that has been explicitly rejected, add it here so we can focus efforts on more feasible designs. Please include the group or organization that made this judgment and a brief description of the reason.

Design link or brief description:

- Reviewed by:
- Reason:

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