Locating Evidence

A sample database search for the clinical question:

Does hand washing among healthcare workers reduce hospital acquired infections?

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STEP 1: Write out your clinical question:

Does hand washing among healthcare workers reduce hospital acquired infections?

For questions of therapy/intervention, use the PICO formula to identify the following elements in your question:

- **Patient/Problem:**
- **Intervention:**
- **Comparison:**
- **Outcome:**
Does hand washing among healthcare workers reduce hospital acquired infections?

• **Patient/Problem:**
  – Hospital acquired infection

• **Intervention:**
  – Hand washing

• **Comparison:**
  – Standard hand washing; other solution; no hand washing

• **Outcome:**
  – Reduced infection rate
Does hand washing among healthcare workers reduce hospital acquired infections?

- **Patient/Problem:**
  - Hospital acquired infection

- **Intervention:**
  - Hand washing

- **Comparison:**
  - Standard hand washing; other solution; no hand washing

- **Outcome:**
  - Reduced infection rate

**TIP:** Consider *Patient/Problem* and *Intervention* first when planning your search strategy and selecting database search terms.

[look for the *Comparison* and *Outcome* when you browse abstracts and review full text of articles]
STEP 2: Select a specialized database

From the libraries home page, http://library.nyu.edu/
select Articles via Databases, then choose a database from the A to Z list
From the A-Z list, select: Medline/PubMed
Widely recognized as the premier source for bibliographic and abstract coverage of biomedical literature. Encompasses information from Index Medicus, Index to Dental Literature, and International Nursing Index, as well as other sources in the areas of allied health, physical therapy, health education, biological and physical sciences, humanities and information science as they relate to medicine and health care, communication disorders, population biology, and reproductive biology. More than 16 million records from more than 5200 journals are indexed. PubMed is the freely available version of MEDLINE.
Conduct a search, using the first term. Notice the Search Details button at lower right. The MeSH term is “handwashing.”

MeSH (Medical Subject Headings) is NLM's controlled vocabulary thesaurus used for indexing MEDLINE articles.
Or use the MeSH browser to locate terms and scope notes:
A search on hospital acquired infection in the MeSH browser directs us to the term: Cross Infection

- If making selections (e.g., Subheadings, etc.), use the Send to Search Box feature to see PubMed records.
- Select PubMed under the Links menu to retrieve all records for the MeSH Term.
- Select NLM MeSH Browser under the Links menu for additional information.

1: Cross Infection

Any infection which a patient contracts in a health-care institution.
Year introduced: HOSPITAL INFECTIONS was see under CROSS INFECTION 1971-1970
Search steps schematically…

Handwashing

AND

cross infection

Hand washing $\rightarrow$ MeSH term: **handwashing**

AND

Hospital-acquired infection $\rightarrow$ MeSH term: **cross infection**
Search steps schematically…

Hand washing  MeSH term: handwashing
AND
Hospital-acquired infection  MeSH term: cross infection

The AND connector narrows a search.
BOTH search terms must be in the retrieved records.
In Advanced Search, view your Search History. Finding the best evidence to answer this clinical question required translating natural language into the controlled vocabulary of the database. This ensures retrieval using standard terms and is more effective than random “keyword” searching.
Search steps schematically...

nosocomial infection* OR hospital acquired infection* OR hospital infection*

Use the OR connector to link synonyms...expand a search,
(OR retrieves MORE...)

Use the * to truncate
(infection* retrieves infection, infections, etc.)
You may wish to expand a search, using synonyms...
Limits: raising the level of evidence. *In all databases,* look for the categorical limits feature:

- In CINAHLPlus, click on **Search Options** tab to limit to Publication type: “research” OR “systematic review” or try the **Clinical Queries**

- In Medline/PubMed, use the **LIMITS** to apply categorical limits, such as age groups, publication types, dates…

- Use Medline/PubMed “**Clinical queries**” or Medline/Ovid **Additional Limits** button to select from “Clinical queries” Clinical queries include the ability to search for systematic reviews or limit to a clinical study category. More info at: [http://www.nlm.nih.gov/bsd/pubmed_subsets/sysreviews_strategy.html](http://www.nlm.nih.gov/bsd/pubmed_subsets/sysreviews_strategy.html)

- In PsycINFO, click on **Limit a Search, limit by Methodology**; try using Clinical Queries.

