Evidence Based Practice in Medicine

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Evidence-based medicine

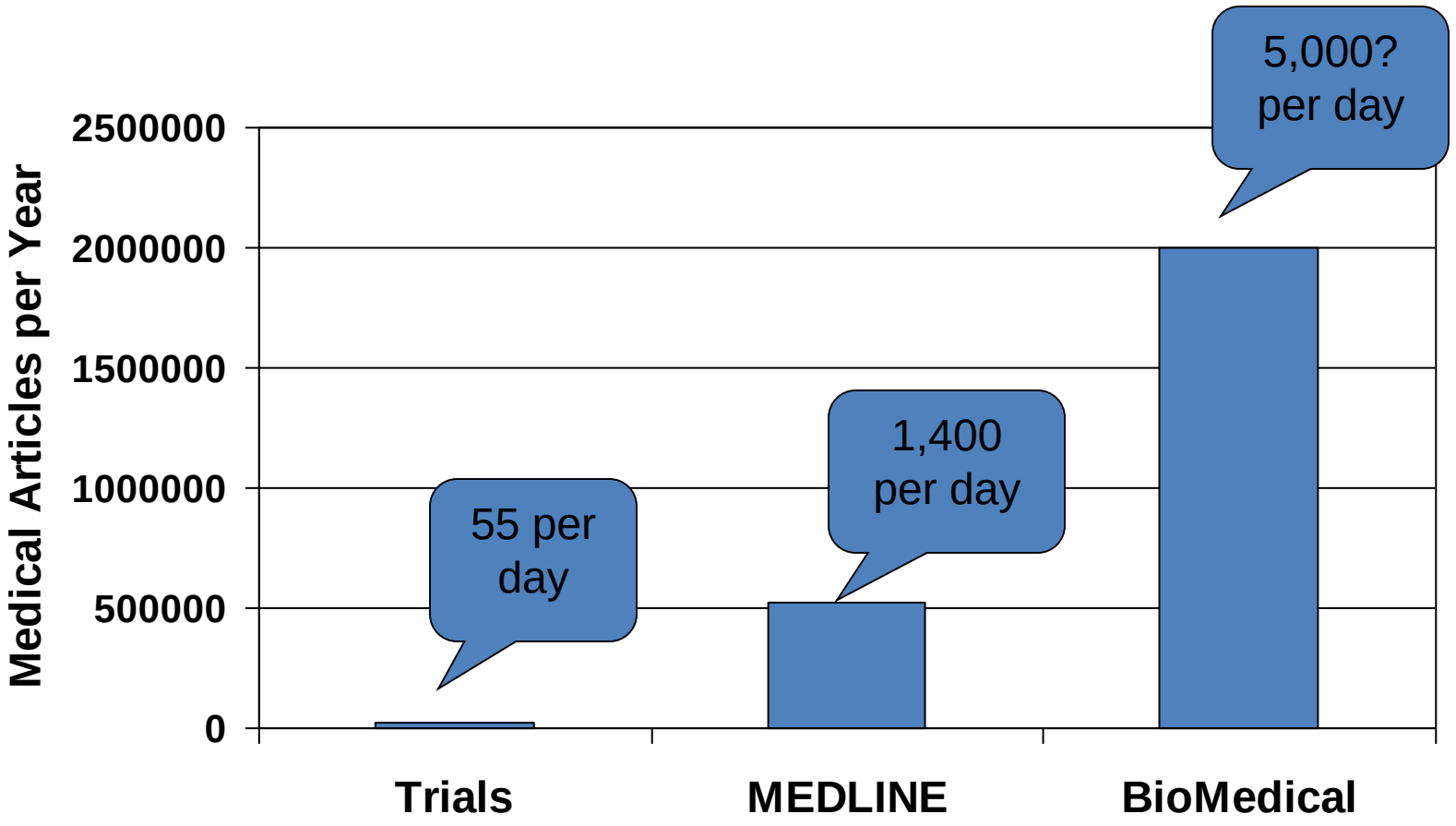
- It is the integration of best research evidence with clinical expertise

