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Show Me the Evidence!
Answering a Clinical Question Online

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Objectives

- Perform an online search for research evidence to answer a clinical question
- Locate e-resources on HEAL-WA, the health evidence website for WA state nurses and other health professional groups
- Identify strategies to improve searching skills to find appropriate evidence on the web to answer clinical questions

What is evidence-based practice?

- Evidence based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients.
- The practice of evidence based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research.

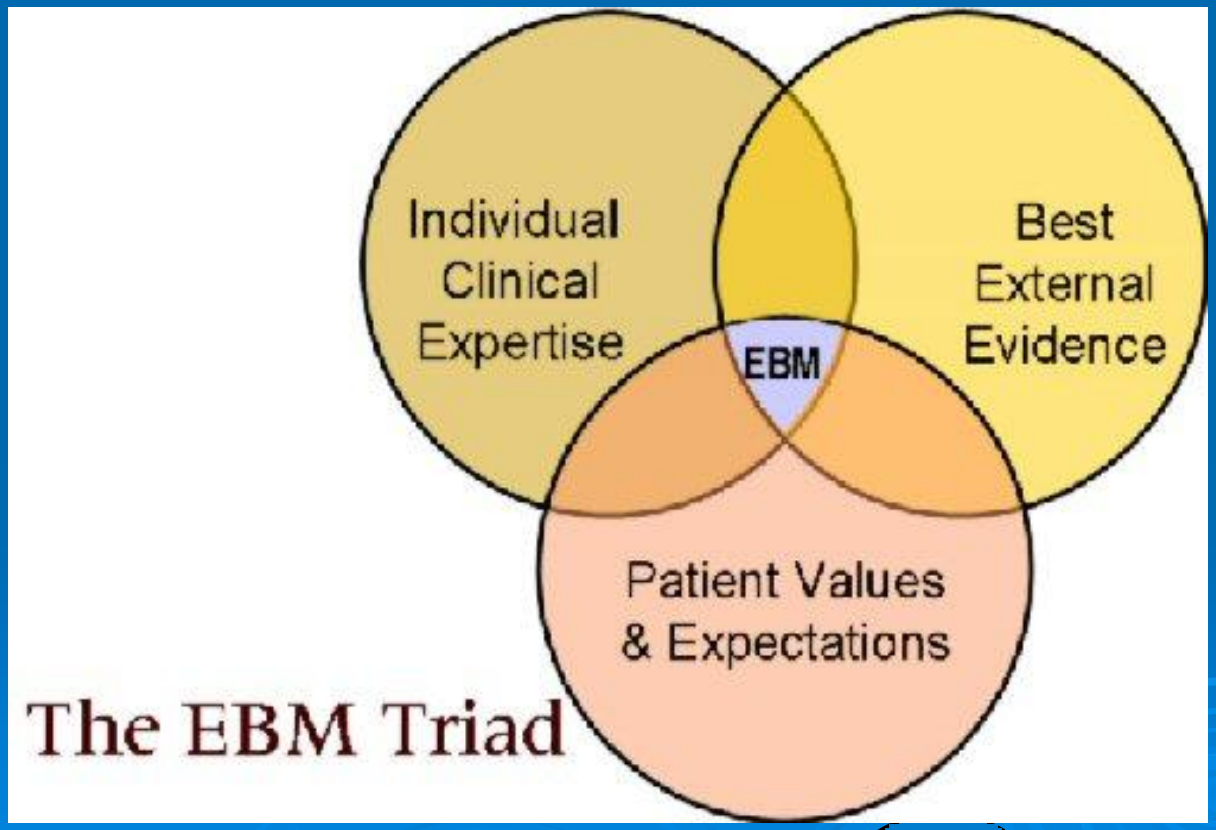
Sackett DL et al. *Evidence based medicine: what it is and what it isn't.* BMJ 1996 Jan 13; 312 (7023): 71-2.

What is evidence-based nursing practice?

"Evidence-based nursing (EBN) means using the best available evidence from research, along with patient preferences and clinical experience, when making nursing decisions."

Cullum N. Users' guides to the nursing literature: an introduction. *Evid Based Nurs* 2000 Jul;3(3):71-2. doi:10.1136/ebn.3.3.71

Evidence-Based Practice



Why do nurses need to do EBP?

- Results in better patient outcomes:

  Failure to use evidence results in lower quality, less effective, and more expensive care.

  Berwick DM. Disseminating innovations in health care. *JAMA* 2003 Apr 16;289(15):1969-75.

- Standards of practice and “best practices” change over time
- Keeps practice current and relevant
- Increases confidence in decision making

What makes good evidence?

Good

- Based on scientific research
- RCT
- Systematic review
- Meta-analysis
- Clinical guidelines

Shoddy

- Opinion
- Consensus
- Because it's been done this way for 100 years

Levels and Grades of Evidence

Levels of Evidence and Grades of Recommendations

Grade of recommendation	Level of evidence	Interventions
A	1a	Systematic review of randomized controlled trials
	1b	Individual randomized controlled trial
B	2a	Systematic review of cohort studies
	2b	Individual cohort study
	3a	Systematic review of case-control studies
	3b	Individual case-control study
C	4	Case series
D	5	Expert opinion without explicit critical appraisal or based on physiology or bench research

5 (7) Steps for EBN Practice

1. Convert your information into an answerable question (PICO)
2. Search the literature for the best available evidence
3. Critically appraise the evidence for validity and usefulness
4. Apply the findings to your clinical practice along with clinical expertise and patient's perspective to plan care
5. Evaluate the outcomes of your practice decisions or changes based on evidence.

2 Additional Steps for EBP=7 Steps

Step 0: Cultivate a spirit of inquiry

Step 6: Disseminate EBP results

Melnyk BM, Fineout-Overholt E, Stillwell SB, Williamson KM. Evidence-based practice: step by step: the seven steps of evidence-based practice. *Am J Nurs* 2010 Jan;110(1):51-3. PMID: 20032669.

Refine Your Question

Step 1: Create an answerable question using the PICO framework

- **P** Patient, Population, or Problem
- **I** Intervention, prognostic factor, exposure
- **C** Comparison
- **O** Outcome

PICO Example

- **Initial question**: What type of indwelling catheter provides lower risk for urinary tract infections?

- **Reformulated question**: In hospitalized patients, which type of indwelling catheter, urethral versus suprapubic, provides lower risk for urinary tract infections?

PICO

PATIENT/POP/PROBLEM – hospitalized adult patients needing bladder drainage

INTERVENTION – indwelling catheter

COMPARISON – urethral versus suprapubic

OUTCOME – lower risk for urinary tract infections

Where can you find evidence a click away?

HEAL-WA *heal-wa.org*

Health Electronic Resource for Washington

- Began: January 2009
- Website: offers online access to a collection of health information resources
- Who has access? selected health care providers in Washington YES, NURSES !
- Funded by: license fees
- Mission: provide you with evidence-based information to support patient care

What is included in HEAL-WA?

- Resources: electronic databases, online texts, and e-journals
- Includes information resources specific to nurses, such as *CINAHL* and the *Nursing Reference Center*
- Other excellent resources: MEDLINE, *DynaMed, Cochrane, Natural Standard*
- Gives practitioners access to timely, evidence-based answers to patient care Q's

How do I get to HEAL-WA?

- Site address: *heal-wa.org*
- Use the "Getting Started" link to set up your UW NetID and password
- You will need your RN license number in order to set up your UW NetID (even if you hold an advanced practice license)
- May take up to 24 hours for your access code to be recognized

HEAL WA
Health Evidence Resource for Washington State

Authoritative, current, evidence-based information for health care providers in Washington State.

heal-wa.org

TOOLKITS | DATABASES | EBOOKS | EJOURNALS | REFERENCE | HELP | ABOUT

news

Volunteers needed for C.A.R.E. Clinic 4/30/2011
Apr 08, 2011

IE 6 and EBSCOHost Databases
Apr 01, 2011

Japan nuclear reactor damage - implications for Washington State
Mar 21, 2011

Accredited CNE modules for Registered Nurses
Mar 14, 2011

Patient ed, mental health, and infectious disease resources
Jan 07, 2011

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search

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Diagnosis & Therapy

Guidelines & Evidence

Search for Articles

Drugs, Labs, Diagnostic Tests

Complementary & Alternative Medicine

Prevention, Screening, Immunizations

Patient Care Management

Nursing Reference Center
Nursing Reference Center includes information about conditions and diseases, patient education resources, drug information, continuing education, lab & diagnosis detail, best practice guidelines, and more.

CINAHL (Nursing Literature)
CINAHL with full text covers nursing, biomedicine, health sciences librarianship, alternative/complementary medicine, consumer health and 17 allied health disciplines and provides the full text for more than 600 journals.

Nursing Calculators

Multicultural Information

Information for Patients

access

Logged in

Getting Started

Certain resources in HEAL-WA (indicated by a lock) require a HEAL-WA access code (UW NetID) and password for access.

Once you have set up your HEAL-WA access code and password, LOG IN to HEAL-WA by clicking on the "Log In" button at the top of this column.

LOG OUT from HEAL-WA by simply closing your browser.

Set up your HEAL-WA access - to set up a HEAL-WA access code and password, see the instructions on the Getting Started page.

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HEAL WA
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Authoritative, current, evidence-based information for health care providers in Washington State.

Search multiple databases simultaneously

TOOLKITS DATABASES EBOOKS EJOURNALS REFE

news

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search

Search Multiple Resources | Title | Go

Diagnosis & Therapy

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HEAL-WA Toolkit: Registered Nurse

Registered Nurse

Nursing Resources

Calculators & Tools

Patient Education

Patient Information from UpToDate

Detailed Drug Information for the Consumer™
Stat!Ref

AAFP Conditions A to Z (2010)
Stat!Ref

MedlinePlus - Health Information for Patients
Authoritative information for patients and health consumers from the US National Library of Medicine, the National Institutes of Health (NIH), and other government agencies and health-related organizations.

National Center for Complementary and Alternative Medicine Health Topics A-Z
National Institutes of Health's lead agency for scientific research on complementary and alternative medicine (CAM).

Drugs, Labs & Diagnostic Tests

Complementary & Alternative Medicine

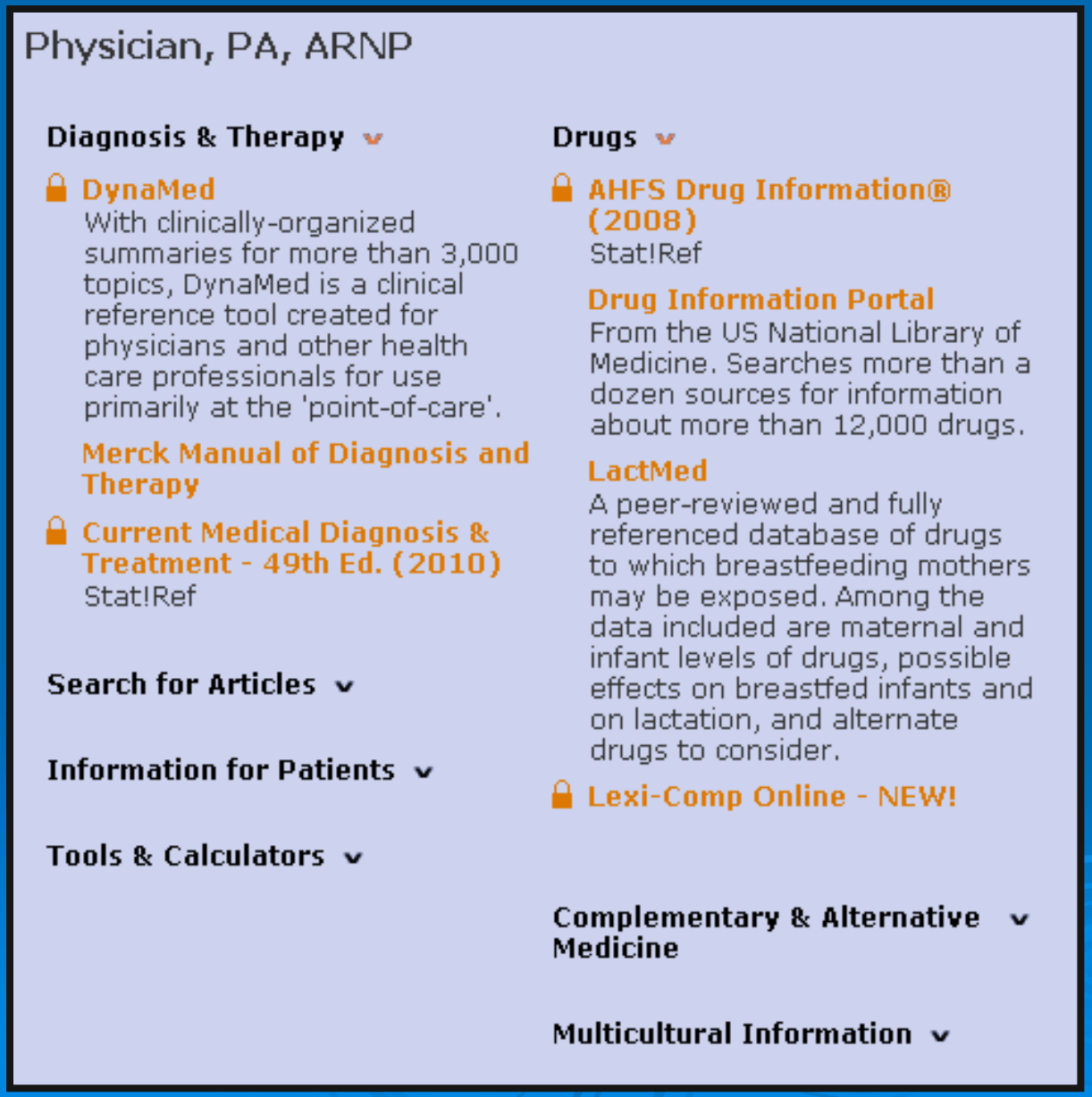
Natural Standard
Natural Standard provides high-quality, evidence-based information on dietary supplements (including herbs, vitamins, and minerals), functional foods, diets, complementary practices (modalities), exercises, and medical conditions.

Multicultural Information

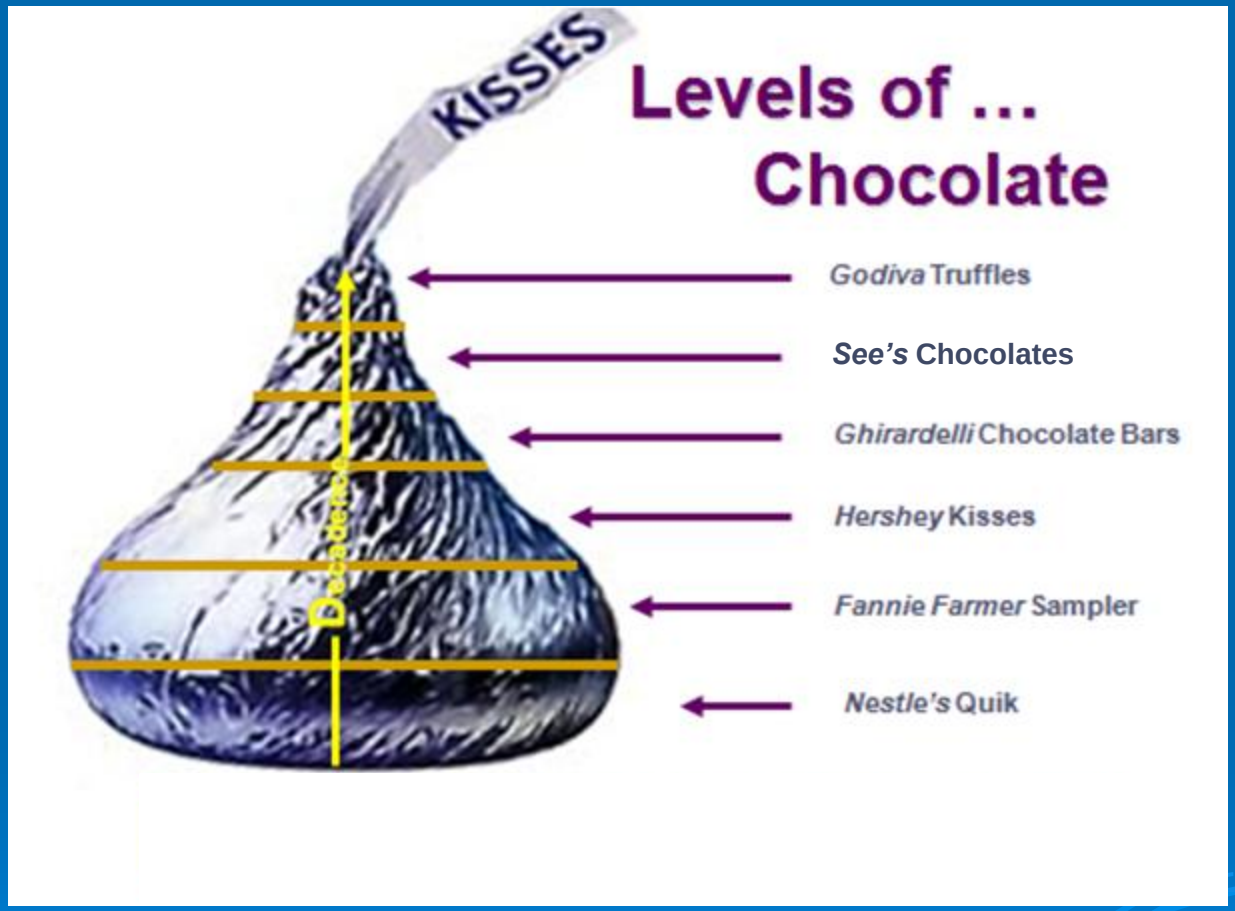
EthnoMed
The EthnoMed site contains information about cultural beliefs, medical issues and other related issues pertinent to the health care of recent immigrants to Seattle or the US, many of whom are refugees fleeing war-torn parts of the world. It includes information for patients as well as for providers.

RHIN® - Refugee Health Information Network
RHIN® is a national collaborative partnership managed by refugee health professionals whose objective is to provide quality multilingual, health information resources for those providing care to resettled refugees and asylees.

