# Applying Evidence to Individual Patients with Multimorbidity

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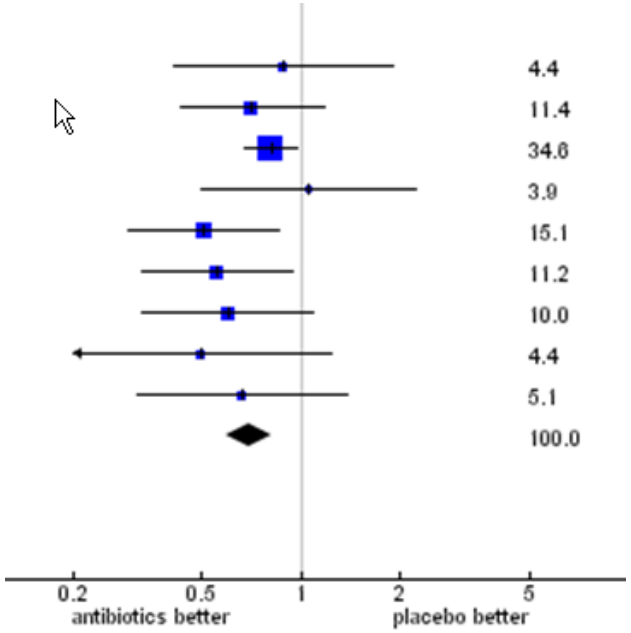


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# Evidence-informed medicine:

"Evidence-based medicine is the integration of best research evidence with clinical expertise and patient values"

- *Dave Sackett*

Patient Concerns

Clinical Expertise


Best Research

# Overview

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  - Prognosis, benefits or harms
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# Clinical Decision in Comorbidity

- Understand circumstances, function, and goals of patient
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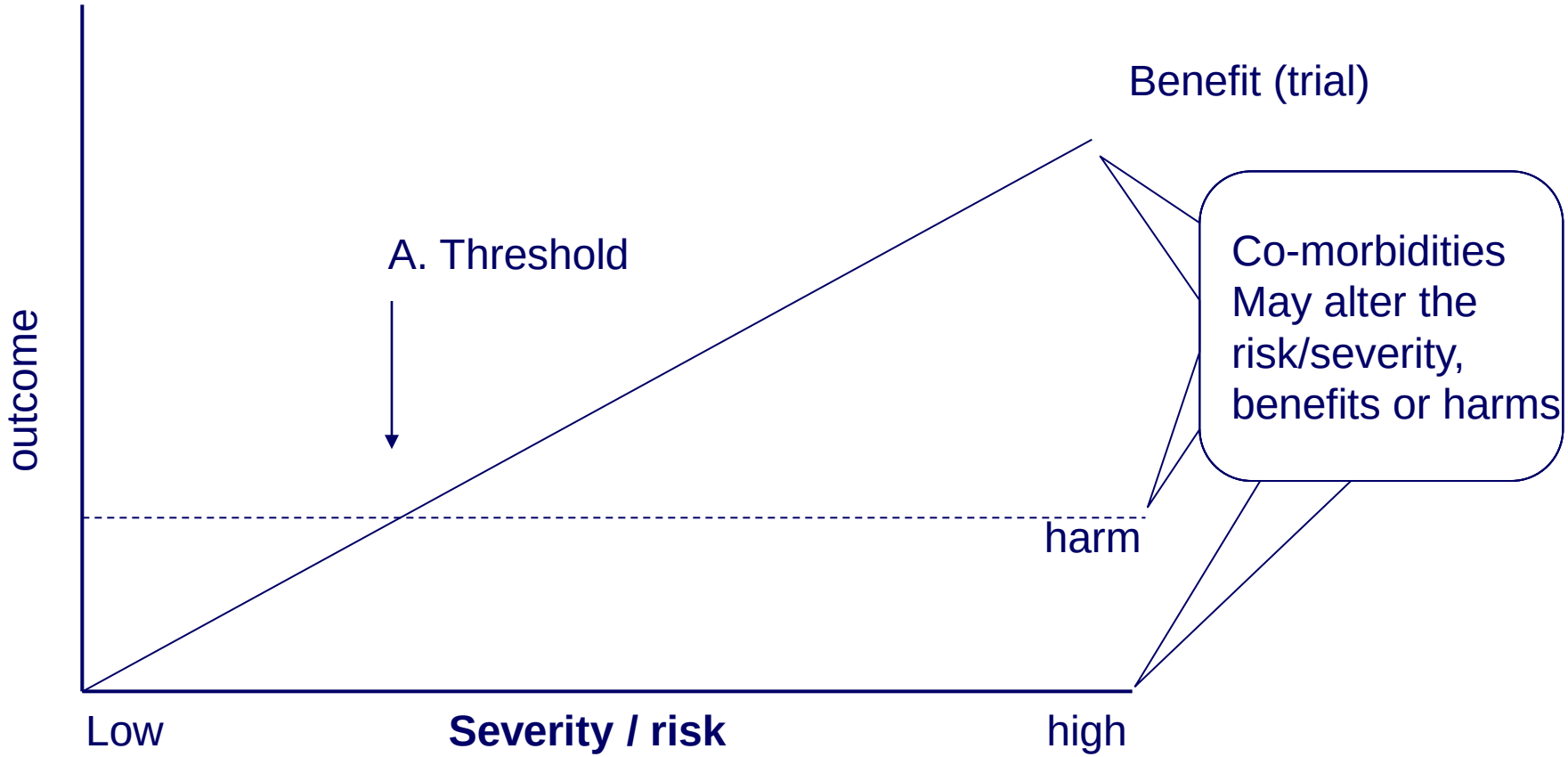
# A general model for treatment decisions