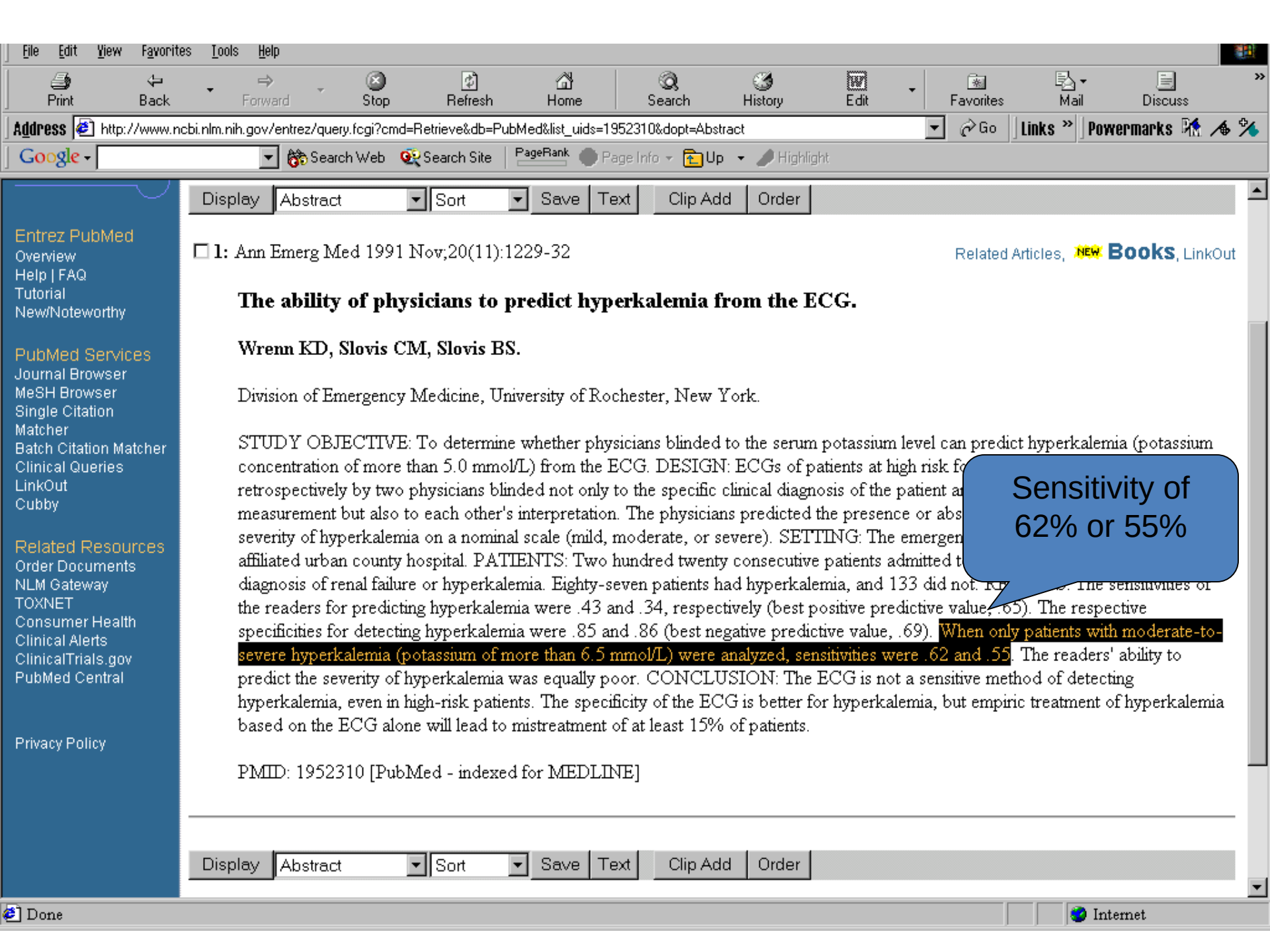
Local practice: No Evidence

- Medications for knee OA:
  - Cortisone: Local & systemic
  - Glucozamine, etc
- Alpha Chemotrypsin, Anti-edematous drugs, etc
- Diagnosis of gout & antigout therapy
- Osteotomy for bow legs (e.g. rickets) and knee vara
- OR issues: Sterilization, image intensifier
- Prophylactic antibiotic: Which one, timing, duration
- Joint replacement: V osteotomy, uni, Bi or total, etc
- Drains