HEAL-WA Toolkit: ARNP

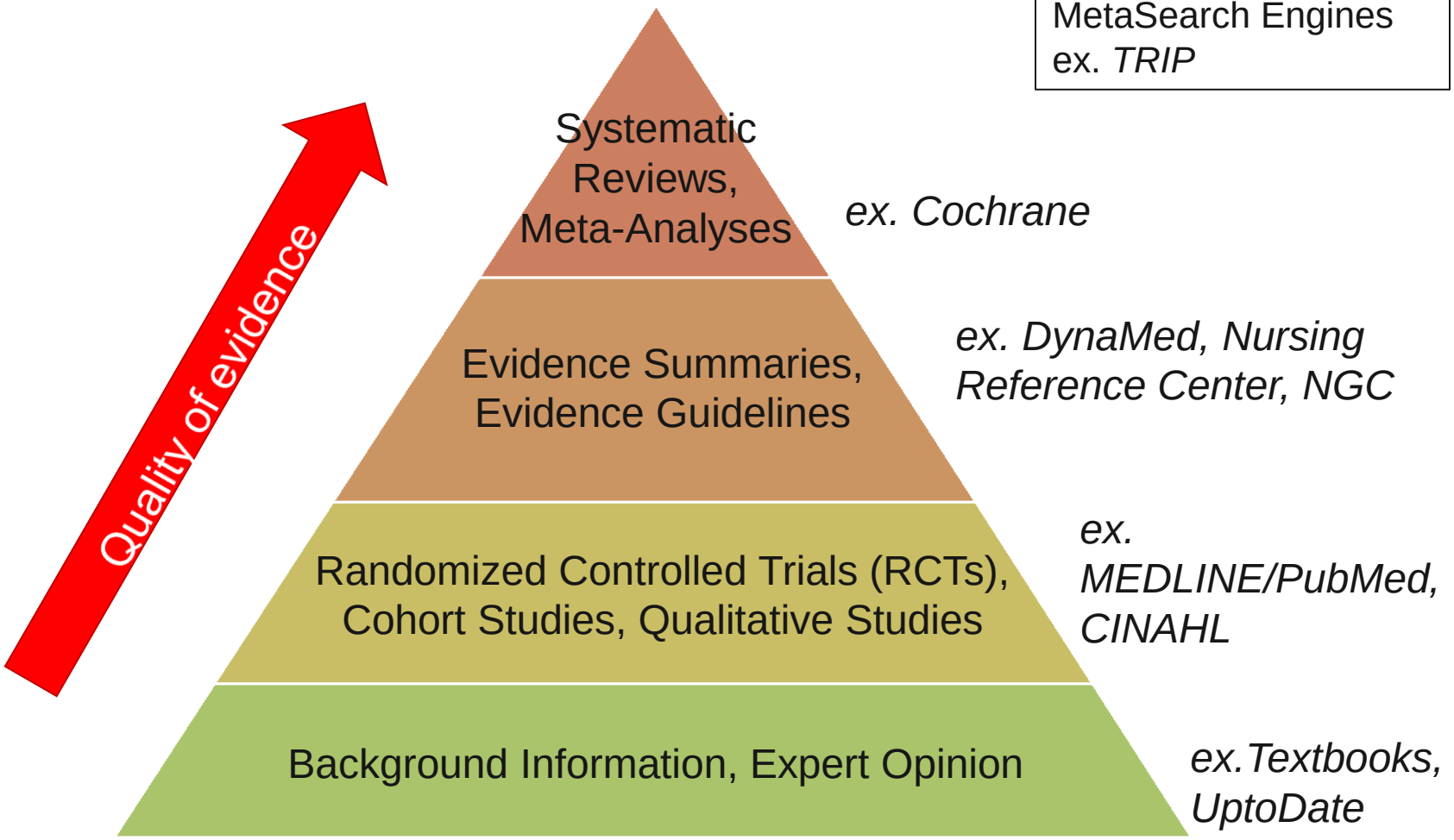


Search for the Best Evidence to answer your Clinical Question



Slide adapted from Edward G. Miner Library, University of Rochester School of Medicine and Dentistry

Searching for Evidence Pyramid

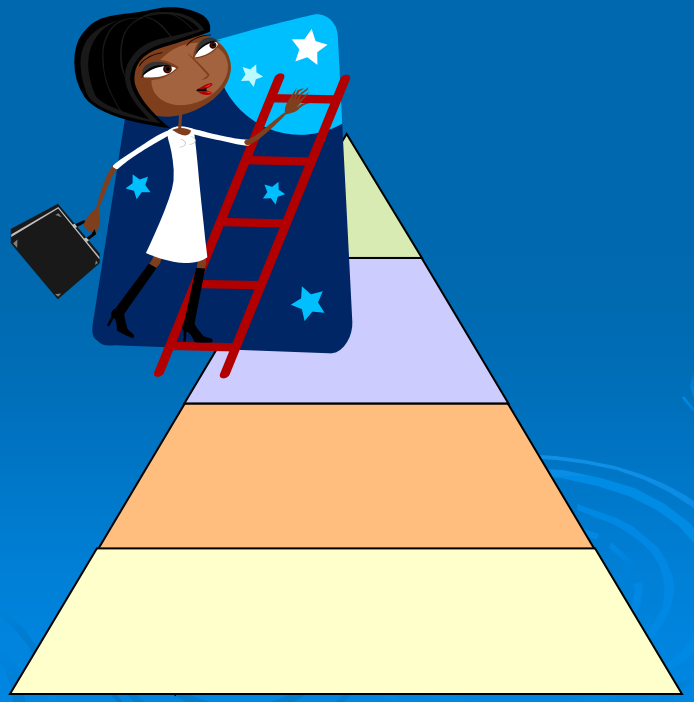


Live Demo of HEAL-WA Resources

The following slides are examples of the resources on HEAL-WA that will be searched to answer a clinical question.

Search for Systematic Review and Meta-Analyses Resources

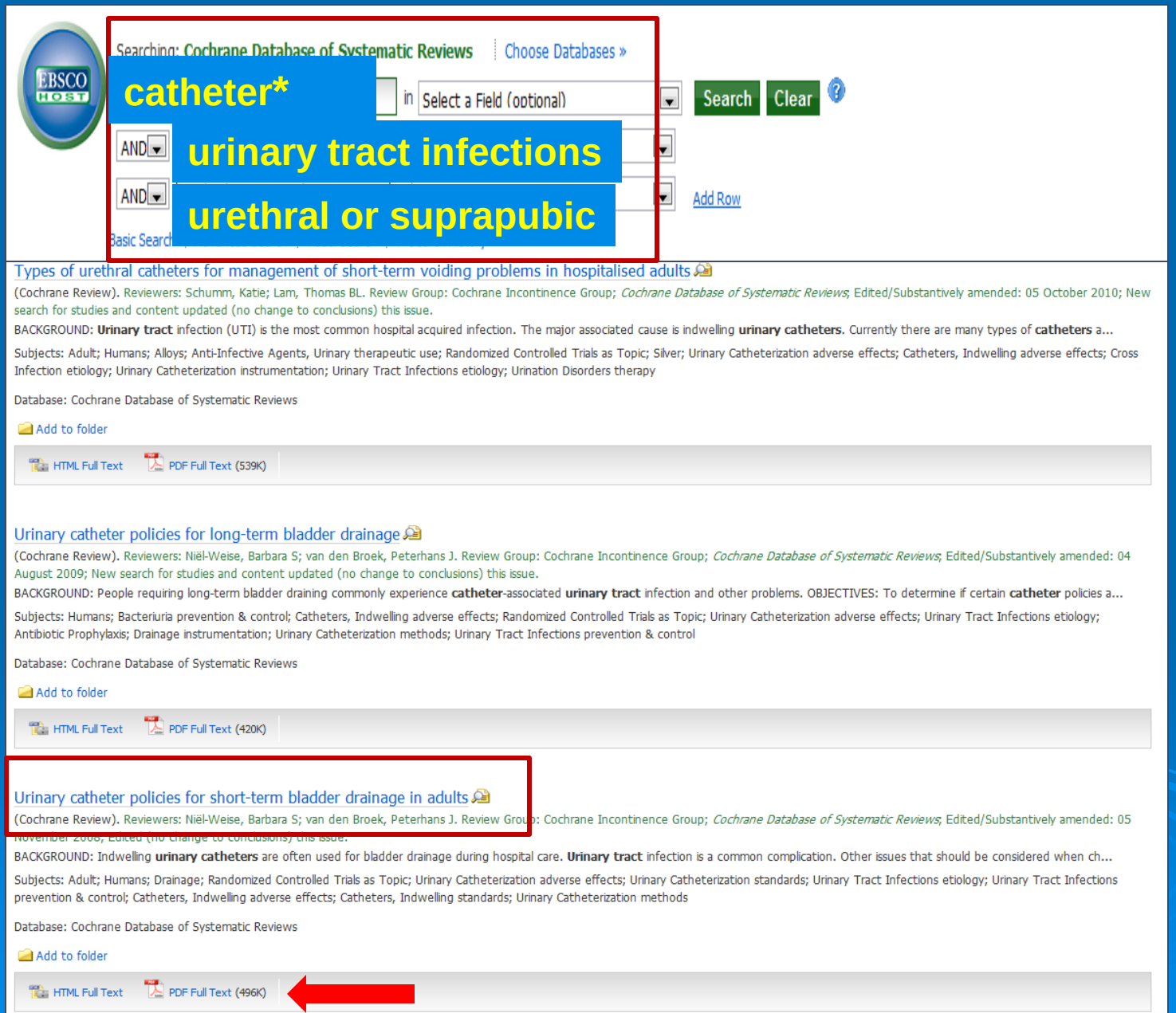
- Cochrane Database of Systematic Reviews (CDSR)
- PubMed/MEDLINE Systematic Reviews
- CINAHL/CINAHL Plus



Systematic review vs Meta-analysis

- Systematic review:
  - a literature review of RCTs focused on a single question which tries to identify, appraise, select and synthesize all high quality research evidence relevant to that question.
  - Uses explicit methods to identify, select and critically evaluate relevant research.
- Meta-analysis:
  - a systematic review combining results of several studies using quantitative statistics.

Cochrane Database



Citation: Niel-Weise BS, van den Broek PJ. Urinary catheter policies for short-term bladder drainage in adults. *Cochrane Database of Systematic Reviews* 2005, Issue 3. Art. No.: CD004203. DOI: 10.1002/14651858.CD004203.pub2.

Next

Abstract

Background
Indwelling urinary catheters are often used for bladder drainage during hospital care. Urinary tract infection is a common complication. Other issues that should be considered when choosing an approach to catheterisation are patients' comfort, other complications/adverse effects, and costs.

Objectives
To determine the advantages and disadvantages of alternative approaches to catheterisation for short-term bladder drainage in adults.

Search strategy
We searched the Cochrane Incontinence Group Specialised Register (searched 29 May 2006). Additionally, we examined all reference lists of identified trials.

Selection criteria
All randomised and quasi-randomised trials comparing catheter route of insertion for adults catheterised for up to 14 days.

Data collection and analysis
Data were extracted by both reviewers independently and compared. Disagreements were resolved by discussion. Data were processed as described in the Cochrane Handbook. If the data in trials had not been fully reported, clarification was sought directly from the authors.

Main results
Seventeen para

Fourteen trials
95%CI 2.12 to
complications

Three trials cor
catheterisation

Authors' conclusions
There was evidence that suprapubic catheters have advantages over indwelling catheters in respect of bacteriuria, recatheterisation and discomfort. The clinical significance of bacteriuria was uncertain, however, and there was no information about possible complications or adverse effects during catheter insertion.

There was more limited evidence that the use of intermittent catheterisation was also associated with a lower risk of bacteriuria than indwelling urethral catheterisation, but might be more costly. Using intermittent catheterisation postoperatively limits catheterisation to those people who definitely need it.

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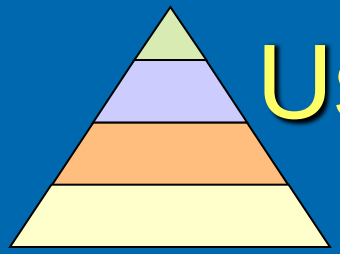
more costly. Using intermittent catheterisation postoperatively limits catheterisation to those people who definitely need it.

Finding Systematic Reviews and Meta-Analyses in *PubMed/MEDLINE and CINAHL*

- In CINAHL:
  - Refine search to Publication Type: Systematic Review
  - Search Meta Analysis as a Subject Heading
- In PubMed/MEDLINE:
  - Select Systematic Reviews in Clinical Queries section
  - Limit to Meta-analysis as Publication/Type of Article



Use a Meta -Search Engines to find evidence sites

TRIP

tripdatabase.com

SUMSearch 2

sumsearch.org

TRIP Database

www.tripdatabase.com

- Meta-search engine
- Performs a simple search 75+ databases
- Finds evidence-based resources
- Includes links to peer-reviewed journals and other publications
- Searches *Cochrane, National Guideline Clearinghouse, Bandolier,* etc.

Donate

trip database

catheter* urinary tract infections suprapubic u

Search Advanced Search History Search Tips

Order By: Date **Relevance**

SELECT ALL Choose Your Action

1. Urethral catheter or suprapubic aspiration to reduce contamination of urine samples in young children?
BestBETS 2009
Developing World? CPD/CME Preview Conclusion Related TILT

2. Washout policies in long-term indwelling urinary catheterisation in adults
Cochrane Database of Systematic Reviews 2010
Developing World? CPD/CME Preview Conclusion Related TILT

3. Urinary catheter policies for long-term bladder drainage
Cochrane Database of Systematic Reviews 2009
Developing World? CPD/CME Preview Conclusion Related TILT

4. Removal of Short-term Indwelling Urethral Catheters
Joanna Briggs Institute 2006
Developing World? CPD/CME Preview Conclusion Related TILT

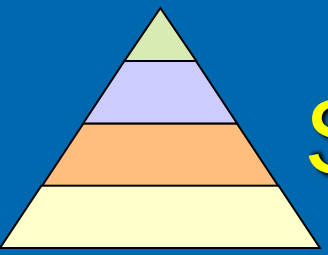
5. Catheter care: RCN guidance for nurses
Royal College of Nursing 2008
Developing World? CPD/CME Preview Conclusion Related TILT

6. Short term urinary catheter policies following urogenital surgery in adults
Cochrane Database of Systematic Reviews 2006
Developing World? CPD/CME Preview Conclusion Related TILT

Filter Your Search what is this?

Total	13
Evidence Based Synopses	2
Systematic Reviews	6
Guidelines	
Aus. & NZ	0
Canada	0
UK	1
USA	0
Other	0
Clinical Q...	0
Core primary research	0
Extended primary research	2
eTextbooks	2
Patient Information	0
More	0
News	0

Suitable for the Developing World



Search for Evidence Summaries

- DynaMed [on HEAL-WA]
  - Evidence-based clinical resource providing summaries of 3000+ diseases and conditions
- Nursing Reference Center [on HEAL-WA]
  - Comprehensive point-of-care resource for nurses that includes Evidence-based Care Sheets
- UpToDate **$$** *uptodate.com*

DynaMed

ebscohost.com/dynamed

- Provides summaries of the best evidence for over 3,500 clinical topics
- Can quickly browse and find key recommendations
- Updated daily
- Monitors content of over 500 journals and systematic review databases
- Download available for PDA and smart phones

Catheter-associated urinary tract infection

- Updated 2011 Apr 14 02:36:00 PM: urinary catheter reminder systems may reduce catheter-associate urinary tract infections in hospitalized adults (Clin Infect Dis 2010 Sep 1) view update
- ultrasound bladder scanner for monitoring urinary retention after surgery may reduce risk of catheter-associated urinary tract infection (J Clin Nurs 2010 Nov) view update
- silver alloy or antibiotic impregnated indwelling catheters may reduce asymptomatic bacteriuria in short-term catheterized hospitalized adults (Cochrane Database Syst Rev 2010 Nov 10;(11):CD00401 view update

- **suprapubic catheters reduce rates of bacteriuria, recatheterization and discomfort compared with indwelling urethral catheters but clinical significance of bacteriuria uncertain**
  - based on Cochrane review
  - systematic review of 17 randomized trials comparing catheter routes f… up to 14 days
  - 14 trials compared indwelling urethral catheters vs. suprapubic catheter… catheters associated with more bacteriuria, more frequent recatheterization and more discomfort
  - 3 trials compared indwelling urethral catheters vs. intermittent catheterization of which 2 trials with data found fewer cases of bacteriuria with intermittent catheterization while cost analyses favored indwelling catheters
  - limited evidence overall regarding complications or adverse effects
  - Reference - systematic review last updated 2005 May 25 (Cochrane Library 2005 Issue 3:CD004203)
- **suprapubic catheterization reduces rates of bacteriuria (level 3 [lacking direct] evidence) and appears more comfortable with lower recatheterization rates (level 2 [mid-level] evidence) compared to transurethral catheterization for bladder drainage after abdominal surgery**
  - based on systematic review with heterogeneity
  - systematic review of 8 randomized trials comparing suprapubic vs. transurethral catheterization for bladder drainage after abdominal surgery
  - comparing suprapubic vs. transurethral catheterization
    - 10.7% vs. 20.6% had bacteriuria (p = 0.0008, NNT 11) in meta-analysis of 5 trials with 550 patients
    - 5.1% vs. 9.7% recatheterization rates in meta-analysis of 6 trials with 600 patients, but not statistically significant after adjusting for heterogeneity
    - 10.6% vs. 35.2% had pain or discomfort (p = 0.004, NNT 4) in meta-analysis of 4 trials with 462 patients, but analysis limited by heterogeneity (p = 0.06)
  - Reference - Br J Surg 2006 Sep;93(9):1038
  - **no significant differences in rates of bacteruria comparing supra… clean intermittent self-catheterization (31% vs. 23%)** in randomi… following urogynecologic surgery (Am J Obstet Gynecol 2007 Jul;197(…
- antimicrobial-coated urinary catheters
  - **silver alloy or antibiotic impregnated indwelling catheters may reduce asymptomatic bacteriuria in short-term catheterized hospitalized adults (level 3 [lacking direct] evidence)**
    - based on Cochrane review without clinical outcomes

DynaMed

Level of evidence

Reviews:

- review can be found in Arch Int 5;164(8):842
- review of hospital-acquired infe negative bacteria can be found in N Engl J Med 2010 May 13;362(19):1804
- review of nosocomial infections in intensive care units can be found in Lancet 2003 Jun 14;361(9374):2068 EBSCO*host* Full Text, commentary can be found in Lancet 2003 Aug 9;362(9382):493 EBSCO*host* Full Text

Full text

Guidelines:

- guidelines on prevention of catheter-associated urinary tract infection
  - European Association of Urology (EAU) guideline on treatment of urological infections (catheter-associated urinary tract infection) can be found at EAU PDF or at National Guideline Clearinghouse 2010 March 22:14808
  - United States Department of Health and Human Services prioritized recommendations to prevent catheter-associated urinary tract infections can be found at HHS Action Plan to Prevent Healthcare-associated Infections accessed 2009 Jan 7
  - Healthcare Infection Control Practices Advisory Committee (HICPAC, panel to CDC and HHS) guideline on prevention of catheter-associated urinary tract infections 2009 can be found in Infect Control Hosp Epidemiol 2010 Apr;31(4):319 or at National Guideline Clearinghouse 2010 Apr 19:15519
  - Society for Healthcare Epidemiology of America guideline on strategies to prevent catheter-associated urinary tract infections in acute care hospitals can be found in Infect Control Hosp Epidemiol 2008 Oct;29 Suppl 1:S41 or at National Guideline Clearinghouse 2009 May 18:13394
  - Massachusetts Department of Public Health guideline on prevention of catheter-associated urinary tract infections can be found at National Guideline Clearinghouse 2009 Feb 9:12923
- NICE guideline on prevention of healthcare-associated infection in primary and community care can be found at NICE 2006 Jun:CG2 or at National Guideline Clearinghouse 2005 Jul 25:5069
- Infectious Diseases Society of America (IDSA) guideline on diagnosis and treatment of asymptomatic bacteriuria in adults can be found in Clin Infect Dis 2005 Mar 1;40(5):643 EBSCO*host* Full Text or at National Guideline Clearinghouse 2005 May 30:6566, summary can be found in Am Fam Physician 2005 Sep 15;72(6):1128
- American Urological Association Education and Research, Incorporated (AUA) best practice policy statement on urological surgery antimicrobial prophylaxis can be found at National Guideline Clearinghouse

UpToDate

uptodate.com

- Concise comprehensive up-to-date reviews of clinical topics in multiple specialties
- Cost: individual $495/yr [NOT ON HEAL-WA]
- Urinary catheter monographs
  - Urinary tract infection associated with urethral catheters
  - Complications of urinary bladder catheters and preventive strategies
  - Placement and management of urinary bladder catheters

Urinary tract infection associated with urethral catheters

Author
Thomas Fekete, MD

Section Editor
Stephen B Calderwood, MD

Deputy Editor
Elinor L Baron, MD, DTMH

Last literature review version 19.1: January 2011 | **This topic last updated:** April 5, 2010 **(More)**

INTRODUCTION — Urinary tract infections (UTI) associated with urinary catheters are the leading cause of secondary nosocomial bacteremia. Approximately 20 percent of hospital-acquired bacteremias arise from the urinary tract, and the mortality associated with this condition is about 10 percent [1].