- Higher risk patients (usually) have higher benefits
- Lower risk patients (usually) have lower benefits




Glasziou, Irwig BMJ, 1995

# 1. Should Mr RM buy an electric toothbrush?


72 year old deaf pensioner

- Benign Prostatic Hypertrophy
- Parkinson's Disease
- gingivitis and frequent caries

Trials in young healthy people show improvements in gingivitis scores (but not caries).

Questions

1. Would the electric brush "work" for him?
2. What factors influence your & his decision?

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# Electric toothbrushes
# Are they effective?

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[Review]
**Manual versus powered toothbrushing for oral health**

PDF (Size 522 K)

- Abstract
- Plain language summary
- Background
- Objectives
- Criteria for considering studies for this review
- Search methods for identification of studies
- Methods of the review
- Description of studies
- Methodological quality
- Results
- Discussion
- Authors' conclusions
- Potential conflict of interest
- Acknowledgements
- Characteristics of included

[Review]

## Manual versus powered toothbrushing for oral health

PG Robinson, SA Deacon, C Deery, M Heanue, AD Walmsley, HV Worthington, AM Glenny, WC Shaw

*Cochrane Database of Systematic Reviews* 2008 Issue 2 (Status: *Unchanged*)

DOI: 10.1002/14651858.CD002281.pub2 This version first published online: 20 April 2005 in Issue 2, 2005

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Next >

### Abstract

**Background**

Remo…hbrushing in achieving this.

**Obje**

To co…dverse effects and cost.

**Searc**

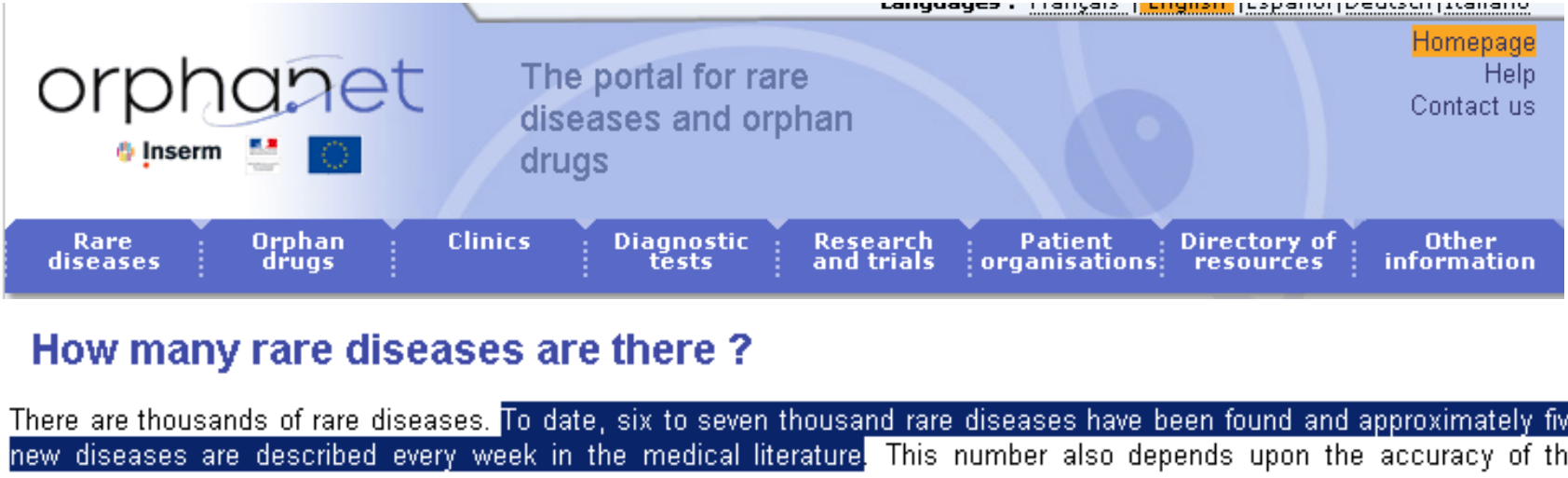
We se…ssue 2, 2004); MEDI… Manufacturers were contac…