Rule 1
Review the World Literature Fortnightly*

*"Kill as Few Patients as Possible" - Oscar London

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1: Ann Emerg Med 1991 Nov;20(11):1229-32
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The ability of physicians to predict hyperkalemia from the ECG.
Wrenn KD, Slovis CM, Slovis BS.
Division of Emergency Medicine, University of Rochester, New York.
STUDY OBJECTIVE: To determine whether physicians blinded to the serum potassium level can predict hyperkalemia (potassium concentration of more than 5.0 mmol/L) from the ECG. DESIGN: ECGs of patients at high risk f
retrospectively by two physicians blinded not only to the specific clinical diagnosis of the patient a
measurement but also to each other's interpretation. The physicians predicted the presence or abs
severity of hyperkalemia on a nominal scale (mild, moderate, or severe). SETTING: The emergen
affiliated urban county hospital. PATIENTS: Two hundred twenty consecutive patients admitted t
diagnosis of renal failure or hyperkalemia. Eighty-seven patients had hyperkalemia, and 133 did not.
the readers for predicting hyperkalemia were .43 and .34, respectively (best positive predictive value, .65). The respective
specificities for detecting hyperkalemia were .85 and .86 (best negative predictive value, .69). When only patients with moderate-to-
severe hyperkalemia (potassium of more than 6.5 mmol/L) were analyzed, sensitivities were .62 and .55. The readers' ability to
predict the severity of hyperkalemia was equally poor. CONCLUSION: The ECG is not a sensitive method of detecting
hyperkalemia, even in high-risk patients. The specificity of the ECG is better for hyperkalemia, but empiric treatment of hyperkalemia
based on the ECG alone will lead to mistreatment of at least 15% of patients.
PMID: 1952310 [PubMed - indexed for MEDLINE]
Sensitivity of 62% or 55%
Display Abstract Sort Save Text Clip Add Order
Done
Internet

Impact factor (IF)

- Provides comparison between different journals

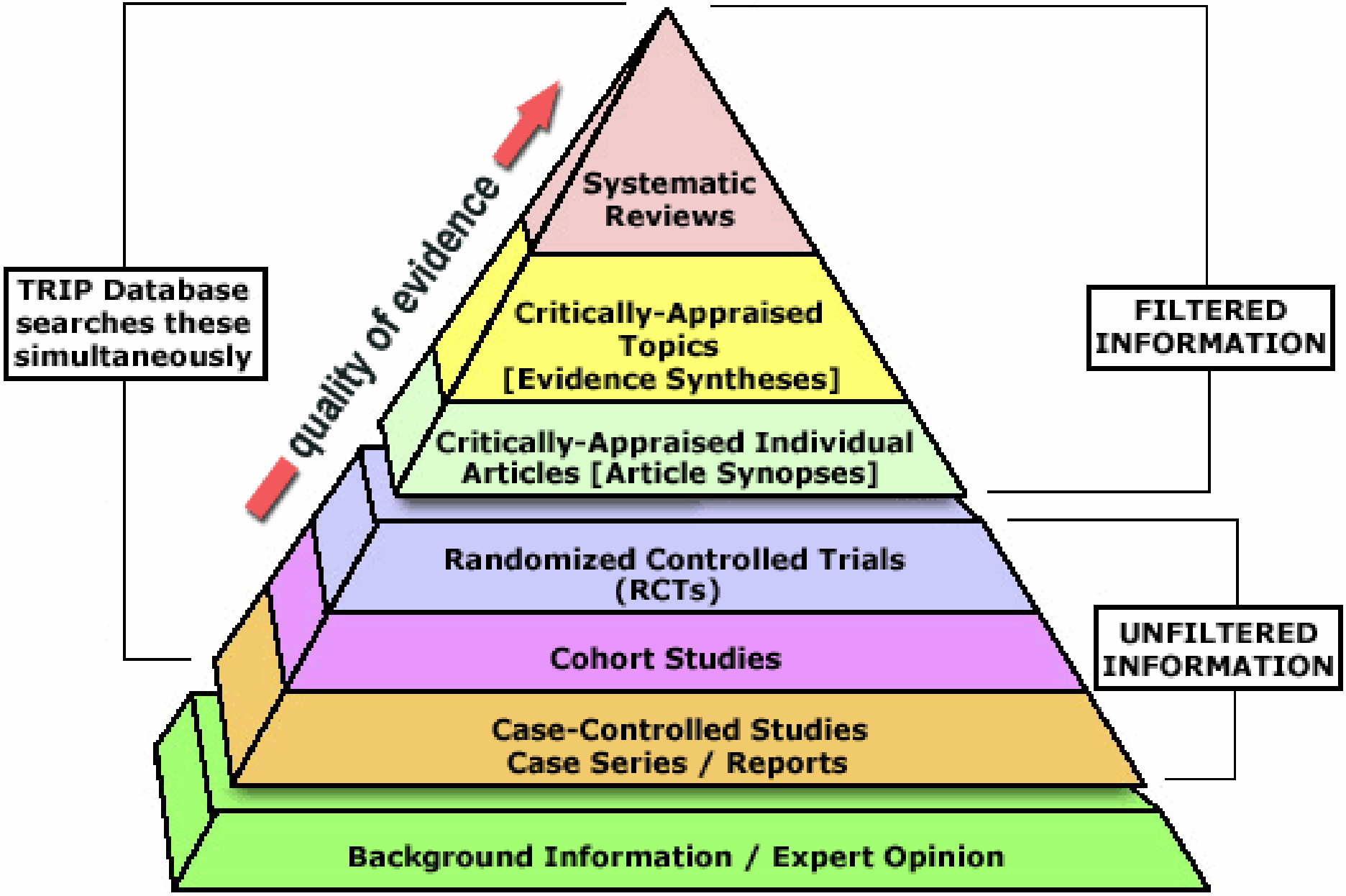
- Impact factor = No. of current citations from articles divided by No. of published articles in a 2 year period