Issues related to symptomatic and asymptomatic bacteriuria (both of which are subsets of UTI and are sometimes referred to as symptomatic or asymptomatic UTI) in patients with indwelling bladder catheters will be reviewed here.

Issues related to asymptomatic bacteriuria and cystitis in other circumstances, and the indications for placement, methods of catheterization, and management and complications of bladder catheters are discussed separately (see "Approach to the adult with asymptomatic bacteriuria" and "Acute cystitis in women" and "Acute cystitis and asymptomatic bacteriuria in men" and "Placement and management of urinary bladder catheters" and "Complications of urinary bladder catheters and preventive strategies").

DEFINITIONS — Asymptomatic bacteriuria (with or without an indwelling catheter) is characterized by a urine culture with >10(5) colony forming units (cfu)/mL of uropathogenic bacteria in the absence of fever >38ºC, suprapubic tenderness or costovertebral angle pain or tenderness [2]. While the CDC has established a definition of >10(5) colony forming units (cfu)/mL, the IDSA has defined asymptomatic bacteriuria as a single catheterized specimen with isolation of a single organism in quantitative counts of ≥10(2) cfu/mL [3]. The more sensitive definition reflects the lower threshold for diagnosis when urine is being sampled by direct bladder puncture or fresh diagnostic catheterization with careful pre-procedure site preparation; it is not so useful in the setting of indwelling catheters.

Symptomatic catheter-related bacteriuria (usually referred to as UTI since a clinically significant infection is inferred) is defined as the presence of fever >38ºC, suprapubic tenderness, costovertebral angle tenderness, or otherwise unexplained systemic symptoms such as altered mental status, hypotension, or evidence of a systemic inlammatory response syndrome, together with one of the following laboratory profiles [4]:

- Urine culture with >10(5) cfu/mL irrespective of urinalysis results
- Urine culture with >10(3) cfu/mL with evidence of pyuria (dipstick positive for leukocyte esterase and/or nitrite, microscopic pyuria or presence of microbes seen on Gram stain of unspun urine).

Patients who are no longer catheterized but had indwelling urinary catheters within the past 48 hours are also considered to have catheter-associated UTI if they meet these definitions.

EPIDEMIOLOGY AND PATHOGENESIS — Bacteriuria in patients with indwelling bladder catheters occurs at a rate of

Nursing Reference Center
[on HEAL-WA]

- Evidence-based Care Sheets
- Diseases & Conditions
- Quick Lessons
- Drug information
- Skills & Procedures
- Practice Guidelines
- Patient Education materials
- CE modules

Browse for:

catheter in Evidence-Based Care Sheets

Browse

Alphabetical **Relevancy Ranked**

Page: Previous | Next

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Catheter Ablation: Wolff-Parkinson-White Syndrome EB

Catheter Ablation: WPW Syndrome EB

Catheter, Intravascular, Use and Prevention of Infection EB

Catheter, Urinary, Use and Prevention of Infection EB

Page: Previous | Next

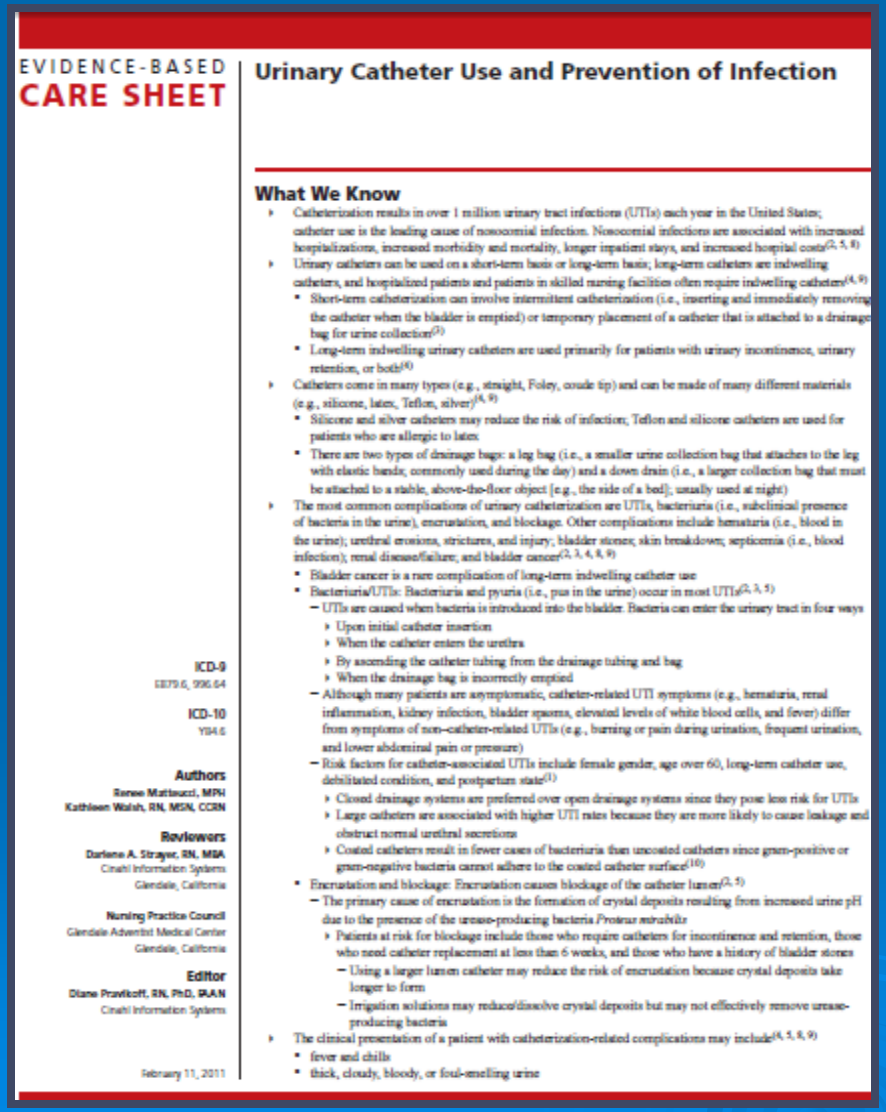
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Key Content

Diseases & Conditions includes:

- **Quick Lessons** Clinically-organized nursing overviews that are designed to map the nursing work flow
- **Evidence-Based Care Sheets** EB Evidence-based summaries on key topics incorporating the best available evidence through rigorous systematic surveillance

Nursing Reference Center Evidence-Based Care Sheet



EVIDENCE-BASED
CARE SHEET

Urinary Catheter Use and Prevention of Infection

What We Know

- Catheterization results in over 1 million urinary tract infections (UTIs) each year in the United States; catheter use is the leading cause of nosocomial infection. Nosocomial infections are associated with increased hospitalizations, increased morbidity and mortality, longer inpatient stays, and increased hospital costs[2, 5, 8]
- Urinary catheters can be used on a short-term basis or long-term basis; long-term catheters are indwelling catheters, and hospitalized patients and patients in skilled nursing facilities often require indwelling catheters[4, 9]
  - Short-term catheterization can involve intermittent catheterization (i.e., inserting and immediately removing the catheter when the bladder is emptied) or temporary placement of a catheter that is attached to a drainage bag for urine collection[3]
  - Long-term indwelling urinary catheters are used primarily for patients with urinary incontinence, urinary retention, or both[4]
- Catheters come in many types (e.g., straight, Foley, coude tip) and can be made of many different materials (e.g., silicone, latex, Teflon, silver)[4, 9]
  - Silicone and silver catheters may reduce the risk of infection; Teflon and silicone catheters are used for patients who are allergic to latex
  - There are two types of drainage bags: a leg bag (i.e., a smaller urine collection bag that attaches to the leg with elastic bands; commonly used during the day) and a down drain (i.e., a larger collection bag that must be attached to a stable, above-the-floor object [e.g., the side of a bed]; usually used at night)
- The most common complications of urinary catheterization are UTIs, bacteriuria (i.e., subclinical presence of bacteria in the urine), encrustation, and blockage. Other complications include hematuria (i.e., blood in the urine); urethral erosions, strictures, and injury; bladder stones; skin breakdown; septicemia (i.e., blood infection); renal disease/failure; and bladder cancer[2, 3, 4, 8, 9]
  - Bladder cancer is a rare complication of long-term indwelling catheter use
  - Bacteriuria/UTIs: Bacteriuria and pyuria (i.e., pus in the urine) occur in most UTIs[2, 3, 5]
    - UTIs are caused when bacteria is introduced into the bladder. Bacteria can enter the urinary tract in four ways
      - Upon initial catheter insertion
      - When the catheter enters the urethra
      - By ascending the catheter tubing from the drainage tubing and bag
      - When the drainage bag is incorrectly emptied
    - Although many patients are asymptomatic, catheter-related UTI symptoms (e.g., hematuria, renal inflammation, kidney infection, bladder spasms, elevated levels of white blood cells, and fever) differ from symptoms of non-catheter-related UTIs (e.g., burning or pain during urination, frequent urination, and lower abdominal pain or pressure)
    - Risk factors for catheter-associated UTIs include female gender, age over 60, long-term catheter use, debilitated condition, and postpartum state[11]
      - Closed drainage systems are preferred over open drainage systems since they pose less risk for UTIs
      - Large catheters are associated with higher UTI rates because they are more likely to cause leakage and obstruct normal urethral secretions
      - Coated catheters result in fewer cases of bacteriuria than uncoated catheters since gram-positive or gram-negative bacteria cannot adhere to the coated catheter surface[10]
  - Encrustation and blockage: Encrustation causes blockage of the catheter lumen[2, 5]
    - The primary cause of encrustation is the formation of crystal deposits resulting from increased urine pH due to the presence of the urease-producing bacteria *Proteus mirabilis*
      - Patients at risk for blockage include those who require catheters for incontinence and retention, those who need catheter replacement at less than 6 weeks, and those who have a history of bladder stones
        - Using a larger lumen catheter may reduce the risk of encrustation because crystal deposits take longer to form
        - Irrigation solutions may reduce/dissolve crystal deposits but may not effectively remove urease-producing bacteria
- The clinical presentation of a patient with catheterization-related complications may include[4, 5, 8, 9]
  - fever and chills
  - thick, cloudy, bloody, or foul-smelling urine
  - renal inflammation or kidney infection
  - suprapubic pain/tenderness or flank pain
  - large quantities of urine leaking from the catheter
  - worsening mental or functional status
  - little to no urine drainage from the catheter despite adequate fluid intake
- Strategies for preventing infection in catheterized patients include[4, 5, 7, 8, 9, 11]
  - daily cleaning of the urethral meatus and catheter with soap and water
  - using the smallest gauge catheter possible
  - increasing the patient's fluid intake
  - draining the drainage bag when it becomes full, or at least once every 8 hours, to prevent migration of bacteria
  - keeping the drainage bag lower than the level of the patient's bladder to prevent backflow of urine into the bladder
  - cleaning the drainage bag outlet valve with soap and water
  - disinfecting the drainage bag with vinegar or chlorine bleach and water and allowing it to air dry
  - alternating indwelling catheter use with either suprapubic (i.e., a catheter inserted through the abdomen and placed directly into the bladder) or intermittent catheterization
  - removing the catheter as soon as possible
  - washing hands and wearing gloves before handling the catheter and drainage bag
  - emptying the drainage bag prior to patient transport and avoiding clamping the catheter during transport
  - replacing the entire catheter and drainage bag if leakage or obstruction occurs
  - avoiding kinks in the catheter tubing
  - irrigating the drainage bag only if there is catheter obstruction
  - securing the catheter tubing to the thigh/body, which can help reduce urethral irritation, injury, infection, and bladder neck trauma as well as increase patient comfort
    - Types of catheter securement devices include Velcro closure straps and adhesive catheter anchors (e.g., Cath-Secure, K-Lock, or StatLock Foley stabilization device)
- A 2009 randomized study of 239 patients who underwent abdominal surgery with perioperative transurethral urinary catheters reported that antibiotic prophylaxis with trimethoprim-sulfamethoxazole (Septra) at the time of catheter removal significantly reduced the rate of symptomatic UTI and bacteriuria[6]

What We Can Do

- Become knowledgeable about evidence-based recommendations for preventing UTIs caused by catheters so you can accurately assess your patients' personal characteristics and health education needs; share this information with your colleagues
- Collaborate with your hospital's education department to provide ongoing training on indications for catheter use, procedures for insertion and securing, and prevention and monitoring of infections
- Wash hands frequently, use aseptic techniques and sterile barriers when inserting a catheter and obtaining urine samples, and follow facility protocols for catheter care; always secure the catheter and maintain a closed drainage system
- Assess your patients for risk factors for catheter-associated UTI, which include female gender, age over 60, immobility, and history of bladder stones
- Monitor for signs of complications in your patients with catheters: strong smell, cloudy or thick urine, blood around the catheter, urethral swelling around the catheter, urinary incontinence, elevated levels of white blood cells, and the presence of bacteriuria and pyuria; be aware that patients with catheter-related UTIs may be asymptomatic

ICD-9
599.0, 996.64

ICD-10
Y84.6

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February 11, 2011

Coding Matrix

References are rated in order of strength:

- M Published meta-analysis
- SR Published systematic or integrative literature review
- RCT Published research (randomized controlled trial)
- R Published research (not randomized controlled trial)
- C Case histories, case studies
- G Published guidelines
- EV Published review of the literature
- RU Published research utilization report
- QI Published quality improvement report
- L Legislation
- PGR Published government report
- PFR Published trade report
- PP Policies, procedures, protocols
- X Practice examples, stories, opinions
- GI General background information/textbooks
- U Unpublished research, review, poster presentations or other such materials
- CP Conference proceedings, abstracts, presentations

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Nursing Skills in NRC

NURSING PRACTICE & SKILL

Urinary Catheter Insertion and Care

ICD-9
57.94

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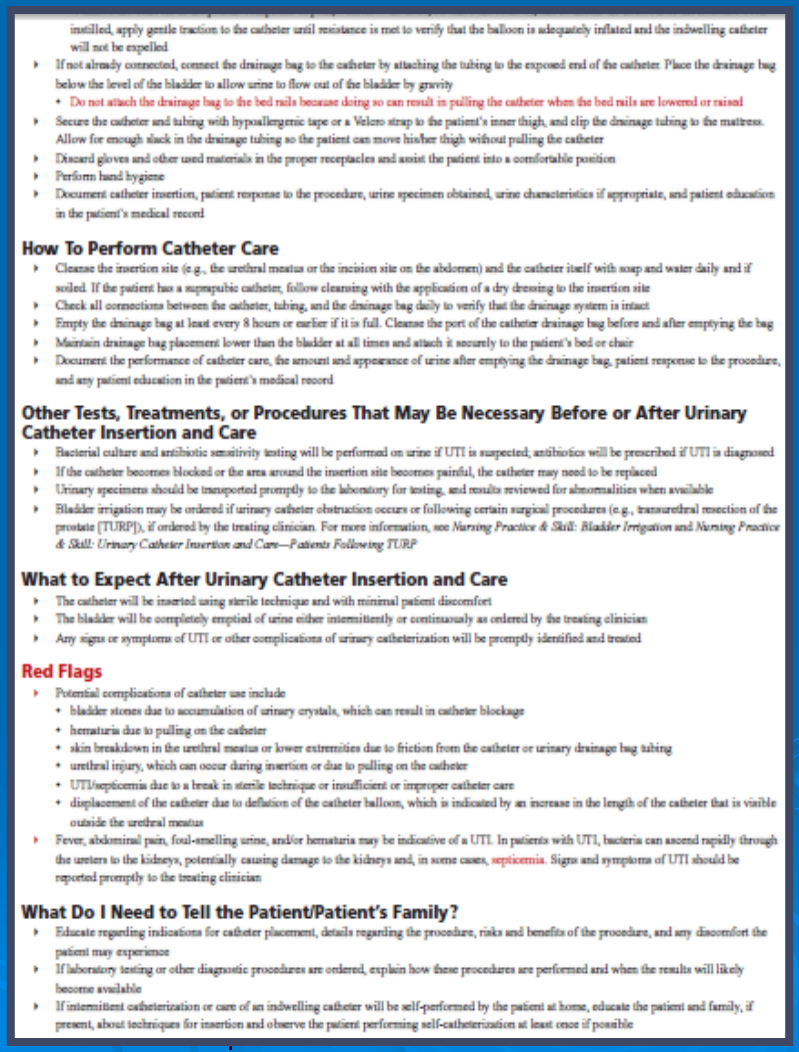
April 1, 2011

What Is Urinary Catheter Insertion and Care?