Yes – for university students
No patients with Parkinson's disease

# Trials of toothbrushing in all diseases?

Diagnosis Pro (www.diagnosispro.com)

- 13,000 diseases;

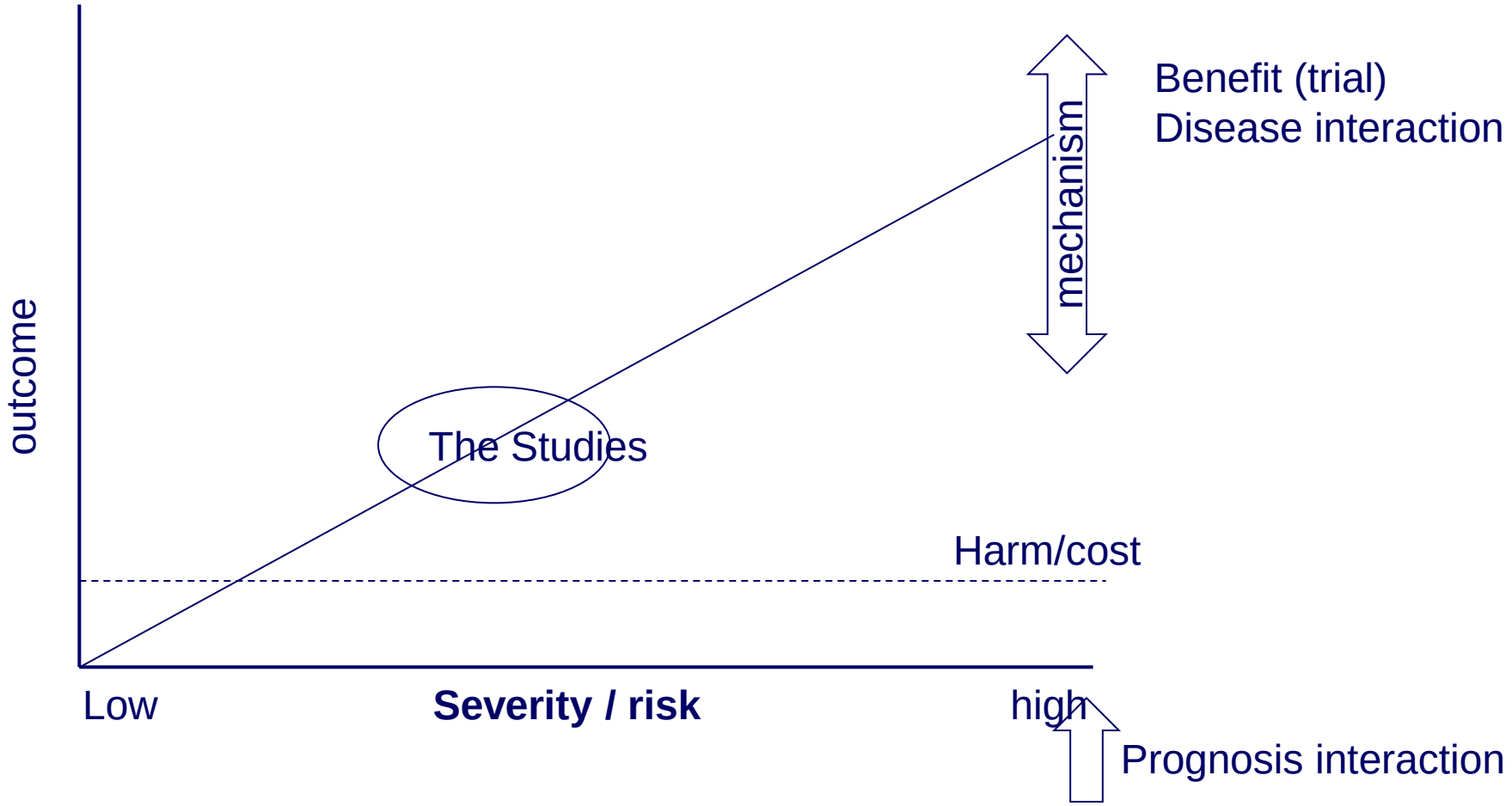


# Should Mr RM buy an electric toothbrush? Option 1: new evidence

Do an n-of-1 trial?

- Left side: Electric
- Right side: Normal

# Should Mr RM buy an electric toothbrush?
# Option 2: reasonable extrapolation



# 2. Are statins worthwhile for this patient with a history of TIA?

81 year old male with:

1. **Transient ischemic attacks (TIA)**
2. Non-H.pylori ulcers & Severe GERD
3. NSAID intolerance
4. Chronic neck pain

- CT scan shows small infarcts
- Cholesterol “normal” 5.8mmol/l

Should he be taking a statin?

# TIA treatments and interaction with co-morbidities

| | | TIA treatments | |
|---|---|---|---|
| | Low-dose Aspirin | BP-lowering | Statin |
| Neck OA | NSAID | - | - |
| GERD | - | - | - |
| Ulcers | Intolerant;<br>Use clopidogrel | - | - |