Journal	Impact factor
Nature	**36.101**
NEJM	47.05
Lancet	33.63
BMJ	13.471
JBJS (A)	**3.762**
Spines	2.51

Journal	Impact factor
CORR	2.116
Acta Orth	1.897
JOT	1.792
Injury	2.269
JBJS (B	2.351
Int Orth	**1.561**

Level of Evidence

I	**1. Randomized controlled trial (RCT)** **2. Systematic review[2] of RCT**
II	**Prospective cohort study**
III	**Retrospective study**
IV	**Case series**


TRIP Database searches these simultaneously
quality of evidence
Systematic Reviews
Critically-Appraised Topics [Evidence Syntheses]
Critically-Appraised Individual Articles [Article Synopses]
Randomized Controlled Trials (RCTs)
Cohort Studies
Case-Controlled Studies
Case Series / Reports
Background Information / Expert Opinion
FILTERED INFORMATION
UNFILTERED INFORMATION

Why Randomized controlled trial

- Bias is (in theory) avoided by:
  - Selecting a sample of participants from a particular population and allocating them randomly to the different groups.
  - The process is similar to the flip of a coin.

A new technique: Wonderful?

- Nothing in textbooks
- Ask the expert
- Look at journals
  - National, International
  - Indexed: Medline, Cochrane library,…
- How I can make a decision?

Fracture neck femur: Many questions but no clear answer

- DHS, Cannulated screws, uni or bioplar hemi, THR
- New plate, new MIS technique, etc
- Operate today, tomorrow or next week
- Traction, antibiotics, DVT drugs, drains, bloods
- Postoperative bed rest or walk (WB or non WB)

Which technique or implant to use?

- Availability
- Economical constraints
- Hospital & national policies
- Surgeons' preference or knowledge
- New technology (MIS, CAOS, new operations)
- Patient seeking fancy options from Internet
- Commercial companies
  - Drug, trauma implants, elective implants, others

Treatment of proximal femoral

- Guidelines
- AAOS, SICOT, EFORT, BOA, NICE, WHO, etc
- Example: Recommendations for 17 aspects of treatment for # NoF with evidence levels on which they are based

- 1. Time to surgery (Level III-2) [34-38]
  - No randomised trial evidence is available.
  - Early surgery (within 24–36 hours) is recommended
  - Delayed surgery increases hospital stay leading to more complications; pressure sores, pneumonia & confusion.

- 2. Preoperative traction (Level II)
  - There is no evidence to support its routine use. The use of skin and skeletal traction should be abandoned.