- A urinary catheter is any tube device or system that is inserted into the bladder for the purpose of urinary drainage. Placement of a urinary catheter may be indicated following urinary tract surgery, for relief of urinary retention, or to facilitate urine collection in patients who are incontinent and/or incapacitated
  - *What* and *How*: A urinary drainage catheter, made of flexible latex, silicone, or Teflon, is inserted into the bladder through the urethra (called transurethral catheterization; commonly referred to as Foley catheter insertion if indwelling catheterization is ordered) or by suprapubic catheterization through a percutaneous abdominal incision. The focus of the *How To* section of this paper is on performing transurethral catheter insertion
    - During transurethral catheterization, the catheter is placed into the urethra and extended into the bladder using sterile technique. Once the catheter is in place, urine will flow freely through it until the bladder is emptied. The catheter is then removed if intermittent catheterization has been ordered or left in place for ongoing bladder drainage if indwelling catheterization has been ordered. The indwelling catheter is secured by inflating the balloon attached to the tip of the catheter inside the bladder with sterile water. Indwelling catheters are attached to a collection bag placed below the level of the bladder, allowing urine to flow into the collection bag by gravity. The procedure is moderately invasive and can be painful to patients who have urethral irritation
    - Suprapubic catheterization is a surgical procedure requiring anesthesia during which the catheter is inserted into the bladder through an abdominal wall incision for the purpose of ongoing urinary drainage. Suprapubic catheters are indicated when placement of a transurethral catheter is contraindicated or is unsuccessful
    - Catheter care is performed regularly on all urinary catheters to confirm that the system is intact and to prevent the proliferation of bacterial microorganisms, which can lead to infection of the urinary tract. Catheter care involves regular cleansing of the insertion site and the catheter device/system, checking of all connections, emptying the collection bag, and verifying proper placement of the collection bag. Depending on the indication for catheterization and/or the treating clinician orders, catheter care can include periodic or continuous irrigation
  - *Where*: Transurethral catheterization is commonly performed in inpatient, outpatient, and homecare settings. Suprapubic catheterization is performed in an outpatient surgical facility, in the operating room of a hospital, or at the bedside in an inpatient facility
  - *Who*: Transurethral catheterization can be performed by registered nurses, physicians, nurse practitioners, and physician's assistants. Suprapubic catheter insertion is typically performed by a urology clinician specialist. Patients can learn to self-perform intermittent catheterization at home when indicated for certain medical conditions and ordered by the treating clinician. Registered and licensed practical (vocational) nurses are principally responsible for routine catheter care and for patient education regarding self-catheterization. These tasks should not be delegated to assistive healthcare staff. Because of the need to promote patient privacy, it is usually not appropriate for family members to be present during the urinary catheter insertion and care. Exceptions can be made in the case of young children because the presence of a parent or other supportive adult known to the child will reduce the child's anxiety and promote cooperation with the procedure

Why Is Urinary Catheter Insertion and Care Ordered?

- To relieve urinary retention due to acute or chronic obstruction, benign prostatic hyperplasia, or neurogenic bladder
- For the collection of sterile urine for laboratory analysis
- To measure residual bladder volume in evaluation of voiding dysfunction
- To precisely measure urinary output (e.g., in critically ill or surgical patients)
- To instill fluid into the bladder for a diagnostic procedure (e.g., pelvic ultrasound)
- As treatment for incontinence when other methods have proven unsuccessful and when it is essential to keep the perineal area clean of urine (e.g., for a patient at risk for a pressure ulcer or with an existing pressure ulcer)



instilled, apply gentle traction to the catheter until resistance is met to verify that the balloon is adequately inflated and the indwelling catheter will not be expelled
- If not already connected, connect the drainage bag to the catheter by attaching the tubing to the exposed end of the catheter. Place the drainage bag below the level of the bladder to allow urine to flow out of the bladder by gravity
  - Do not attach the drainage bag to the bed rails because doing so can result in pulling the catheter when the bed rails are lowered or raised
- Secure the catheter and tubing with hypoallergenic tape or a Velcro strap to the patient's inner thigh, and clip the drainage tubing to the mattress. Allow for enough slack in the drainage tubing so the patient can move his/her thigh without pulling the catheter
- Discard gloves and other used materials in the proper receptacles and assist the patient into a comfortable position
- Perform hand hygiene
- Document catheter insertion, patient response to the procedure, urine specimen obtained, urine characteristics if appropriate, and patient education in the patient's medical record

How To Perform Catheter Care

- Cleanse the insertion site (e.g., the urethral meatus or the incision site on the abdomen) and the catheter itself with soap and water daily and if soiled. If the patient has a suprapubic catheter, follow cleansing with the application of a dry dressing to the insertion site
- Check all connections between the catheter, tubing, and the drainage bag daily to verify that the drainage system is intact
- Empty the drainage bag at least every 8 hours or earlier if it is full. Cleanse the port of the catheter drainage bag before and after emptying the bag
- Maintain drainage bag placement lower than the bladder at all times and attach it securely to the patient's bed or chair
- Document the performance of catheter care, the amount and appearance of urine after emptying the drainage bag, patient response to the procedure, and any patient education in the patient's medical record

Other Tests, Treatments, or Procedures That May Be Necessary Before or After Urinary Catheter Insertion and Care

- Bacterial culture and antibiotic sensitivity testing will be performed on urine if UTI is suspected; antibiotics will be prescribed if UTI is diagnosed
- If the catheter becomes blocked or the area around the insertion site becomes painful, the catheter may need to be replaced
- Urinary specimens should be transported promptly to the laboratory for testing, and results reviewed for abnormalities when available
- Bladder irrigation may be ordered if urinary catheter obstruction occurs or following certain surgical procedures (e.g., transurethral resection of the prostate [TURP]), if ordered by the treating clinician. For more information, see *Nursing Practice & Skill: Bladder Irrigation* and *Nursing Practice & Skill: Urinary Catheter Insertion and Care—Patients Following TURP*

What to Expect After Urinary Catheter Insertion and Care

- The catheter will be inserted using sterile technique and with minimal patient discomfort
- The bladder will be completely emptied of urine either intermittently or continuously as ordered by the treating clinician
- Any signs or symptoms of UTI or other complications of urinary catheterization will be promptly identified and treated

Red Flags

- Potential complications of catheter use include
  - bladder stones due to accumulation of urinary crystals, which can result in catheter blockage
  - hematuria due to pulling on the catheter
  - skin breakdown in the urethral meatus or lower extremities due to friction from the catheter or urinary drainage bag tubing
  - urethral injury, which can occur during insertion or due to pulling on the catheter
  - UTI/septicemia due to a break in sterile technique or insufficient or improper catheter care
  - displacement of the catheter due to deflation of the catheter balloon, which is indicated by an increase in the length of the catheter that is visible outside the urethral meatus
- Fever, abdominal pain, foul-smelling urine, and/or hematuria may be indicative of a UTI. In patients with UTI, bacteria can ascend rapidly through the ureters to the kidneys, potentially causing damage to the kidneys and, in some cases, septicemia. Signs and symptoms of UTI should be reported promptly to the treating clinician

What Do I Need to Tell the Patient/Patient's Family?

- Educate regarding indications for catheter placement, details regarding the procedure, risks and benefits of the procedure, and any discomfort the patient may experience
- If laboratory testing or other diagnostic procedures are ordered, explain how these procedures are performed and when the results will likely become available
- If intermittent catheterization or care of an indwelling catheter will be self-performed by the patient at home, educate the patient and family, if present, about techniques for insertion and observe the patient performing self-catheterization at least once if possible

April 2011

Languages Available	Spanish

Title: *Urinary Tract Infection* By: Riley J, Carmack A, Health Library: Evidence-Based Information, September 1, 2010
Database: *Nursing Reference Center*

Patient Education

Urinary Tract Infection

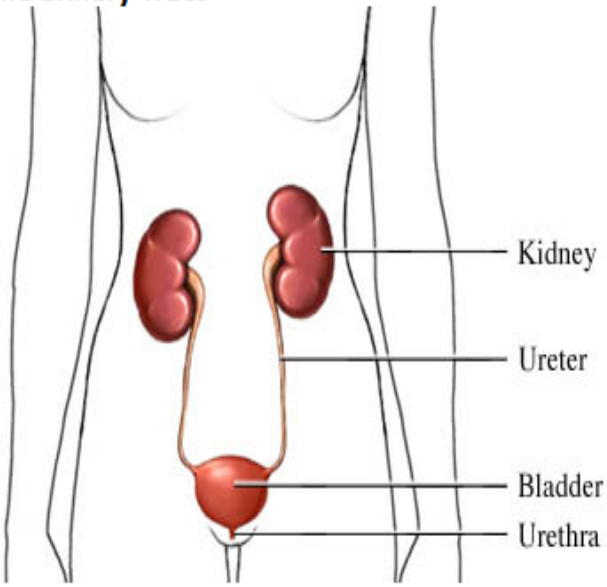
Contents

(UTI; Lower UTI)

Definition

UTIs are caused by bacteria. The bacteria invade the urinary system and multiply. The infection can occur in any part of the urinary system, but usually starts in the urethra. The urethra is a tube that carries the urine out of the body.

The Urinary Tract



Related Information

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- Drugs
- Patient Education
- Guidelines
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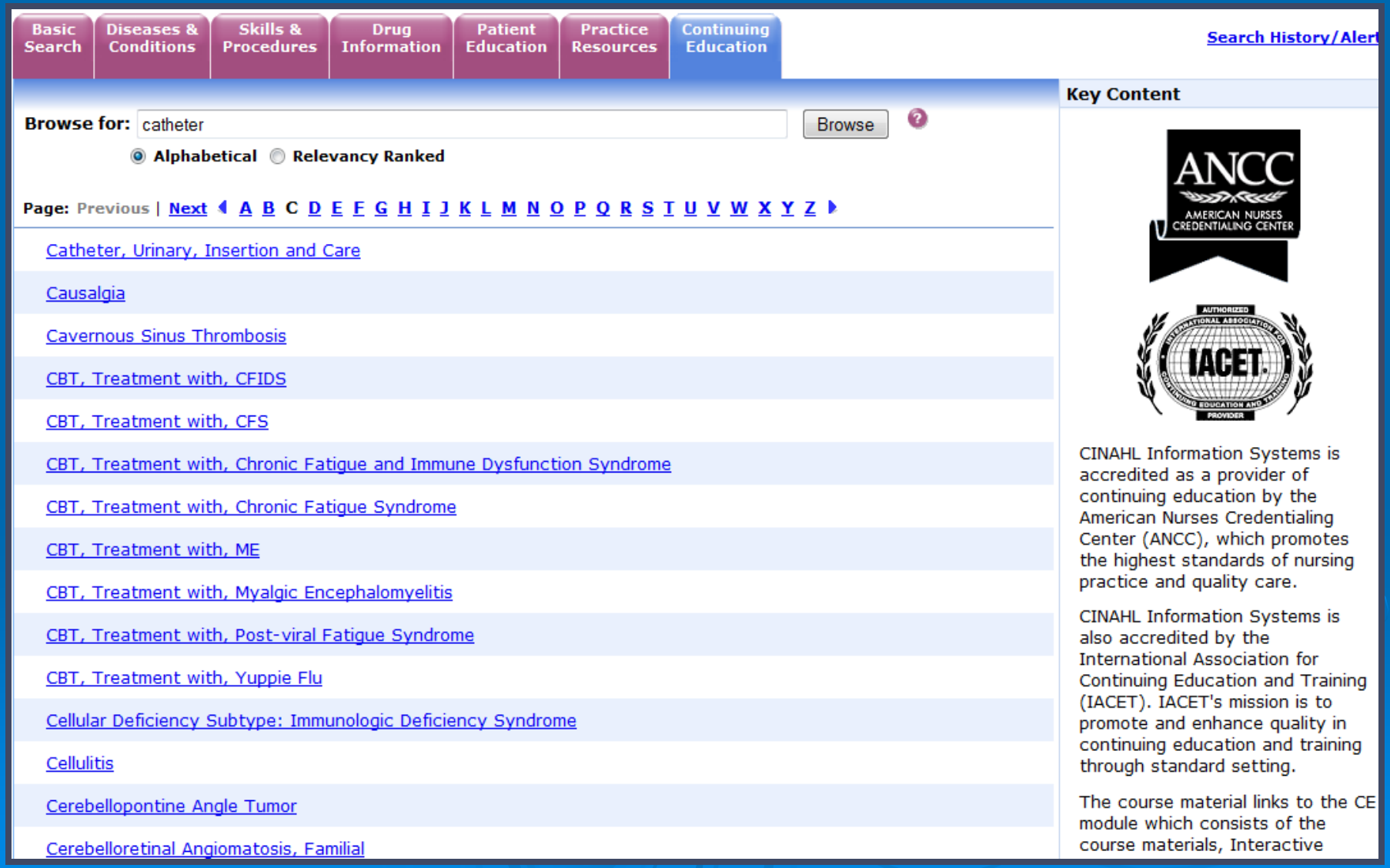
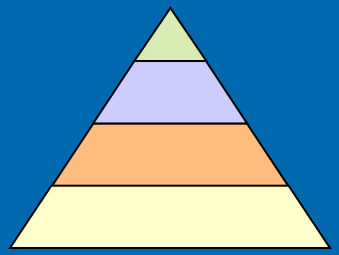
Causes

In most cases, bacteria begins growing in the urethra. The bacteria comes most often from the digestive tract and rectal area. They cling to the opening of

Continuing Education Credit





Search for Clinical Practice Guidelines

- Systematically developed statements of appropriate care designed to assist the practitioner and patient make decisions about appropriate health care for specific clinical circumstances
- Usually based on the most current available research if from reputable, authoritative organizations
- Developed using widely varying standards
  - *Cost* may be considered as well as *health outcomes* or *politics*

Practice Guideline Resources

- National Guideline Clearinghouse
- Nursing Reference Center [on HEAL-WA]
- MEDLINE [on HEAL-WA] or PubMed
- CINAHL [on HEAL-WA]
- Association/Society guidelines

  ex. Association of Rehabilitation Nurses *rehabnurse.org*
- Advanced Google or Google Scholar

National Guideline Clearinghouse

guideline.gov

- Initiative of the Agency for Healthcare Research and Quality (AHRQ)
- Database of clinical practice guidelines and related docs. Voluntary participation
- Free
- Updated weekly

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Compare Guidelines

1-11 of 11

1. **Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 international clinical practice guidelines from the Infectious Diseases Society of America.** 2010 Mar. NGC:008049
   Infectious Diseases Society of America - Medical Specialty Society. *View all guidelines by the developer(s)*

2. **Guideline for prevention of catheter-associated urinary tract infections 2009.** 2009. NGC:007596
   Centers for Disease Control and Prevention - Federal Government Agency [U.S.]. *View all guidelines by the developer(s)*

3. **Bladder management for adults with spinal cord injury: a clinical practice guideline for health-care providers.** 2006 Aug. NGC:005846
   Consortium for Spinal Cord Medicine - Nonprofit Organization. *View all guidelines by the developer(s)*

4. **Guidelines on neurogenic lower urinary tract dysfunction.** 2008 Mar. NGC:006451
   European Association of Urology - Medical Specialty Society. *View all guidelines by the developer(s)*

5. **Catheter-associated urinary tract infections. In: Guidelines on urological infections.** 2008 Mar (revised 2009 Mar). NGC:007316
   European Association of Urology - Medical Specialty Society. *View all guidelines by the developer(s)*

Guideline Comparison

Guideline Title	Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 international clinical practice guidelines from the Infectious Diseases Society of America.	Guideline for prevention of catheter-associated urinary tract infections 2009.	Catheter-associated urinary tract infections. In: Guidelines on urological infections.
Date Released	2010 Mar	2009	2008 Mar (revised 2009 Mar)
Guideline Developer (s)	Infectious Diseases Society of America - Medical Specialty Society	Centers for Disease Control and Prevention - Federal Government Agency [U.S.]	European Association of Urology - Medical Specialty Society
Intended Users	Advanced Practice Nurses Hospitals Managed Care Organizations Nurses Physician Assistants Physicians	Advanced Practice Nurses Allied Health Personnel Health Care Providers Hospitals Nurses Other Physician Assistants Physicians Public Health Departments	Advanced Practice Nurses Physician Assistants Physicians
Methods Used to Collect/Select the Evidence	Searches of Electronic Databases	Hand-searches of Published Literature (Primary Sources) Hand-searches of Published Literature (Secondary Sources) Searches of Electronic Databases	Searches of Electronic Databases
Method of Guideline Validation	External Peer Review Internal Peer Review	External Peer Review Internal Peer Review	Internal Peer Review
Major Recommendations	View Major Recommendations	View Major Recommendations	View Major Recommendations
Availability of Original Guideline	View original (full-text) guideline	View original (full-text) guideline	View original (full-text) guideline

Guideline Summary

Guideline Title

Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 international clinical practice guidelines from the Infectious Diseases Society of America.

Bibliographic Source(s)

Hooton TM, Bradley SF, Cardenas DD, Colgan R, Geerlings SE, Rice JC, Saint S, Schaeffer AJ, Tambayh PA, Tenke P, Nicolle LE, Infectious Diseases Society of America. Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. Clin Infect Dis 2010 Mar 1;50(5):625-63. [299 references] PubMed

Guideline Status

This is the current release of the guideline.

Jump To | Guideline Classification | Related Content

- Scope
- Methodology
- Recommendations
- Evidence Supporting the Recommendations
- Benefits/Harms of Implementing the Guideline Recommendations
- Qualifying Statements
- Implementation of the Guideline
- Institute of Medicine (IOM) National Healthcare Quality Report Categories
- Identifying Information and Availability

Recommendations

Strategies to Consider Prior to Catheter Insertion

Infection Prevention

13. Hospitals and long term care facilities (LTCFs) should develop, maintain, and promulgate policies and procedures for recommended catheter insertion indications, insertion and maintenance techniques, discontinuation strategies, and replacement indications **(A-III)**.
    i. Strategies should include education and training of staff relevant to these policies and procedures **(A-III)**.
14. Institutions may consider feedback of CA-bacteriuria rates to nurses and physicians on a regular basis to reduce the risk of CA-bacteriuria **(C-II)**.
    i. Data are insufficient to make a recommendation as to whether such an intervention might reduce the risk of CA-UTI.
15. Data are insufficient to make a recommendation as to whether institutions should place patients with indwelling urinary catheters in different rooms from other patients who have indwelling urinary catheters or other invasive devices to reduce the risk of CA-bacteriuria or CA-UTI.