# Subgroup Analysis

**Do "statins" work in those with a history (Hx) of stroke?**

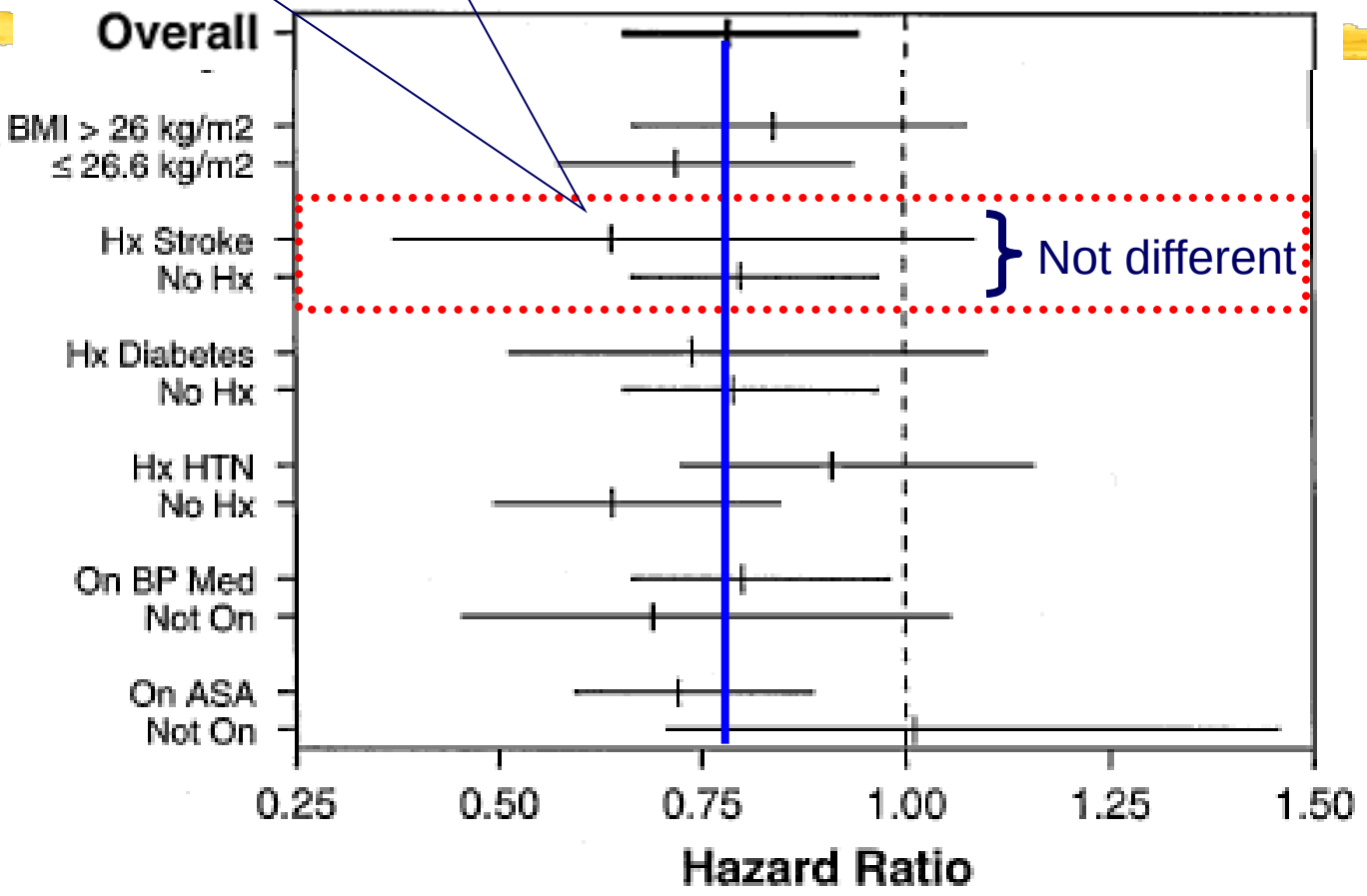



**Figure 3.** Effect of pravastatin on total stroke (fatal or nonfatal) according to baseline characteristic (95% CIs around hazard

(***Circulation*. 2001;103:387-392.**)

# How does predicted risk change the benefit?

| *Baseline Risk* | *Relative Risk Reduction* | *Absolute Risk Reduction* | *Number needed to Treat* |
|---|---|---|---|
| ***8%*** | 25% | 2% | 50 |

← **Trial patients**

