

Office of Evidence Based Practice (EBP) – Critically Appraised Topic: Parent and Visitor Personal Protective Equipment (PPE) Education

Specific Care Question

Does providing information and/or education regarding PPE, to parents and visitors of hospitalized inpatients, reduce the potential spread of infection?

Based on review of current literature by the Department of EBP

A strong recommendation is made for providing information and/or education to parents and visitor regarding PPE, based on expert review of current literature by the Department of EBP. The overall certainty in the evidence is very low. No evidence was found that directly answers the question. Although, one qualitative study (Seibert et al., 2018) found nursing instructions had the largest impact on PPE compliance by family and visitors. When there is a lack of scientific evidence, standard work should be developed, implemented, and monitored.

Literature Summary

Background. Infection transmission in healthcare settings is an important problem. The US Center for Disease Control and Prevention identifies that nearly 1.7 million hospitalized patients annually acquire Health care-associated infections (Haque, Sartelli, McKimm, & Abu Barkar, 2018). The role families and visitors play in the transmission of infections is not understood (Banach, Bearman, Morgan, & Munoz-Price, 2015). Although there is no evidence that reports on the relationship between visitors and infection transmission (Banach et al., 2015), precautions such as PPE are used in healthcare settings for healthcare workers and visitors (Association for Professionals in Infection Control & Epidemiology, 2019). Visitors spend more time in a patient's room than health care workers (Cohen, Hyman, Rosenberg, & Larson, 2012). PPE is worn to create a barrier and is warranted when precautions are needed to prevent the spread of infection (Medline, 2017). PPE may include: (a) mask, (b) gown, (c) glove, and (d) face shield (Medline, 2017). Children's Mercy policy on infection control for family and visitors' states (Visitation and Welcoming Policy, 2018):

1. Visitors must be free of illness or exposure to communicable disease and screened prior to visiting.
2. Family and visitors are educated on hand hygiene, isolation, and use of barrier (PPE).
3. Visitation of the patient in isolation may be limited or denied due to the risk of spreading infection.
4. All visitors, except those who live in the home, must wear barriers appropriate for the patient's isolation precautions, unless otherwise instructed.
5. On a daily basis, sibling visitors who visit the Playroom BEFORE going into a patient's room do not need to wear barriers in the patient room.
6. On a daily basis, siblings who intend to visit the Playroom during their visit after already being in an isolated patient room must wear barriers when in an isolated patient room.
7. On a daily basis, siblings who do not wear barriers while in an isolated patient room may not visit the Playroom.
8. Visitors free of infection may use the Patient Activity Room/Playroom in accordance with unit guidelines.

Study characteristics. The search for suitable studies was completed on May 16, 2019. Lory Harte, PharmD, reviewed the 26 titles and/or abstracts found in the search and identified six articles believed to answer the question. After an in-depth review, none of the articles answered the question. While none of the studies answered the question directly, one qualitative study identified motivations of visitors for using PPE (Seibert et al., 2018).

Summary

PPE motivation and knowledge. One qualitative study (Seibert et al., 2018) interviewed visitors ($N = 31$) of patients with *Clostridium difficile* infection regarding their understanding of compliance, knowledge, and perceptions of contact precautions and use of PPE. Family members accounted for 90% of the visitors interviewed. Only 42% of the visitors were fully compliant with gown and gloves. The visitor's primary motivation for wearing gown or gloves was nursing instructions, 11/21 (52.4%) and 6/13 (46.2%), respectively. Also, visitor's knowledge on the location of PPE was primarily due to nursing instruction, 15/25 (60%). The evidence is very low certainty as the study employed a qualitative method (qualitative studies start as low certainty evidence). This study is further downgraded because it occurred in adults (indirectness), and it is only one study (imprecision).