Alternatives to Indwelling Urethral Catheterization

16. In men for whom a urinary catheter is indicated and who have minimal postvoid residual urine, condom catheterization should be considered as an alternative to short-term **(A-II)** and long-term **(B-II)** indwelling catheterization to reduce CA-bacteriuria in those who are not cognitively impaired.
    i. Data are insufficient to make a recommendation as to whether condom catheterization is preferable to short-term or long-term indwelling urethral catheterization for reduction of CA-UTI.
    ii. Data are insufficient to make a recommendation as to whether condom catheterization is preferable to short-term or long-term indwelling urethral catheterization for reduction of CA-bacteriuria in those who are cognitively impaired.
17. Intermittent catheterization should be considered as an alternative to short-term **(C-I)** or long-term **(A-III)** indwelling urethral catheterization to reduce CA-bacteriuria and an alternative to short-term **(C-III)** or long-term **(A-III)** indwelling urethral catheterization to reduce CA-UTI.
18. Suprapubic catheterization may be considered as an alternative to short-term indwelling urethral catheterization to reduce CA-bacteriuria **(B-I)** and CA-UTI **(C-III)**.
    i. Data are insufficient to make a recommendation as to whether suprapubic catheterization is preferable to long-term indwelling urethral catheterization for reduction of CA-bacteriuria or CA-UTI.
    ii. Data are insufficient to make a recommendation as to whether intermittent catheterization is preferable to suprapubic catheterization for reduction of CA-bacteriuria or CA-UTI.

Searching for Practice Guidelines in CINAHL and MEDLINE/PubMed

- In CINAHL:

  Limit to **Practice Guidelines** as a Publication Type

- In MEDLINE/PubMed:

  Limit to **Practice Guideline** under Type of Article

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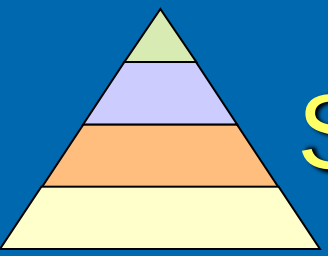
Diagnosis, prevention, and treatment of **catheter**-associated **urinary** tract **infection** in adults: 2009 International Clinical Practice Guidelines from the Infectious …
TM Hooton, SF Bradley… - Clinical Infectious …, 2010 - cid.oxfordjournals.org
… adhesins, and residual urine in the bladder is increased through pooling below the **catheter** bulb [84]. Organisms causing nosocomial UTI require fewer recognized virulence factors to colonize and establish **infection** than do organisms that infect a normal **urinary** tract [85 …
Cited by 32 - Related articles - All 23 versions

Preventing hospital-acquired **urinary** tract **infection** in the United States: a national study
S Saint, CP Kowalski, SR Kaufman… - Clinical Infectious …, 2008 - cid.oxfordjournals.org
… of 14 studies comparing **suprapubic** with **urethral catheters** found that patients given a **suprapubic catheter** had significantly … Because >80% of patients who develop a UTI during hospitalization have a **urinary catheter**, and because the risk of **infection** increases as the …
Cited by 44 - Related articles - BL Direct - All 39 versions

Is Transurethral Catheterisation the Ideal Method of Bladder Drainage? A Survey of Patient Satisfaction With Indwelling Transurethral **Urinary Catheters**
SP Chan, GWL Tan… - Asian Journal of Surgery, 2010 - Elsevier
… **Suprapubic catheters** do not cause **urethral** strictures and have a lower risk of **urinary** tract **infection** because the **urethral** closure … Furthermore, micturition can be tested before **catheter** removal, thereby reducing the risk of urine reten- tion and the need for re-catheterisation. …
Cited by 1 - Related articles - All 3 versions

European and Asian guidelines on management and prevention of **catheter**-associated **urinary** tract infections
P Tenke, B Kovacs, TE Bjerklund Johansen… - International journal of …, 2008 - Elsevier
… 23. In case of candiduria associated with **urinary** symptoms or if candiduria is the sign of a systemic **infection**, systemic therapy … 26. In appropriate patients **suprapubic**, condom drainage system or intermittent **catheter** are preferable to indwelling **urethral catheter** (B). …
Cited by 35 - Related articles - All 8 versions



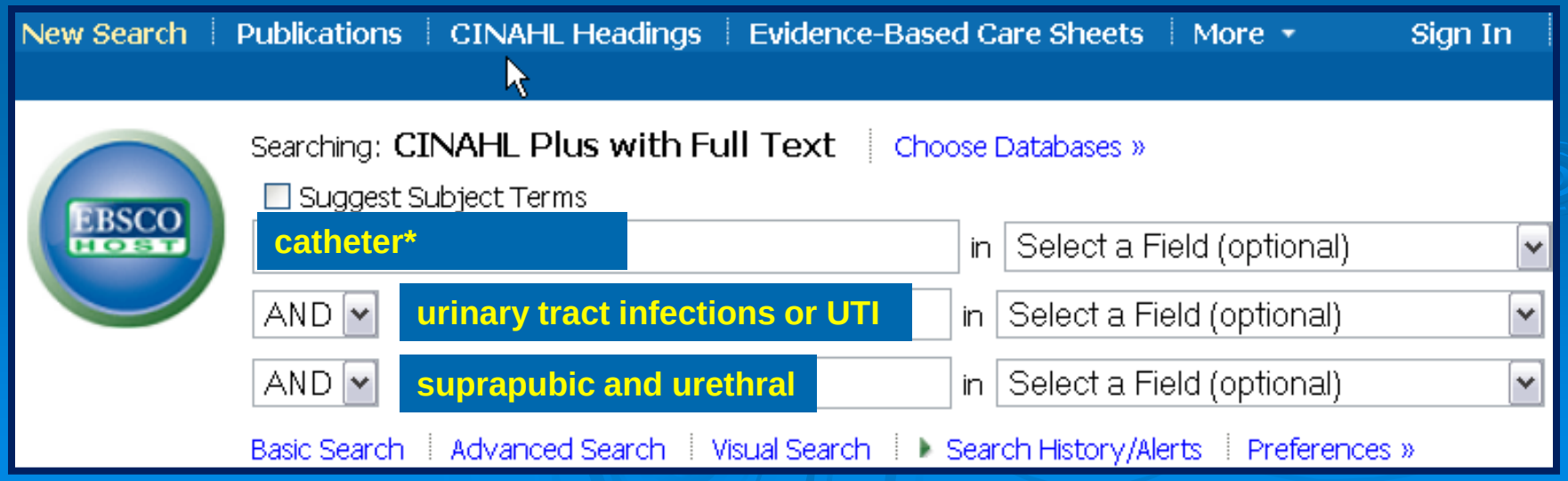
Search Databases Efficiently for Research Journal Articles

- MEDLINE/PubMed or CINAHL

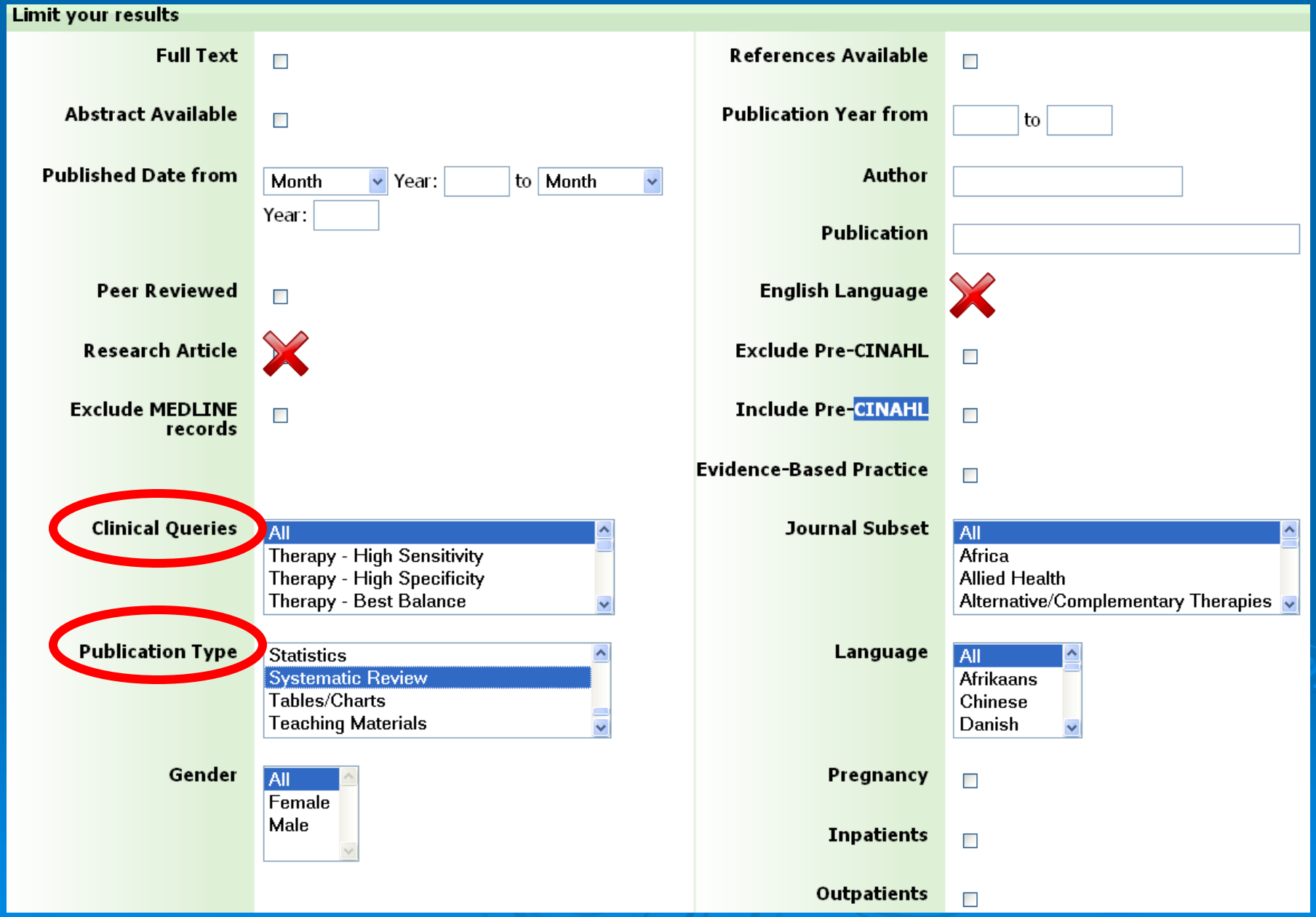
  Includes references to original research articles on a topic:
  - Some with full-text links
  - Most with abstracts
- You will see the same interface when searching *MEDLINE* or *CINAHL* (or *Cochrane*) on HEAL-WA

CINAHL

- Cumulative Index to Nursing and Allied Health Literature
- Provides coverage from 1982+ of nursing and 17 allied health disciplines literature
- 1700+ journals indexed including virtually all English-language nursing journals
- Can easily search for Research articles

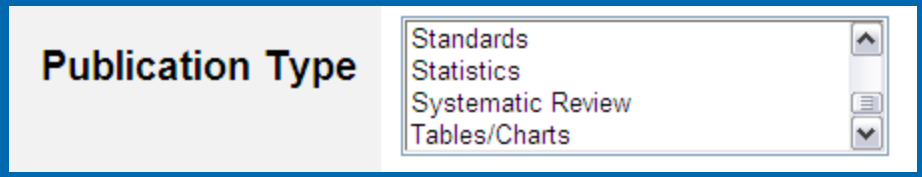


Limit your Results



CINAHL Publication Type Limits

- Clinical trial
- Critical path
- Practice guidelines
- Research
- Standards
- Systematic review



CINAHL Results

1. Bladder management methods and urological complications in spinal cord injury patients.

(includes abstract); Singh, Roop; Rohilla, Rajesh Kumar; Sangwan, Kapil; Siwach, Ramchander; Magu, Narender Kumar; Sangwan, Sukh -7 (journal article) ISSN: 0019-5413 PMID: 21430869

Background: The optimal bladder management method should preserve renal function and minimize the risk of urinary tract complications. The present study is conducted to assess the overall inciden...

Database: CINAHL Plus with Full Text

Add to folder

Check for Full Text

2. RCT of urethral versus suprapubic catheterization.

(includes abstract); Dixon L; Dolan LM; Brown K; Hilton P; British Journal of Nursing (BJN), 2010 Oct 14; 19: Supplement: S7-S13 (journal article - clinical trial, questionnaire/scale, research, tables/charts) ISSN: 0966-0461

Objective: To compare the use of intermittent urethral catheterization with indwelling suprapubic catheterization in women undergoing surgery for urodynamic stress incontinence or uterovaginal pr...

Subjects: Urinary Catheterization, Intermittent; Stress Incontinence; Uterine Prolapse; Postoperative Period; Female

Database: CINAHL Plus with Full Text

Add to folder | Cited References: (13)

PDF Full Text (166.4KB)

link to full text

3. Urethral versus suprapubic catheter: choosing the best bladder management for male spinal cord injury patients with indwelling catheters.

(includes abstract); Katsumi HK; Kalisvaart JF; Ronningen LD; Hovey RM; Spinal Cord, 2010 Apr; 48 (4): 325-9 (journal article - research, tables/charts) ISSN: 1362-4393 PMID: 19823191

Objective: Bladder management for male patients with spinal cord injury (SCI) challenges the urologist to work around physical and social restrictions set forth by each patient. The objective of ...

Subjects: Bladder, Neurogenic; Spinal Cord Injuries; Urinary Catheterization; Middle Aged: 45-64 years; Female; Male

Database: CINAHL Plus with Full Text

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Abstracts

Urethral versus suprapubic catheter: choosing the best bladder management for male spinal cord injury patients with indwelling catheters.

Authors: Katsumi HK; Kalisvaart JF; Ronningen LD; Hovey RM

Affiliation: Department of Urology, University of California Irvine, Orange, CA, USA

Source: Spinal Cord (SPINAL CORD), 2010 Apr; 48(4): 325-9 (14 ref)

Publication Type: journal article - research, tables/charts

Language: English

Major Subjects: Bladder, Neurogenic -- Therapy
Spinal Cord Injuries -- Complications
Urinary Catheterization -- Methods

Minor Subjects: Abscess; California; Cause of Death; Creatinine -- Bloo
Statistics; Epididymitis; Female; Hematuria; Hospitals,
Design; Scrotum -- Pathology; Urethral Diseases; Urina

Abstract: Objective: Bladder management for male patients with
restrictions set forth by each patient. The objective o
versus **suprapubic** tube (SPT) in patients with SCI. M
carried out to identify SCI patients managed with SPT
bladder stones, renal calculi, **urethral** complications,
measurements were evaluated to determine whether
no significant difference between the two **catheter** g
complications specific to each group that could not be
the SPT and SPT revision in the SPT group. Average s
respectively. Conclusion: SCI patients with a chronic c
cancer. **Urethral** and scrotal complications may be hig
from SPT. Serum creatinine was maintained in both gro
should be selected on the basis of long-term comfort f
challenges.

Journal Subset: Allied Health; Biomedical; Europe; Expert Peer Review

RCT of urethral versus suprapubic catheterization.

Authors: Dixon L; Dolan LM; Brown K; Hilton P

Affiliation: Nurse Consultant Urogynaecology, Newcastle-upon.Tyne Hospitals NHS Foundation Trust, Newcastle-upon-Tyne

Source: British Journal of Nursing (BJN) (BR J NURS), 2010 Oct 14; 19: Supplement: S7-S13 (13 ref)

Publication Type: journal article - clinical trial, questionnaire/scale, research, tables/charts

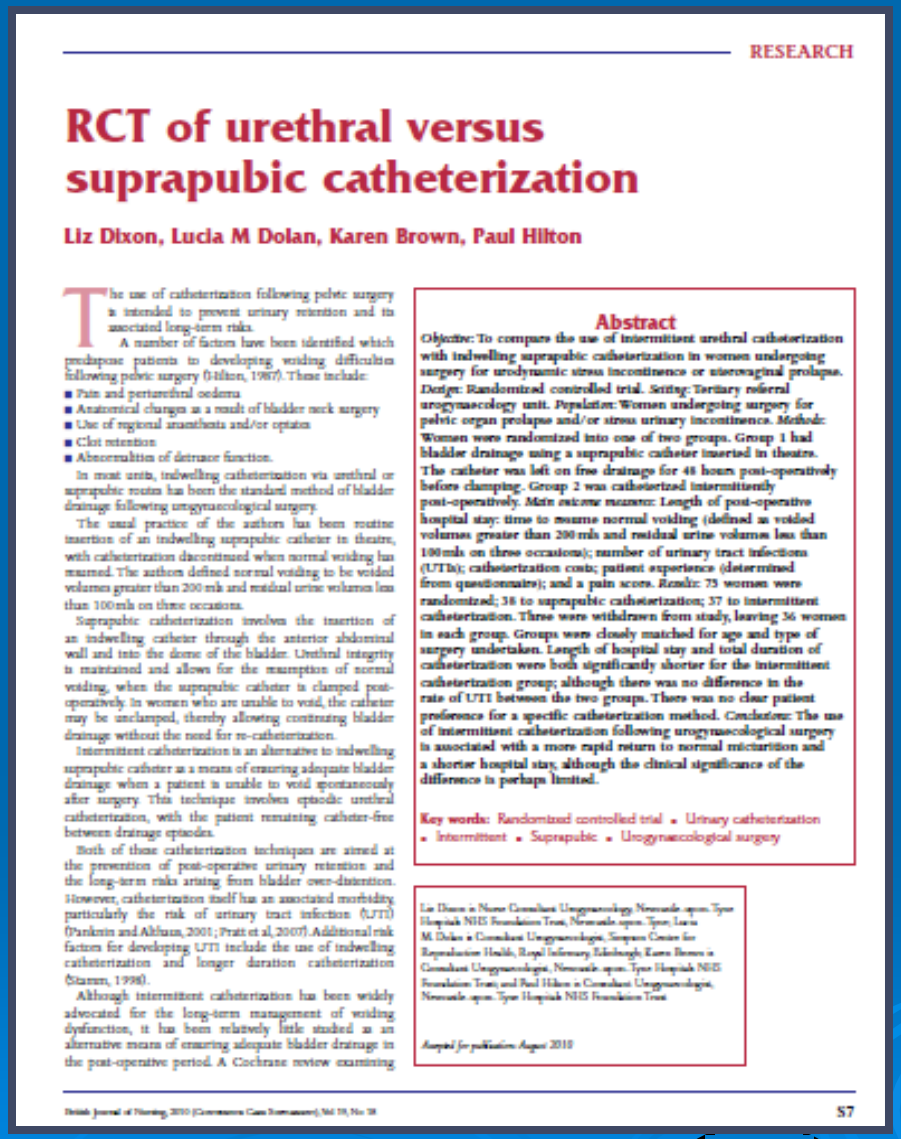
Language: English

Major Subjects: Urinary Catheterization, Intermittent
Stress Incontinence -- Surgery
Uterine Prolapse -- Surgery
Postoperative Period

Minor Subjects: Human; Clinical Trials; Random Assignment; Length of Stay; Questionnaires; Female; Pain Measurement; Self Care; Urinary Tract Infections -- Prevention and Control; Fisher's Exact Test; Mann-Whitney U Test; Chi Square Test; Postoperative Complications -- Prevention and Control; Scales

Abstract: Objective: To compare the use of intermittent **urethral catheterization** with indwelling **suprapubic catheterization** in women undergoing surgery for urodynamic stress incontinence or uterovaginal prolapse. Design: Randomized controlled trial. Setting: Tertiary referral urogynaecology unit. Population: Women undergoing surgery for pelvic organ prolapse and/or stress **urinary** incontinence. Methods: Women were randomized into one of two groups. Group 1 had bladder drainage using a **suprapubic catheter** inserted in theatre. The **catheter** was left on free drainage for 48 hours post-operatively before clamping. Group 2 was **catheterized** intermittently post-operatively. Main outcome measures: Length of post-operative hospital stay: time to resume normal voiding (defined as voided volumes greater than 200 mls and residual urine volumes less than 100 mls on three occasions); number of **urinary tract infections** (UTIs); **catheterization** costs; patient experience (determined from questionnaire); and a pain score. Results: 75 women were randomized; 38 to **suprapubic catheterization**; 37 to intermittent **catheterization**. Three were withdrawn from study, leaving 36 women in each group. Groups were closely matched for age and type of surgery undertaken. Length of hospital stay and total duration of **catheterization** were both significantly shorter for the intermittent **catheterization** group; although there was no difference in the rate of **UTI** between the two groups. There was no clear patient preference for a specific **catheterization** method. Conclusions: The use of intermittent **catheterization** following urogynaecological surgery is associated with a more rapid return to normal micturition and a shorter hospital stay, although the clinical significance of the difference is perhaps limited.