3. Prevention of pressure sores (Level I)
  - All patients should be nursed on a pressure-relieving mattress.

- 4. Oxygen therapy (Level II)
  - Some evidence supports the routine use of oxygen therapy for the first 72 hours after surgery. All patients should have oximetry assessment from the time of emergency admission to 48 hours after surgery, and oxygen administered as necessary.

- 5. Thromboprophylaxis (Level I)
  - Should receive heparin, either LMWH or unfractionated
  - Patients on anticoagulants may benefit from additional low-dose aspirin.
  - Mechanical devices should be used otherwise

- 6. Pressure gradient stockings (Level I)
  - Patients should be wearing pressure gradient stockings as soon as possible after admission.

- 7. Type of anaesthesia (Level I)
  - Regional anaesthesia is recommended for most patients

- 8. Type of analgesia (Level II)
  - Adequate analgesia before & immediately after surgery. Nerve blocks may be useful in some cases.
- 9. Prophylactic antibiotics (Level I)[74]
  - IV antibiotics at induction of anaesthesia.
  - No proven benefit for prolonged use of antibiotics

- 10. Type of surgery
  - Trochanteric # should be treated by DHS (Level I)
  - Undisplaced neck # be fixed by methods that is familiar to the surgeon; screws or DHS (Level I)
  - Displaced neck # have no clearly superior treatment. The options are fixation or arthroplasty.
    - Decision is based on patient factors (including age, presence of arthritis, availability and cost of the different types of treatment, surgeon experience and preference)
  - Fixation has higher risk of implant failure than hemi
  - No clear benefit of bipolar over unipolar hemi (Level II)

  - Subtrochanteric fractures (Level II): The Medoff sliding plate is recommended and has less failures than DHS

- 11. Surgical wound drains (Level II)
  - May not be required as often as currently used and early removal is advised (about 24 hours after insertion).
- 12. Postoperative blood transfusion (Level II)
  - Not required in asymptomatic patients with Hb ≥ 80 g/L
- 13. Surgical swabs (Level II)
  - Calcium alginate swabs should be considered
- 14. Urinary catheterisation (Level II)[102]
  - Avoid indwelling catheters (where possible). Intermittent catheterisation is preferable and has been shown not to increase the incidence of urinary tract infections.

- 15. Nutritional status (Level II)
  - All patients should have a nutritional assessment.
  - Some evidence supports oral protein supplementation for the 6 months after surgery.
  - Nasogastric tube feeding for very thin patients
- 16. Mobilisation
  - Early assisted ambulation within 48 hours (Level III)
- 17. Rehabilitation (Level II)
  - A coordinated rehab program early in the hospital
  - Early supported discharge
  - Frail patients, get continued rehab after discharge.

Is arthroscopy useful for knee OA?

The placebo effect of performing knee arthroscopy for knee OA accounted for the main therapeutic benefit observed at follow-up

50 % reduction saved $100 million annually.

- *Nature Reviews Rheumatology* **5**, 122-123 (March 2009)
- *New England Journal of Medicine:* 2002 and 2008
- BMJ

TKA:
A GUIDE TO GOOD PRACTICE

- a consensus statement from the British Orthopaedic Association and the British Association for Surgery of the Knee

- Discussion on manpower, funding and resources related to the provision of orthopaedic and knee surgery services

Several other guideline: AAOS, NICE,

Surgical Site Infection for Hip and Knee Arthroplasty

Institute for Healthcare Improvement, Cambridge, USA

- Use an alcohol-containing antiseptic for skin prep
- Patients to shower with chlorhexidine soap preop
- Screen for *Staphylococcus aureus* (SA)
  - Decolonize SA carriers with intranasal mupirocin
- Appropriate use of prophylactic antibiotics
- Appropriate hair removal

Outcome of TKA

- International Society of arthroplasty registers (ISAR)
- National registers
  - Community register (Egyptian)
- Systematic reviews (Cochrane library)
- Meta anaylsis
- RCT
- Centres of excellence (HSS, Mayo, etc)

New technology

- MIS TKA
- Unicompartmental
- Patellofemoral
- Bicondylar
- Computer assisted surgery
  - Robtics
  - Navigation
- Patient specific instruments
- Patient specific implants