Identification of Studies

Search Strategy and Results (see Figure 1)
CINAHL



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S1 (MH "Protective Devices") OR (MH "Eye Protective Devices") OR (MH "Head Protective Devices") OR (MH "Masks") OR (MH "Protective Clothing+") OR (MH "Respiratory Protective Devices") OR "PPE" OR "personal protective equipment" OR "gloves" OR "gowns" OR "contact precaution"

S2 (MH "Parents+/ED") OR "parent education"

S3 (MH "Infection Control+") OR (MH "Disease Transmission+/PC") OR (MH "Infection+/PC") OR (infection* N3 (control* OR prevent*))

S4 S1 AND S2 AND S3 AND LA English AND RV Y

S1 (MH "Protective Devices") OR (MH "Eye Protective Devices") OR (MH "Head Protective Devices") OR (MH "Masks") OR (MH "Protective Clothing+") OR (MH "Respiratory Protective Devices") OR "PPE" OR "personal protective equipment" OR "gloves" OR "gowns" OR "contact precaution"

S2 (MH "Parents+/ED") OR "parent education"

S4 S1 AND S2 AND LA English AND RV Y

PubMed

("Personal Protective Equipment"[mh] OR "Personal Protective Equipment"[tw] OR PPE[tw] OR face mask*[tw] OR glove*[tw] OR gown*[tw] OR "contact precaution"[tw] OR "universal precautions"[mh]) AND ("parents/education"[mh] OR "parent education"[tw] OR "family education"[tiab] OR (parents[mh] AND "health education"[mh]) OR (parent*[tw] AND "health education"[tw]) OR (parent*[tw] AND "health literacy"[tw])) AND English[la] AND 2009:2019[dp]

(Parents[majr] OR "Visitors to Patients"[majr] OR parent[ti] OR parents[ti] OR step-parent[ti] OR step-parents[ti]) AND ("Personal Protective Equipment"[mh] OR "Personal Protective Equipment"[tiab] OR PPE[tiab] OR face mask*[tiab] OR glove*[tiab] OR gown*[tiab] OR "contact precaution"[tiab] OR "universal precautions"[mh] OR "Disease Outbreaks/prevention and control"[mh] OR "Disease Transmission, Infectious/prevention and control"[mh] OR Infection Control[mh] OR "Infection/prevention and control"[mh]) AND (pediatrics[mh] OR pediater*[ti] OR paediatr*[ti] OR child[mh] OR infant[mh] OR child*[ti] OR infan*[ti] OR adolescen*[ti] OR "Hospitals, Pediatric"[mh]) AND English[la] AND 2009:2019[dp] NOT (letter[pt] OR comment[pt] OR case reports[pt] OR editorial[pt] OR news[pt])

Records identified through database searching $n = 26$

Studies Included in this Review

Citation	Study Type
Seibert et al. (2018)	Qualitative Study

Studies Not Included in this Review with Exclusion Rationale

Citation	Reason for exclusion
Cohen et al. (2012)	Does not answer question
Davies and Byington (2016)	Review article
Kang, Weber, Mark, and Rutala (2014)	Survey
Munoz-Price et al. (2015)	Does not answer question
Washam, Woltmann, Ankrum, and Connelly (2018)	Does not answer question

Methods Used for Appraisal and Synthesis

^aRayyan is a web-based software used for the initial screening of titles and / or abstracts for this analysis (Ouzzani, Hammady, Fedorowicz & Elmagarmid, 2017).

^bReview Manager (Higgins & Green, 2011) is a Cochrane Collaborative computer program used to assess the study characteristics as well as the risk of bias and create the forest plots found in this analysis.

^cThe Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram depicts the process in which literature is searched, screened, and eligibility criteria is applied (Moher, Liberati, Tetzlaff, & Altman, 2009).



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^aOuzzani, M., Hammady, H., Fedorowicz, Z., & Elmagarmid, A. (2016). Rayyan-a web and mobile app for systematic reviews. *Systematic Reviews*, 5(1), 210. doi:10.1186/s13643-016-0384-4

^bHiggins, J. P. T., & Green, S. e. (2011). *Cochrane Handbook for Systematic Reviews of Interventions [updated March 2011]* (Version 5.1.0 ed.): The Cochrane Collaboration, 2011.