Full text article



RESEARCH

RCT of urethral versus suprapubic catheterization

Liz Dixon, Lucia M Dolan, Karen Brown, Paul Hilton

The use of catheterization following pelvic surgery is intended to prevent urinary retention and its associated long-term risks.

A number of factors have been identified which predispose patients to developing voiding difficulties following pelvic surgery (Hilton, 1987). These include:

- Pain and periurethral oedema
- Anatomical changes as a result of bladder neck surgery
- Use of regional anaesthesia and/or opiates
- Clot retention
- Abnormalities of detrusor function.

In most units, indwelling catheterization via urethral or suprapubic routes has been the standard method of bladder drainage following urogynaecological surgery.

The usual practice of the authors has been routine insertion of an indwelling suprapubic catheter in theatre, with catheterization discontinued when normal voiding has resumed. The authors defined normal voiding to be voided volumes greater than 200 mls and residual urine volumes less than 100 mls on three occasions.

Suprapubic catheterization involves the insertion of an indwelling catheter through the anterior abdominal wall and into the dome of the bladder. Urethral integrity is maintained and allows for the resumption of normal voiding, when the suprapubic catheter is clamped post-operatively. In women who are unable to void, the catheter may be unclamped, thereby allowing continuing bladder drainage without the need for re-catheterization.

Intermittent catheterization is an alternative to indwelling suprapubic catheter as a means of ensuring adequate bladder drainage when a patient is unable to void spontaneously after surgery. This technique involves episodic urethral catheterization, with the patient remaining catheter-free between drainage episodes.

Both of these catheterization techniques are aimed at the prevention of post-operative urinary retention and the long-term risks arising from bladder over-distention. However, catheterization itself has an associated morbidity, particularly the risk of urinary tract infection (UTI) (Parkin and Altham, 2001; Pratt et al, 2007). Additional risk factors for developing UTI include the use of indwelling catheterization and longer duration catheterization (Stamm, 1998).

Although intermittent catheterization has been widely advocated for the long-term management of voiding dysfunction, it has been relatively little studied as an alternative means of ensuring adequate bladder drainage in the post-operative period. A Cochrane review examining

Abstract

Objective: To compare the use of intermittent urethral catheterization with indwelling suprapubic catheterization in women undergoing surgery for urodynamic stress incontinence or uterovaginal prolapse. *Design:* Randomized controlled trial. *Setting:* Tertiary referral urogynaecology unit. *Population:* Women undergoing surgery for pelvic organ prolapse and/or stress urinary incontinence. *Methods:* Women were randomized into one of two groups. Group 1 had bladder drainage using a suprapubic catheter inserted in theatre. The catheter was left on free drainage for 48 hours post-operatively before clamping. Group 2 was catheterized intermittently post-operatively. *Main outcome measures:* Length of post-operative hospital stay; time to resume normal voiding (defined as voided volumes greater than 200 mls and residual urine volumes less than 100 mls on three occasions); number of urinary tract infections (UTIs); catheterization costs; patient experience (determined from questionnaire); and a pain score. *Results:* 75 women were randomized; 38 to suprapubic catheterization; 37 to intermittent catheterization. Three were withdrawn from study, leaving 36 women in each group. Groups were closely matched for age and type of surgery undertaken. Length of hospital stay and total duration of catheterization were both significantly shorter for the intermittent catheterization group; although there was no difference in the rate of UTI between the two groups. There was no clear patient preference for a specific catheterization method. *Conclusion:* The use of intermittent catheterization following urogynaecological surgery is associated with a more rapid return to normal micturition and a shorter hospital stay, although the clinical significance of the difference is perhaps limited.

Key words: Randomized controlled trial • Urinary catheterization • Intermittent • Suprapubic • Urogynaecological surgery

Liz Dixon is Nurse Consultant Urogynaecology, Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne; Lucia M Dolan is Consultant Urogynaecologist, Simpson Centre for Reproductive Health, Royal Infirmary, Edinburgh; Karen Brown is Consultant Urogynaecologist, Newcastle upon Tyne Hospitals NHS Foundation Trust; and Paul Hilton is Consultant Urogynaecologist, Newcastle upon Tyne Hospitals NHS Foundation Trust

Accepted for publication: August 2010

Dixon L, Dolan LM, Brown K, Hilton P. RCT of urethral versus suprapubic catheterization. *British Journal of Nursing* , 2010 Oct 14; 19: Supplement: S7-S13.

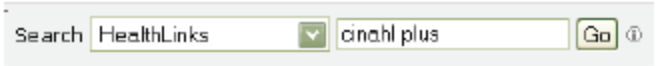
Searching CINAHL Plus: Cumulative Index to Nursing and Allied Health Literature

What is CINAHL Plus?

CINAHL Plus with Full Text provides access to the literature in nursing and 17 allied health disciplines dating back to 1937. Over 3500 journals are indexed including virtually all English language nursing journals along with selected titles in biomedicine, alternative therapies, and consumer health. It also offers access to Evidence-Based Care Sheets, searchable cited references, and over 300 research instrument descriptions.

Getting Connected

Connect through the HealthLinks > Resources > Databases page, or type CINAHL Plus in the Search box on the upper right corner of HealthLinks and follow the link.



- Searching for research instruments:
  - Search for a description of an instrum and possible full text using the researc instrument Publication Type (PT): Ty *Rosenberg self esteem scale* in one Se box and *research instrument* in anothe and select the Publication Type field.
  - Search for studies that use a particular strument by using the Instrumentation (IN): Type *Rosenberg self esteem sca* and choose the Instrumentation field.

Step 3: Combining Sets/Search History

- Click Search next to the search box to remove the currrent search terms.
- Click Search History/Alerts and select th search sets to combine by clicking the Ad Search box, choose the desired Boolean o tor (AND, OR, etc) from the Combine sea with drop down box, and then Add and Search
- Alternatively, combine results by typing a search number into a new Search box, i.e. *and s2* or (*keyword(s)* and s1), and click

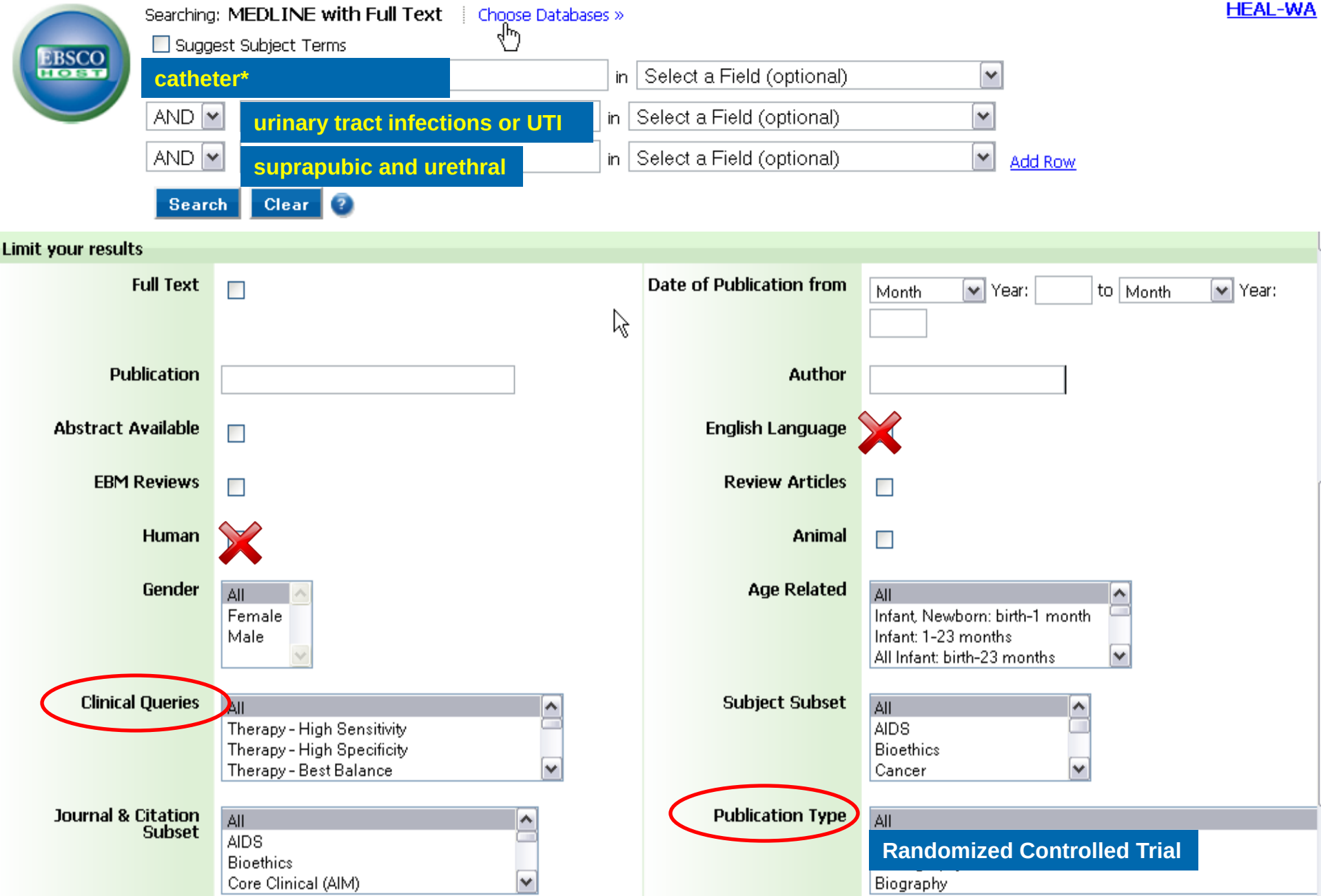
Search MEDLINE [on HEAL-WA] or PubMed for Research Articles

- MEDLINE (1940's+) is included on PubMed
- Indexes 5,200 biomedical journals
- Covers all aspects of biosciences and healthcare
- 75%-80% of citations have abstracts
- Updated 5x/week

2 MEDLINE/PubMed Strategies for Finding Evidence-Based Citations

1. Use Publication Type limits
   - Randomized Controlled Trial
   - Meta-Analysis
   - Practice Guideline
   - Clinical Trial
   - Consensus Development Conference
2. Use Clinical Queries

MEDLINE Search Screen



Medline Results

RCT of **urethral** versus **suprapubic catheterization**.

(**eng**) By Dixon L, Dolan LM, Brown K, Hilton P, British Journal Of Nursing (Mark Allen Publishing) [Br J Nurs], ISSN: 0966-0461, 2010 Oct 14-27; Vol. 19 (18), pp. S7-13; PMID: 20948487; To compare the use of intermittent **urethral catheterization** with indwelling **suprapubic catheterization** in women undergoing surgery for urodynamic stress incontinence or uterovaginal prolapse.

Subjects: Cystostomy methods; Drainage methods; Intermittent Urethral Catheterization methods; Postoperative Complications prevention & control; Urinary Retention prevention & control; Female

Database: MEDLINE with Full Text

Add to folder

PDF Full Text

link to full text

Suprapubic versus transurethral **catheterisation** of males undergoing pelvic colorectal surgery.

(**eng**) By Ratnaval CD, Renwick P, Farouk R, Monson JR, Lee PW, International Journal Of Colorectal Disease [Int J Colorectal Dis], ISSN: 0179-1958, 1996; Vol. 11 (4), pp. 177-9; PMID: 8876274; A prospective, randomised double-blind trial of **suprapubic** (SPC) versus transurethral (TUC) **catheterisation** was undertaken in fifty consecutive male patients of median age 66 (range 32-81) years undergoing pelvic colorectal surgery. Twenty-four patients were randomised to SPC. **Catheter** removal times were comparable between the two groups: SPC = mean 7.2 (3-14) days; TUC = man 7.5 (2-13) days; P > 0.5. Acute **urinary** retention was recorded in 5 patients with SPC and 6 in the TUC group. Chronic retention with overflow was recorded in one TUC patient. Frequent voiding after **catheter** removal occurred in two SPC, and in eleven TUC patients (P < 0.05). Re-**catheterization** was required in two SPC, and seven TUC patients. One culture positive **urinary tract** infection occurred in the SPC, and three in the TUC groups. It is concluded that **suprapubic catheterisation** allows comparable controlled return of normal voiding with fewer bladder and **urethral** symptoms when compared with transurethral **catheterisation**.

Subjects: Colonic Diseases surgery; Rectal Diseases surgery; Urinary Catheterization methods; Urinary Retention etiology; Urinary Tract Infections etiology; Adult: 19-44 years; Aged: 65+ years; Aged, 80 and over; Middle Aged: 45-64 years; All Adult: 19+ years; Male

Database: MEDLINE with Full Text

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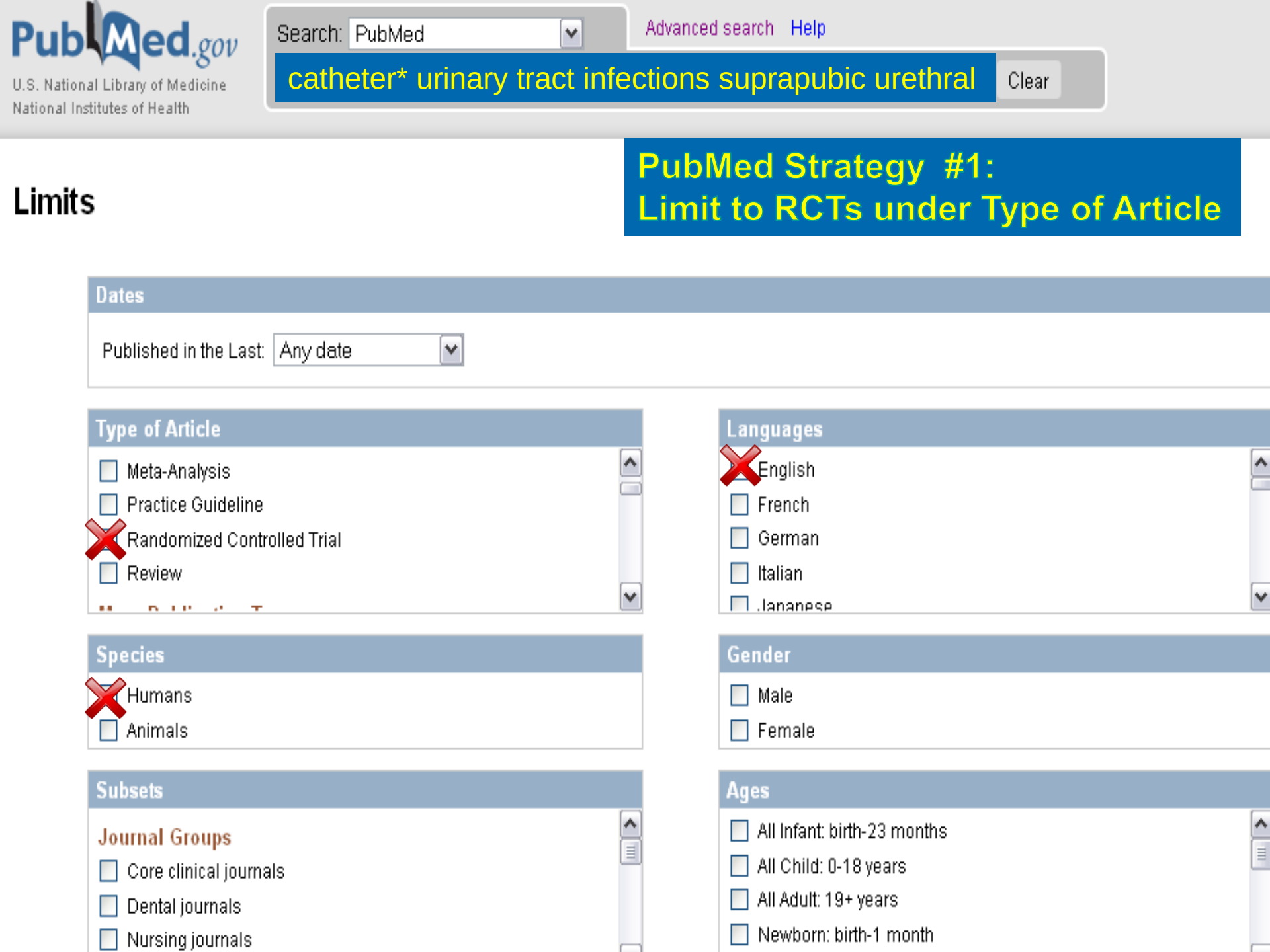
PubMed.gov
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catheter* urinary tract infections suprapubic urethral
Clear
PubMed Strategy #1:
Limit to RCTs under Type of Article
Limits
Dates
Published in the Last: Any date
Type of Article
Meta-Analysis
Practice Guideline
Randomized Controlled Trial
Review
Languages
English
French
German
Italian
Species
Humans
Animals
Gender
Male
Female
Subsets
Journal Groups
Core clinical journals
Dental journals
Nursing journals
Ages
All Infant: birth-23 months
All Child: 0-18 years
All Adult: 19+ years
Newborn: birth-1 month

PubMed Clinical Queries

Strategy #2: Clinical Queries – Link on Advanced Search or Home page

Search urinary catheterization urinary tract infections suprapubic urethral

Results of searches on this page are limited to specific clinical research areas. For comprehensive searches

Clinical Study Categories

Category: Therapy

Scope: Narrow

Results: 5 of 42

Postoperative infections due to bladder catheters after anterior colporrhaphy: a prospective, randomized three-arm study. [Int Urogynecol J Pelvic Floor Dysfunct. 2010]

Periurethral cleaning prior to urinary catheterization in children: sterile water versus 10% povidone-iodine. [Clin Pediatr (Phila). 2009]

A prospective randomized clinical trial of urethral catheter removal following elective cesarean delivery. [Int J Gynaecol Obstet. 2008]

A randomized controlled trial of clean intermittent self-catheterization versus suprapubic catheterization after urogynec

A random

antibiotic

patients.