- View a slide show on **LIMITS:** Magnet in a Haystack: filtering the literature for research studies. [http://tinyurl.com/nyuhealthslides](http://tinyurl.com/nyuhealthslides)
Does hand washing among healthcare workers reduce hospital acquired infections?

In all databases, look for the categorical limits feature:

- for Age groups, e.g., aged, child, young adult (rather than keywords such as “pediatric” or “elderly”)
- for Article type.

In this PubMed example let’s limit to Article type: “randomized controlled trial” to retrieve a higher level of evidence.
Select **Limits**; scroll to Type of Article, e.g., “Randomized Controlled Trial” or choose more than one Limit.

Then click on Search…
Handwashing [MeSH] AND Publication type: randomized controlled trial AND cross infection [MeSH]
Here is a sample Medline record that meets all the search criteria:

Handwashing [MeSH term] AND cross infection [MeSH term] AND publication type: Randomized controlled trial
Locating the full text of articles...

• Look for a link from citation to “full text” or

• OR, you may use Bobcat to locate Bobst holdings [http://www.bobcat.nyu.edu/](http://www.bobcat.nyu.edu/)
  – journals may be held in print on the 9th floor Current Periodical Shelves, bound in the stacks by call number, electronically, or on microform on A-level

  – journals may be linked electronically in Bobcat

• Interlibrary loan:
  [http://library.nyu.edu/services/ill.html](http://library.nyu.edu/services/ill.html)
Efficacy of handrubbing with alcohol based solution versus standard handwashing with a water and detergent

Girou E, Loveau S, Legrand P, Oppen F, Brun-Buisson C.

Infection Control Unit, Hôpital Henri Mondor, Assistance Publique-Hôpitaux de Paris, Créteil, France.

OBJECTIVE: To compare the efficacy of handrubbing with an alcohol based solution versus conventional handwash with water and detergent in reducing bacterial contamination of hands of nurses during routine patient care. DESIGN: Randomised controlled trial during daily nursing sessions of 2 to 3 hours. SETTING: Intensive Care Unit of a 76-bed hospital ward. PARTICIPANTS: 56 nurses (28 handrubbing, 28 handwash). INTERVENTIONS: Handrubbing with alcohol based solution (n=12) or handwashing with water and detergent (n=4). MEASUREMENTS: Bacterial red count of hand microbiochemistry: Bacterial red count of hand microbiochemistry. RESULTS: With handrubbing the median percentage reduction in bacterial contamination of hands was 26.3% (95% confidence interval 8.5% to 44.1%). Handwashing reduced bacterial contamination by 26.0% (95% confidence interval 8.6% to 44.1%). CONCLUSIONS: Due to the improved hand hygiene compliance during routine patient care handrubbing with an alcohol based solution is significantly more efficient in reducing bacterial contamination of hands. (BMJ 2002; 325:362).
Title: Efficacy of handrubbing with alcohol based solution versus standard handwashing with antiseptic soap: randomised clinical trial.

Options may link to article full text or...
If an article is not available full text or hard copy in the libraries Bobcat catalog, click to order via Interlibrary Loan.
1. **FRAME QUESTION**, Translate the terms of the question to the controlled vocabulary of the database, when possible; use keyword searching when necessary

2. **FINDING**: **Select a SOURCE**, database (CINAHLPlus, PubMed/MEDLINE…)

3. Use **AND** to combine terms and narrow a search:
   - cross infection **AND** handwashing

   Use **OR** to expand a search using synonyms
   - (handwashing **OR** scrubbing **OR** hand rubbing)
   - (cross infection **OR** nosocomial infection* **OR** hospital acquired infection* **OR** hospital infection*)

   Apply categorical limits for publication type, year, age groups,
   *For example:*
   - Limit to age group “Aged, 65 and over”
   - Limit to publication years 2001-2007
   - Limit to publication type “randomized controlled trial”

4. **ASSESSMENT**: critical appraisal, applicability, actionability, repeat from 1 if needed
Evidence is hierarchical. Explore the resources linked to the pyramid at: http://tinyurl.com/nyupyramid
Getting more help:

- **Watch slide show:**
  Magnet in a Haystack: filtering the literature for research studies. [http://tinyurl.com/nyuhealthslides](http://tinyurl.com/nyuhealthslides)

- **Citing your sources in APA style:**
  [http://nyu.libguides.com/citations](http://nyu.libguides.com/citations)

- **Health Resources Page**
  [http://nyu.libguides.com/health](http://nyu.libguides.com/health)