# How does predicted risk change the benefit?

| *Baseline Risk* | *Relative Risk Reduction* | *Absolute Risk Reduction* | *Number needed to Treat* | |
|---|---|---|---|---|
| ***20%*** | 25% | | | ← **High risk patient** |
| ***8%*** | 25% | | | ← **Trial patients** |
| ***4%*** | 25% | | | ← **Typical patients** |
| ***1%*** | 25% | | | ← **Low risk patient** |

**For biological effect & transferability**

**For clinical decision making**

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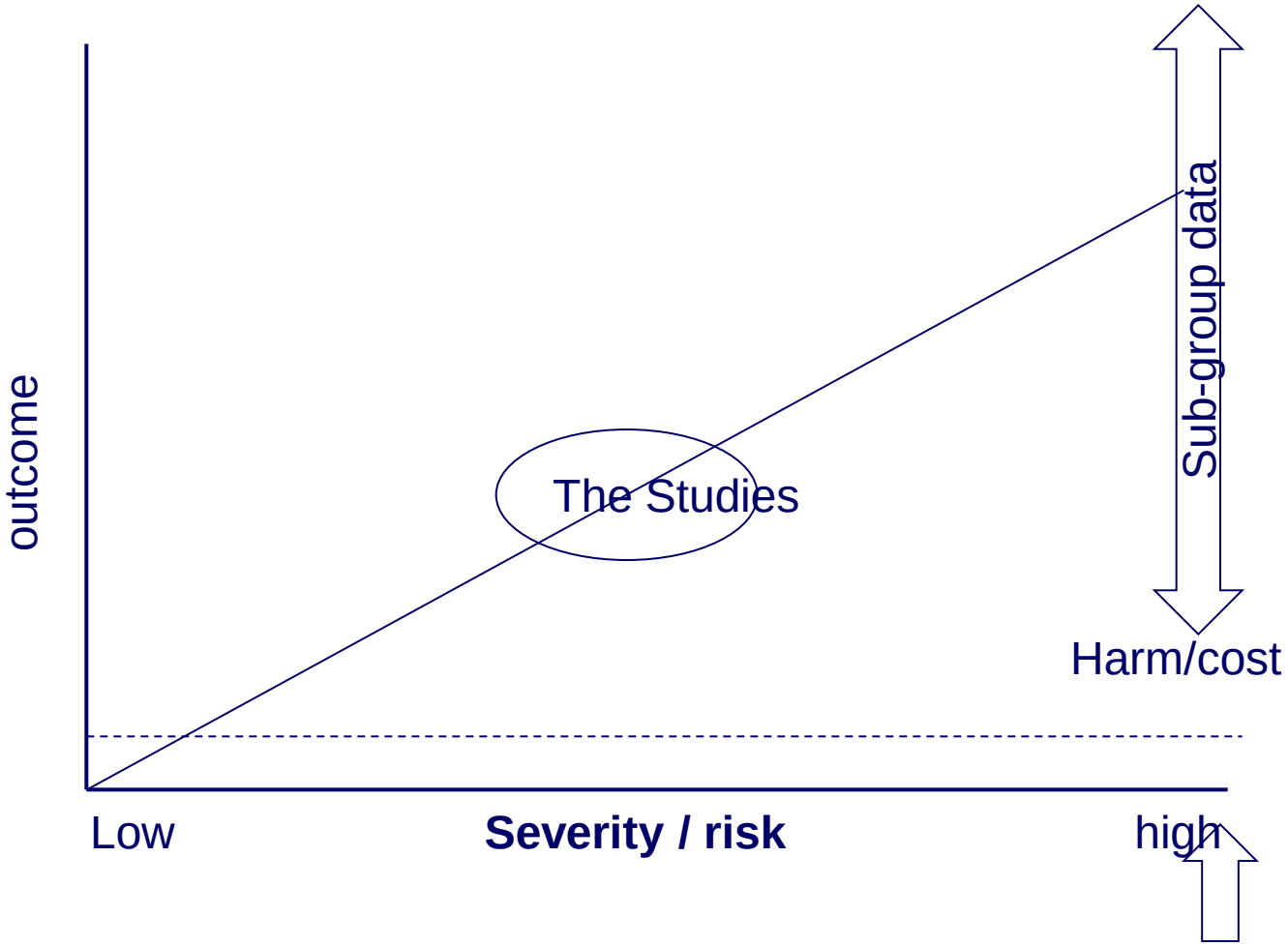