Systematic Reviews

Results: 5 of 8

Comment re: Types of urethral catheters for management of short-term voiding problems in hospitalized adults. [Neurourol Urodyn. 2008]

Comment re: Types of urethral catheters for management of short-term voiding problems in hospitalized adults. [Neurourol Urodyn. 2008]

Types of urethral catheters for management of short-term voiding problems in hospitalised adults. [Cochrane Database Syst Rev. 2008]

Antibiotic policies for short-term catheter bladder drainage in adults.

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A randomized controlled trial of clean intermittent self-catheterization versus suprapubic catheterization after urogynecologic surgery.

Jannelli ML, Wu JM, Plunkett LW, Williams KS, Visco AG.

Am J Obstet Gynecol. 2007 Jul;197(1):72.e1-4.

PMID: 17618764 [PubMed - indexed for MEDLINE]

PubMed at the UW

healthlinks.washington.edu/howto/pubmed

PubMed provides access to bibliographic citations to biomedical journal articles, including MEDLINE back to the 1940's, and to additional life sciences journals. Updated 5 times/week. VIDEO

Basic Search Techniques VIDEO

Step 1: Enter Your Terms

Type any key word or phrase into the Search box. Use an asterisk (*) to retrieve variations on a word, e.g., *bacter** retrieves *bacteria, bacterium, bacteriophage*, etc.

- **For a Subject Search:** Enter one or more words (e.g., *asthma drug therapy*) in the Search box and click on Search. PubMed automatically "ANDs" (combines) terms together so that all terms or concepts are present, and it translates your words into MeSH (Medical Subject Headings) terms.
- **For an Author Search:** Enter the author's name in the format of last name first followed by initials (e.g., *byrnes ca*) in either the Search box or the Search by Author section.
- **For a Journal Search:** To retrieve articles from a specific journal, use *Journals in NCBI Databases* or *Single Citation Matcher* features (available on the PubMed homepage).

Instructional Video Clips

To watch the instructional video clips (VIDEO), the Adobe Flash Player is required.

- Basic search (1:22)
- Clinical Queries (3:49)
- Clipboard (2:31)
- Connecting to Full Text (3:38)
- Documenting your search strategy (0:35)
- Downloading Results for Use in Reference Management Software (NLM:2 min.)
- Emailing (0:53)
- History (4:27)
- Introduction (2:55)
- Limits (5:33)
- MeSH Database
  - Searching with Mesh (NLM: 3 min.)
  - Combining MeSH terms (NLM: 3 min.)
  - Subheadings (NLM: 3 min.)
- Ordering articles (2:17)
- Printing (1:08)
- Related articles (1:18)
- Saving (0:50)
- Single Citation Matcher (1:22)
- Viewing Results (4:05)

CINAHL vs MEDLINE/PubMed

CINAHL

- Coverage: 1982+
- Indexes 1700 journals
- Focuses on nursing and allied health literature
- CINAHL Thesaurus with more nursing terms
- Has peer-reviewed limit
- Includes cited references at end of many refs

MEDLINE

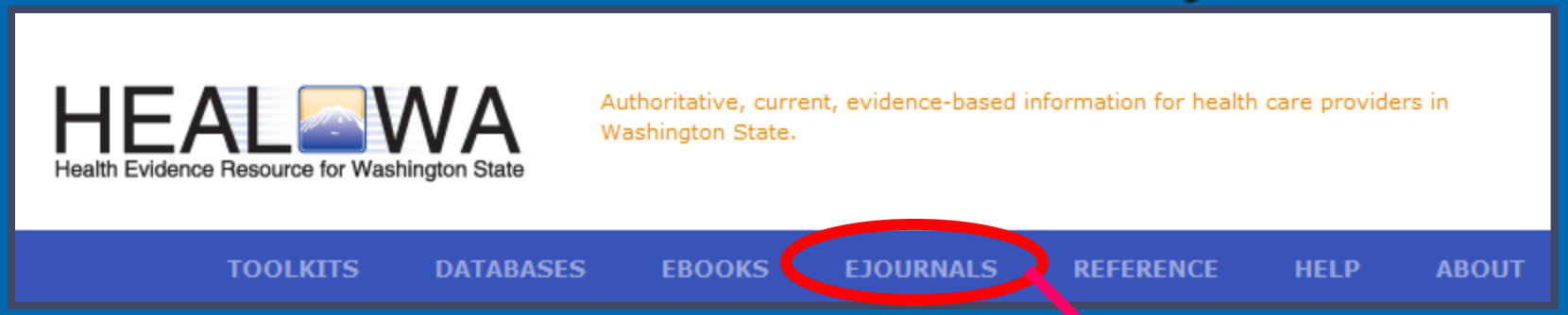
- Coverage: late 1940's+
- Indexes 5000 journals
- Focuses on biomedical literature
- Uses MeSH as its controlled vocabulary
- No peer-reviewed limit
- No cited references

Locating E-Journals

- Check with your library for access to full-text e-journals
- Use HEAL-WA for WA state nurses
  - Includes *CINAHL Plus* and MEDLINE full-text
  - A-Z Journals: 5,000 full-text journals
- UW Affiliates: use the Proxy service to access full-text ejournals from off-campus

HEAL-WA Journals A-Z

5,000 full-text health-related journals



Open Access Journal Sites

- BioMed Central

  biomedcentral.com

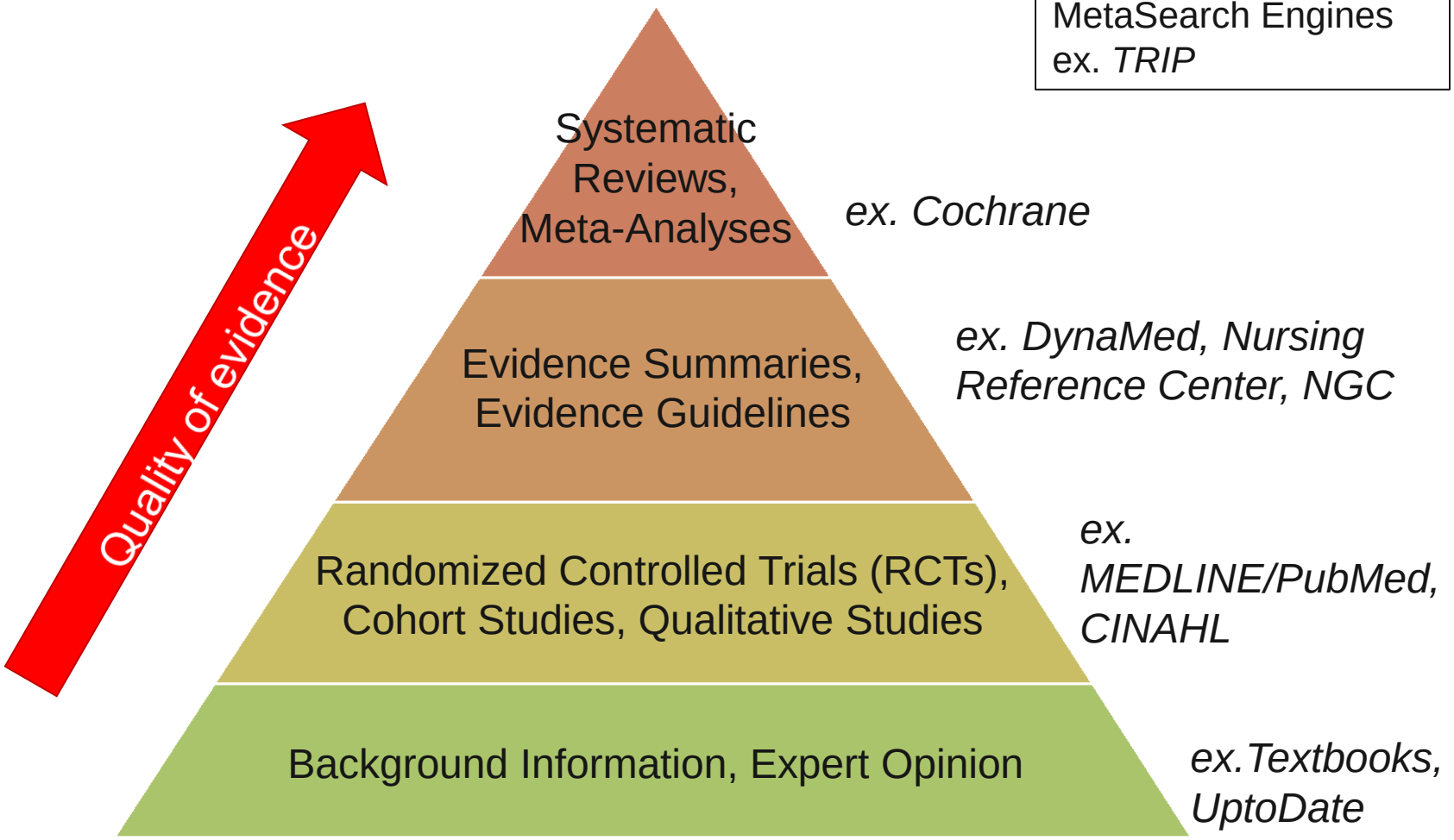
  - Independent publishing house providing immediate free access to peer-reviewed biomedical research
  - Includes *BMC Nursing*

- PubMed Central

  pubmedcentral.gov

  - National Library of Medicine's free digital archive of biomedical and life sciences journal literature

Searching for Evidence Pyramid



Information Overload!

- 2 million articles published in biomedical journals each year
- considering everything of potential biomedical importance would require perusing about 6,000 articles per day…
- If you only read 2 articles a day, at the end of year you would be 60 centuries behind.

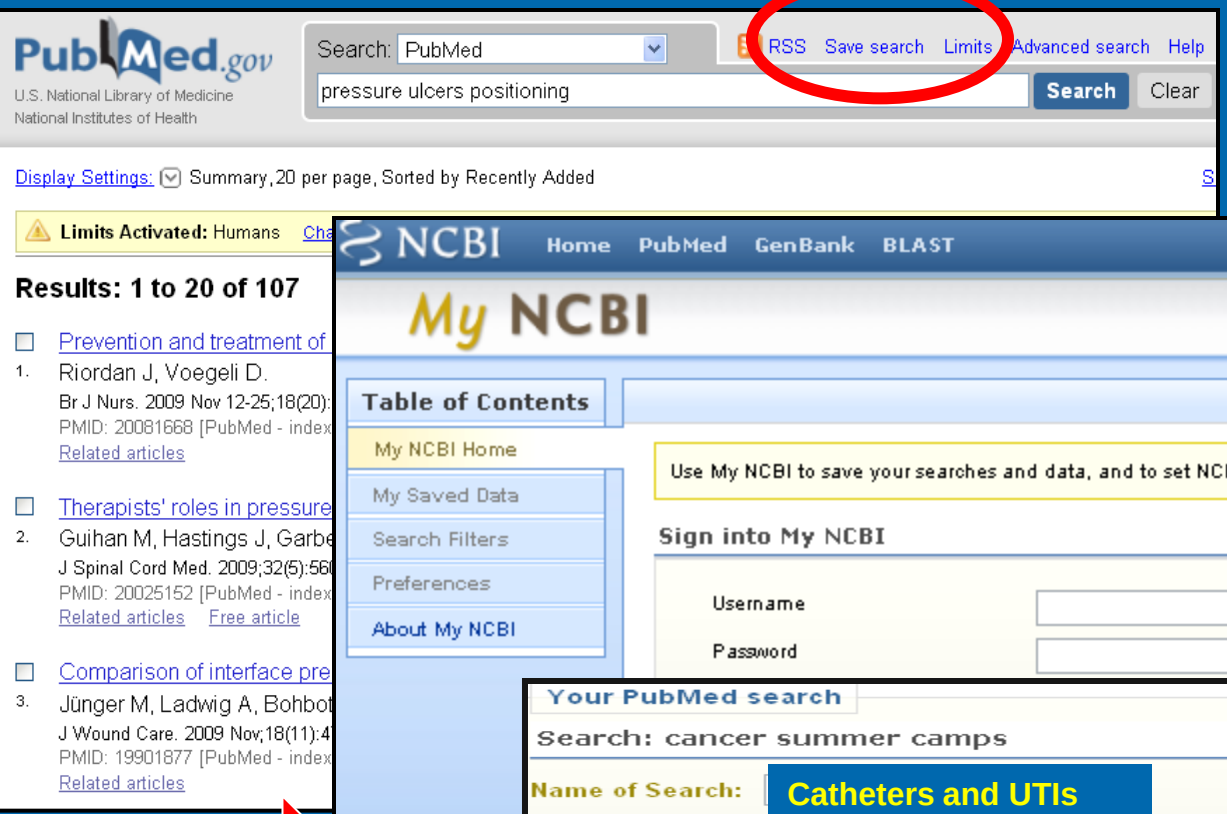
Lundberg GD. Perspective from the editor of JAMA, The Journal of the American Medical Association. *Bull Med Libr Assoc.* 1992 Apr;80(2):110-4.

What are Email Alert Services?

- Deliver current citations into your email
- Based on a search strategy you create
- In most cases, abstracts of articles provided
- May provide links to *PubMed, CINAHL* and full-text articles

PubMed: My NCBI

- Your personal space on the NLM computer system for:
  - storing search strategies used to generate updates
  - storing references
  - creating email alerts (recent PubMed citations sent automatically to your email
- Free registration
- *PubMed My NCBI* help page: *healthlinks.washington.edu/howto/myncbi.html*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Prevention and treatment of
1. Riordan J, Voegeli D.
Br J Nurs. 2009 Nov 12-25;18(20):
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J Spinal Cord Med. 2009;32(5):56
PMID: 20025152 [PubMed - index
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3. Jünger M, Ladwig A, Bohbot
J Wound Care. 2009 Nov;18(11):4
PMID: 19901877 [PubMed - index
Related articles

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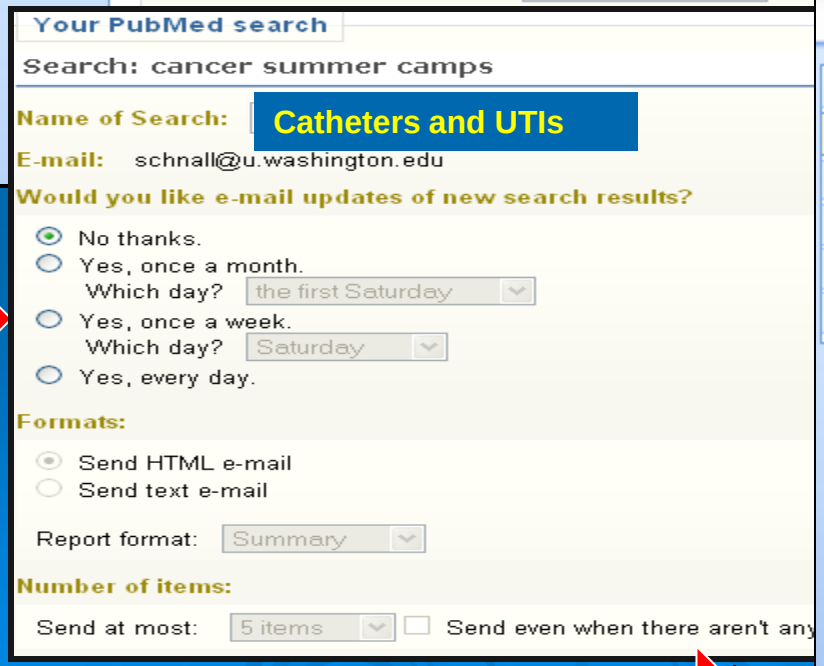
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Yes, once a week.
Which day? Saturday
Yes, every day.
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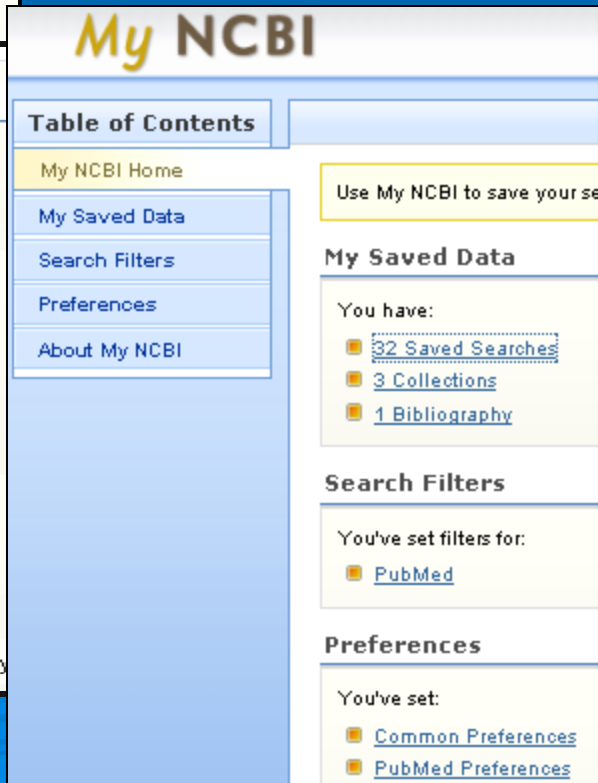
Send HTML e-mail
Send text e-mail
Report format: Summary
Number of items:
Send at most: 5 items
Send even when there aren't any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3 Collections
1 Bibliography
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Alerting Services

healthlinks.washington.edu/howto/alerts.html

Alert Service	Database Coverage	RSS
My NCBI	PubMed	yes
Alerts (EBSCO) [on HEAL-WA]	MEDLINE CINAHL	yes

Search for Evidence in Drug and Natural Medicines Databases

- AHFS Drug Information [on HEAL-WA]
  ahfsdruginformation.com
- Davis's Drug Guide for Nurses [on HEAL-WA]
- Natural Standard [on HEAL-WA]
  naturalstandard.com

AHFS Drug Information

ahfsdruginformation.com

Escitalopram Oxalate

Introduction

$C_{20}H_{21}FN_2O \bullet C_2H_2O_4$

- Escitalopram, the *S*-enantiomer of citalopram, is a selective serotonin-reuptake inhibitor (SSRI) and an antidepressant.[1]

Uses

- **Major Depressive Disorder**

Escitalopram oxalate is used in the
established in 3 placebo-controlled
disorder.[1, 2] In these studies, 10-
Montgomery Asberg Depression Rat
Impression Improvement and Sever
aspects of depressive disorder, inc
HAM-D scores was noted in patient
therapy.[2, 14, 16] In addition, escita
of 20-40 mg daily.[2, 16] There is som
selective serotonin-reuptake inhibit
however, additional studies are nee
established to date.[1, 8] For further
choosing the most appropriate anti
Hydrobromide 28:16.04.20.