^cMoher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 6(7): e1000097. doi:10.1371/journal.pmed1000097 **For more information, visit www.prisma-statement.org.**

Question Originator

Lory Harte, PharmD

Medical Librarian Responsible for the Search Strategy

Jennifer Lyon MEd, MS, MLIS, AHIP

EBP Scholar's Responsible for Analyzing the Literature

Erin Lindhorst MS, RD, LD

Justine Edwards RN

Rhonda Sullivan MS, RD, CSP, LD

Teresa Bontrager RN, BSN, MSN, CPEN

EBP Team Member Responsible for Reviewing, Synthesizing, and Developing this Document

Jarrold Dusin MS, RD, LD, CPHQ

Acronyms Used in this Document

Acronym	Explanation
CAT	Critically Appraised Topic
CDI	<i>Clostridium difficile</i> infection
CMH	Children's Mercy Hospital
EBP	Evidence Based Practice
PPE	Personal Protective Equipment
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analysis
SEIPS	Systems Engineering Initiative for Patient Safety

Date Developed/Updated

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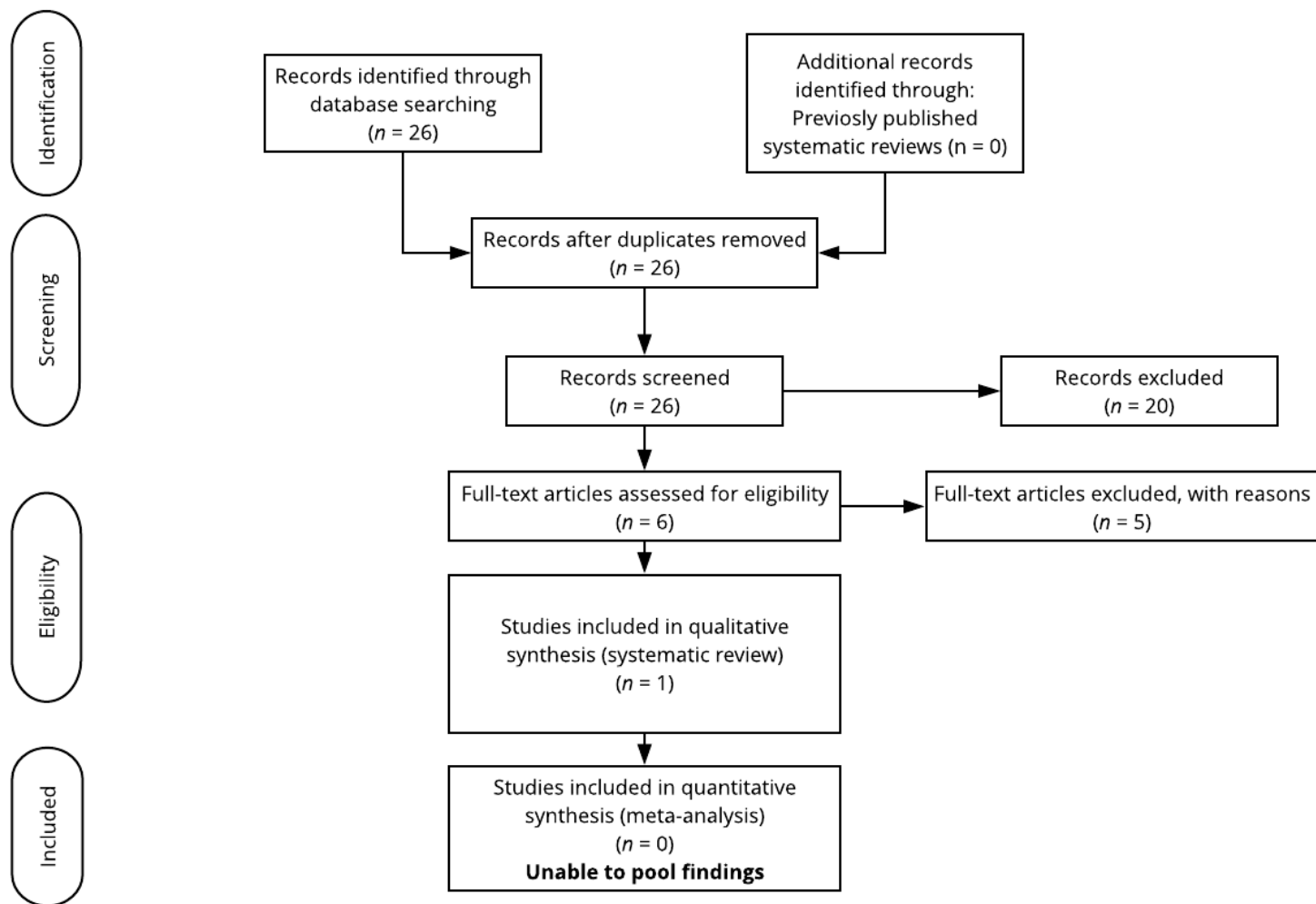


Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)^e

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Characteristics of Studies

Seibert 2018

Methods	Qualitative study to evaluate visitors' compliance and perception of personal protective equipment (PPE) use.
Participants	<p>Participants:</p> <ul style="list-style-type: none"> • Randomly chosen visitors of adult inpatients with a confirmed or suspected <i>Clostridium difficile</i> infection (CDI). <p>Setting:</p> <ul style="list-style-type: none"> • 505 bed Midwestern tertiary care hospital <p>Number enrolled into study: <i>N</i> = 31</p> <p>Number completed: <i>N</i> = 31</p> <p>Gender, males:</p> <ul style="list-style-type: none"> • Not reported <p>Race / ethnicity or nationality:</p> <ul style="list-style-type: none"> • Not reported <p>Age, mean/median in months/years:</p> <ul style="list-style-type: none"> • Not reported <p>Inclusion criteria:</p> <ul style="list-style-type: none"> • Visitors of adult inpatients confirmed or suspected CDI • Verbal consent from the patient • Verbal consent from the visitor <p>Exclusion criteria:</p> <ul style="list-style-type: none"> • not reported
Interventions	<ul style="list-style-type: none"> • Trained interviewer conducted qualitative open-ended survey • Carried out of 3 months • Randomly selected from hospital list of patients with confirmed CDI. • Survey was developed using Systems Engineering Initiative for Patient Safety (SEIPS) conceptual framework <ul style="list-style-type: none"> ○ This model demonstrates how the work system affects patient outcomes by examining complex interactions through a factors engineering lens
Outcomes	<ul style="list-style-type: none"> • To ascertain visitor knowledge and perceptions of enhanced contact precautions
Notes	<p>Results:</p> <ul style="list-style-type: none"> • 28 of 31 participants were family members • 12 of 31 were spouses • 22 of 31 had experience visiting a patient in contact precaution <p>Compliance</p> <ul style="list-style-type: none"> • Full (gown and gloves) <i>n</i> = 13 (41.9%) • Partial (only gown) <i>n</i> = 8 (25.8%) • Noncompliant <i>n</i> = 10 (32.3%) <p>Perceptions</p> <ul style="list-style-type: none"> • Hospital had adequate access <i>n</i> = 30 (96.8%) • Gowns are necessary to prevent the spread of infection <i>n</i> = 24 (75.0%)



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	<ul style="list-style-type: none"> • Gloves are necessary to prevent the spread of infection $n = 21$ (63.6%) <p>Motivation</p> <ul style="list-style-type: none"> • Motivation for wearing gowns $n = 21$ (67.7%) <ul style="list-style-type: none"> ○ Nursing instruction $n = 11$ (52.4) ○ Door signage $n = 4$ (19%) ○ Protect self $n = 2$ (6.5%) • Motivation for not wearing gowns $n = 10$ (32.2%) <ul style="list-style-type: none"> ○ Immediate family member so lack of perceived risk $n = 7$ (46.7%) ○ Discomfort $n = 3$ (20%) ○ Hospital staff not wear PPE $n = 2$ (13.3) • Motivation for wearing gloves $n = 13$ (41.9%) <ul style="list-style-type: none"> ○ Nursing instructions $n = 6$ (46.2%) ○ Door signage $n = 4$ (30.8%) ○ Protect self $n = 2$ (12.5%) • Motivation for not wearing gloves $n = 18$ (58.1%) <ul style="list-style-type: none"> ○ Health care worker instructed not to wear or not told to were $n = 6$ (30%) ○ Discomfort or heat $n = 5$ (25%) ○ Immediate family member so lack of perceived risk $n = 4$ (20%) <p>Knowledge</p> <ul style="list-style-type: none"> • Location of PPE $n = 25$ <ul style="list-style-type: none"> ○ Known because of nursing instruction $n = 15$ (60%) ○ Known because of seeking and finding on own $n = 8$ (32%) • Reason for signage instructing to wear PPE $n = 33$ <ul style="list-style-type: none"> ○ Patient has infection or is being tested $n = 17$ (51.5%) ○ To prevent spread of disease $n = 11$ (33.3%) ○ Could not describe rationale $n = 5$ (15%)
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