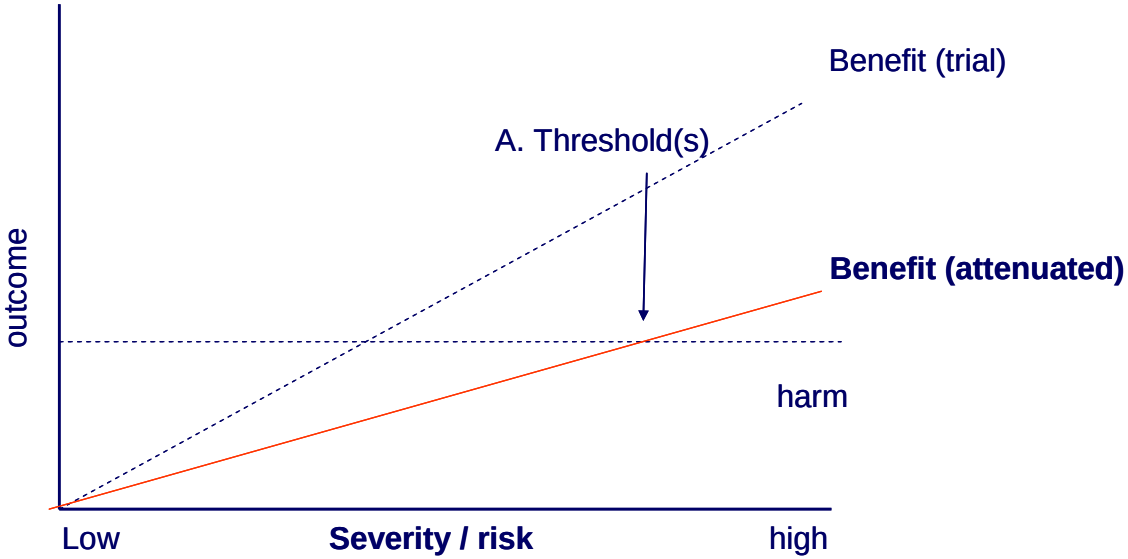

# 3. Fractured hip and carotid stenosis

- A 92 year old man with bilateral carotid stenosis fell and fractured his hip.
- The fracture needs a hip replacement but the carotid stenosis puts him at high risk.
- *What should be done?*

(benefit same; increased harm; patient's priorities crucial)

# Summary: Steps from trials to individual decisions

1. What are the benefits and harms?
2. How do co-morbidities change the benefits or the harms?
3. Is the predicted net benefit a worthwhile priority?




# Take home messages

With Co-morbidities the principles of decision making the same but, more complex:

- Need to consider problem priorities
- Interactions (disease, drug) may alter
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  - Available data usually weaker