Routes	Dosage Forms	Strengths	Brand Names
Oral	Solution	5 mg (of escitalopram) per 5 mL	Lexapro®
	Tablets, film-coated	5 mg (of escitalopram)	Lexapro®
		10 mg (of escitalopram)	Lexapro® (scored)
		20 mg (of escitalopram)	Lexapro® (scored)

- **Comparative Pricing**

This pricing information is subject to change at the sole discretion of DS Pharmacy. For the information, please visit drugstore.com.

Lexapro 10MG Tablets (FOREST): 30/$92.99 or 90/$259.97

Lexapro 20MG Tablets (FOREST): 30/$95.99 or 90/$265.98

Lexapro 5M

Lexapro 5M

References

1. Forest Pharmaceuticals, Inc. Lexapro® (escitalopram oxalate) tablets/oral solution prescribing inf

2. Burke WJ, Gergel I, Bose A. Fixed-dose trial of the single isomer SSRI escitalopram in depressed c 63:331-6. [IDIS 479908] [PubMed 12000207]

3. Anon. Forest Lexapro® approval includes label claim of greater potency than celexa. FDC Rep. Au

Davis's Drug Guide for Nurses 2011

NURSING IMPLICATIONS

ASSESSMENT

- Monitor mood changes and level of anxiety during therapy.
- Assess for suicidal tendencies, especially during early therapy. Restrict amount of drug available to patient. Risk may be increased for children or adolescents. After starting therapy, children and adolescents should be seen by health care professional at least weekly for 4 wks, every 2 wks for next 4 wks, and on advice of health care professional thereafter .
- Assess for sexual dysfunction (erectile dysfunction; decreased libido) .

POTENTIAL NURSING DIAGNOSES

Ineffective coping (Indications).
Risk for injury (Side Effects).
Sexual dysfunction (Side Effects).
(Indications).

IMPLEMENTATION

- Do not administer escitalopram and citalopram concomitantly. Taper to avoid potential withdrawal reactions. Reduce dose by 50% for 3 days, then again by 50% for 3 days, then discontinue.
- **PO:** Administer as a single dose in the morning or evening without regard to meals.

PATIENT/FAMILY TEACHING

- Instruct patient to take escitalopram as directed. Take missed doses on the same day as soon as remembered and consult health care professional. Resume regular dosing schedule next day. Do not double doses. Do not stop abruptly, should be discontinued gradually .
- May cause dizziness. Caution patient to avoid driving or other activities requiring alertness until response to medication is known.
- Advise patient to avoid alcohol and other CNS-depressant drugs during therapy and to consult a health care professional before taking other Rx or OTC medications or herbal products.
- Instruct female patients to notify health care professional if pregnancy is planned or suspected or if they plan to breastfeed an infant.
- Caution patients that escitalopram should not be used for at least 14 days after discontinuing MAO inhibitors, and at least 14 days should be allowed after stopping escitalopram before starting an MAO inhibitor.
- Emphasize importance of follow-up exams to monitor progress.
- Encourage patient participation in psychotherapy to improve coping skills .
- Refer patient/family to local support groups.

EVALUATION/DESIRED OUTCOMES

- Increased sense of well-being - Renewed interest in surroundings. May require 1-4 wk of therapy to obtain antidepressant effects. Full antidepressant effects occur in 4-6 wks .

Natural Standard
[on HEAL-WA]

- provides high quality, evidence-based information:
  - dietary supplements (including herbs, vitamins, and minerals)
  - functional foods
  - diets
  - complementary practices (modalities)
  - exercises
  - medical conditions

Natural Standard

Ginger

Professional reading level

12th grade reading level

Spanish

Spanish

Patient handout 5th grade

Natural Standard Professional Monograph

Ginger (*Zingiber Officinale* Roscoe)

Natural Standard *Professional Monograph, Copyright © 2011 (www.naturalstandard.com).*

Synonyms/Common Names/Related Substances:

- (+)-germacrene D synthase, 1-(4'-hydroxy-3'-methoxyphenyl)-2-nonadecen-1-one, 1-(4-O-beta-D-glucopyranosyl-3-methoxyphenyl)-3,5-dihydroxydecane, 1,7-bis-(4'-hydroxy-3'-methoxyphenyl)-3-hydroxy-5-acetoxyheptane, 1,7-bis-(4'-hydroxy-3'-methoxyphenyl)-5-methoxyheptan-3-one, 1-dehydrogingerdione, 1-hydroxy-[6]-paradol, 3-acetoxy-[4]-gingerdiol, 3-acetoxydihydro-[6]-paradol methyl ether, 5-acetoxy-3-deoxy-[6]-gingerol, 5-acetoxy-[6]-gingerdiol (stereoisomer), 5-methoxy-[n]-gingerols, 5-O-beta-D-glucopyranosyl-3-hydroxy-1-(4-hydroxy-3-methoxyphenyl)decane, 6-(4'-hydroxy-3'-methoxyphenyl)-2-nonyl-2-hydroxytetrahydropyran, 6-dehydro-[6]-gingerol, 6-dehydrogingerdione, 6-gingerdiol, 6-gingerol, 8- gingerol, 10-gingerol, 6-gingesulfonic acid, 6-hydroxy-[n]-shogaol, [6]-isoshogaol, 6-paradol, 6-shogaol, 8-shogaol, and 10-shogaol, acetoxy-3-dihydrodemethoxy-[6]-shogaol, aadaa (Assamese, Bengali), adarak (Hindi), adrak (Urdu), adraka (Urdu), adruka (Hindi), aduvaa (Nepalese), African ginger, allaama (Telugu), allaamu (Telugu), alpha-curcumene, alpha

Clinical Bottom Line/Effectiveness

Brief Background:

- The rhizomes and stems of ginger have assumed significant roles in Chinese, Japanese, and Indian medicine since the 1500s. The oleoresin of ginger is often contained in digestive, antitussive, antiflatulent, laxative, and antacid compounds.
- There is supportive evidence from several randomized controlled trials that ginger reduces the severity and duration of nausea or emesis during pregnancy (1;2;3;4;5;6;7;8;9;10). Ginger's effects on other types of nausea or emesis, such as chemotherapy-induced (11;12;13;14;15), postoperative nausea, or motion sickness remain undetermined (16;17). Zinopin, made of Pycnogenol® and standardized ginger root extract (SGRE), has been suggested as a possible treatment for motion sickness (18). However, a clinical trial reported that patients could not distinguish ginger from placebo (19).
- Ginger is used orally, topically, and intramuscularly for a wide array of other conditions without clear scientific evidence of benefit.
- The most frequent side effects associated with ginger use are gastrointestinal upset, heartburn, gas, and bloating. Ginger may inhibit platelet aggregation or decrease platelet thromboxane production, thus theoretically increasing bleeding risk.

Natural Standard

Ginger

Indication	Evidence Grade
Hyperemesis gravidarum	B
Anti-platelet agent	C
Chemotherapy-induced leukopenia	C
Chemotherapy-induced nausea and vomiting	C
Dysmenorrhea	C
Exercise recovery	C
Hemorrhage (upper digestive tract)	C
Hyperglycemia-evoked dysrhythmias	C
Hyperlipidemia	C
Knee pain	C
Migraine	C
Motion sickness/sea sickness	C
Nausea and vomiting (postoperative)	C
Osteoarthritis	C
Rheumatoid arthritis	
Shortening labor	
Urinary disorders (post-stroke)	
Weight loss	

Level of Evidence Grade	Criteria
A (Strong Scientific Evidence)	Statistically significant evidence of benefit from >2 properly randomized trials (RCTs), OR evidence from one properly conducted RCT AND one properly conducted meta-analysis, OR evidence from multiple RCTs with a clear majority of the properly conducted trials showing statistically significant evidence of benefit AND with supporting evidence in basic science, animal studies, or theory.
B (Good Scientific Evidence)	Statistically significant evidence of benefit from 1-2 properly randomized trials, OR evidence of benefit from ≥1 properly conducted meta-analysis OR evidence of benefit from >1 cohort/case-control/non-randomized trials AND with supporting evidence in basic science, animal studies, or theory. *This grade applies to situations in which a well designed randomized controlled trial reports negative results but stands in contrast to the positive efficacy results of multiple other less well designed trials or a well designed meta-analysis, while awaiting confirmatory evidence from an additional well designed randomized controlled trial.*
C (Unclear or conflicting scientific evidence)	Evidence of benefit from ≥1 small RCT(s) without adequate size, power, statistical significance, or quality of design by objective criteria,* OR conflicting evidence from multiple RCTs without a clear majority of the properly conducted trials showing evidence of benefit or ineffectiveness, OR evidence of benefit from ≥1 cohort/case-control/non-randomized trials AND without supporting evidence in basic science, animal studies, or theory, OR evidence of efficacy only from basic science, animal studies, or theory.
D (Fair Negative Scientific Evidence)	Statistically significant negative evidence (i.e., lack of evidence of benefit) from cohort/case-control/non-randomized trials, AND evidence in basic science, animal

Nausea and related conditions

Levels of scientific evidence for specific therapies

Grade: A (Strong Scientific Evidence)	
Therapy	**Specific therapeutic Use(s)**
Acupressure, shiatsu, tuina	Nausea (of various etiologies)
Grade: B (Good Scientific Evidence)	
Therapy	**Specific therapeutic Use(s)**
Acupuncture	Nausea (chemotherapy-induced)
Acupuncture	Post-operative nausea / vomiting (adults)
Acustimulation	Motion sickness
Acustimulation	Nausea (postoperative)
Cayenne	Post-operative nausea / vomiting (plaster at acupoint)
Ginger	Hyperemesis gravidarum
Grade: C (Unclear or Conflicting Scientific Evidence)	
Therapy	**Specific therapeutic Use(s)**
Acupuncture	Nausea
Acupuncture	Nausea and vomiting of pregnancy
Acupuncture	Post-operative nausea / vomiting (pediatric)
Acustimulation	Nausea (chemotherapy-induced)
Acustimulation	Nausea and vomiting (electroconvulsive therapy-related)
Acustimulation	Nausea and vomiting during pregnancy
Aromatherapy	Nausea and vomiting (postoperative)
Ginger	Motion sickness/sea sickness
Ginger	Nausea and vomiting (postoperative)
Hypnotherapy, hypnosis	Nausea/vomiting
Music therapy	Nausea/vomiting
Peppermint	Post-operative nausea (inhalation)

Patient Education: MedlinePlus

medlineplus.gov

- **#1 SOURCE** for basic quality consumer/patient information
- 800 health topics
- drug and herbal information
- Medical Encyclopedia – full-text with illustrations
- Spanish version
- Preformulated *PubMed* searches
- Interactive tutorials and live OR videos
- Current health news

MedlinePlus

medlineplus.gov

Traumatic Brain Injury

Also called: Acquired brain injury, Head injury, Head trauma, TBI

Every year, millions of people in the U.S. sustain head and brain injuries. More than half are bad enough that people must go to the hospital. The worst injuries can lead to permanent brain damage or death.

Half of all traumatic brain injuries (TBIs) are due to motor vehicle accidents. Military personnel are also at risk. Symptoms of a TBI may not appear until days or weeks following the injury. Serious traumatic brain injuries need emergency treatment.

Treatment and outcome depend on the injury. TBI can cause a wide range of changes affecting thinking, sensation, language, or emotions. TBI can be associated with post-traumatic stress disorder. People with severe injuries usually need rehabilitation.

Get Traumatic Brain Injury updates by email — Enter email address — GO — What's this?

Start Here

- Head Injuries: What to Watch for Afterward (American Academy of Family Physicians)
  Also available in Spanish
- Traumatic Brain Injury: Hope through Research *NIH* (National Institute of Neurological Disorders and Stroke)
  Also available in Spanish
- Traumatic Brain Injury *Interactive Tutorial* (Patient Education Institute)
  Also available in Spanish

Basics	Learn More	Multimedia & Cool Tools
Overviews	Rehabilitation/Recovery	Health Check Tools
Latest News	Specific Conditions	Tutorials
Diagnosis/Symptoms	Related Issues	Videos
Treatment		
Prevention/Screening		

Research	Reference Shelf	For You
Anatomy/Physiology	Directories	MedlinePlus Magazine
Clinical Trials	Organizations	Children
Research	Law and Policy	Teenagers
Journal Articles	Statistics	Seniors
		Patient Handouts

MedlinePlus

MEDICAL ENCYCLOPEDIA

Brain components
Brain herniation
Brain injury - discharge
Cerebral hypoxia
Chronic subdural hematoma
CPK isoenzymes test
Cranial CT scan
CSF leak
Daily bowel care program
EEG

Related Topics

Coma
Concussion
Brain and Nerves
Injuries and Wounds

National Institutes of Health

The primary NIH organization for research on

Authoritative, Quality Links for Consumers

Overviews

- Living with Brain Injury (Brain Injury Association of America)
- Traumatic Brain Injury (Centers for Disease Control and Prevention)
- Traumatic Brain Injury ***NIH*** (National Institute of Neurological Disorders and Stroke) - Short Summary

Latest News

- Depression Common After Brain Injury (04/19/2011, HealthDay)
- Steroid May Help Cut Pneumonia Risk After Brain Trauma (03/22/2011, HealthDay)
- Learn TBI Signs, Symptoms and How to Respond (03/07/2011, Centers for Disease Control and Prevention)

Diagnosis/Symptoms

- CT -- Head (American College of Radiology, Radiological Society of North America)
  Also available in Spanish
- Diagnosing Brain Injury (Brain Injury Association of America)
- Functional MR Imaging (fMRI) -- Brain (American College of Radiology, Radiological Society of North America) - PDF
  Also available in Spanish

Treatment

- Brain Injury Treatment (Brain Injury Association of America)
- Head Trauma: First Aid (Mayo Foundation for Medical Education and Research)
- Neurosurgery - What Is It? ***Interactive Tutorial*** (Patient Education Institute)
  Also available in Spanish

Return to top

Prevention/Screening

- What Can I Do to Help Prevent Concussion and Other Forms of TBI? (Centers for Disease Control and Prevention)
  Also available in Spanish

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Rehabilitation/Recovery

- Cognitive Retraining (American Brain Tumor Association)
- Guide to Selecting and Monitoring Brain Injury Rehabilitation Services (Brain Injury Association of America) - PDF
- Traumatic Brain Injury (TBI), Effects and Intervention (American Occupational Therapy Association)

Interactive Tutorial

X-Plain PATIENT EDUCATION

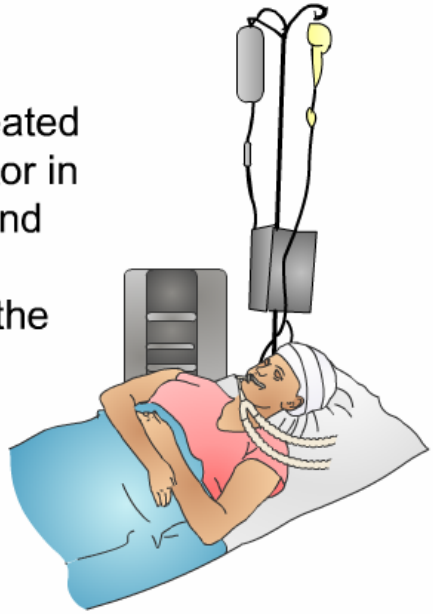
MedlinePlus® Trusted Health Information for You

Traumatic Brain Injury

Help | Credits | Terms of Use

- Introduction
- Causes of TBI
- Effects of TBI
- Types of TBI
- Symptoms
- Complications
- Diagnosis
- Treatment
- Conclusion

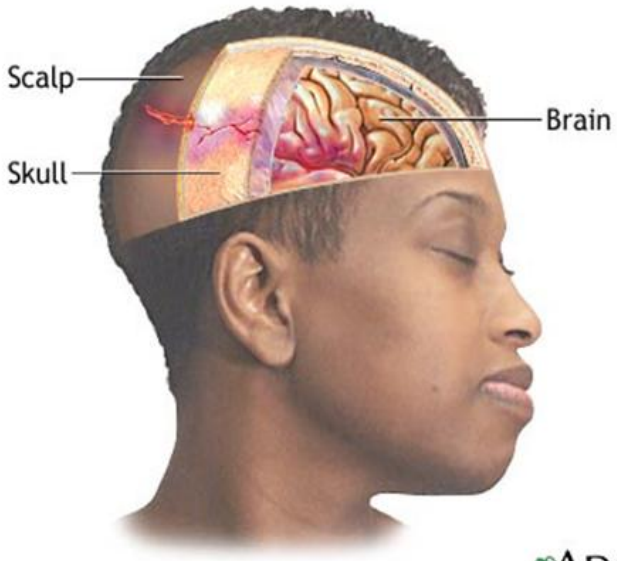
Severe TBI is sometimes treated with placement on a respirator in order to protect the airway and hyperventilate the patient. Hyperventilation decreases the pressure inside the skull.



Slide 70 of 86

Medical Encyclopedia

Head injury



Head injuries can range from a minor bump on the head to a devastating brain injury. Learning to recognize a serious head injury, and implementing basic first aid, can make the difference in saving someone's life. Common causes of head injury include traffic accidents, falls, physical assault, and accidents at home, work, outdoors, or while playing sports.

Final Thoughts

- Contact Your Ultimate Search Engine*…a librarian*
- Remember key evidence-based practice resources on HEAL-WA:
  - MEDLINE and CINAHL
  - DynaMed, Cochrane, Natural Standard
  - Nursing Reference Center …and more
- Investigate **HEAL-WA!**

UNIVERSITY LIBRARIES
UNIVERSITY of WASHINGTON

Show Me the Evidence!
Answering a Clinical Question Online

PowerPoint presentation located:

healthlinks.washington.edu/hsl/liaisons/schnall/rehabnurs2011.pptx

Handout:

healthlinks.washington.edu/hsl/liaisons/schnallrehabnurs2011.docx