

Do we need a meta-analysis?

Is the 4-step EBM process feasible?

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EBM versus Systematic Review

■ EBM

■ Steps

1. Ask Question
2. Search
3. Appraise
4. Apply

■ Time: 90 seconds

■ < 20 articles

■ This patient survives!

■ Systematic Review

■ Steps

1. Ask Question
2. Search ++ x 2
3. Appraise x 2
4. Synthesize
5. Apply

■ Time: 6 months, team

■ < 2,000 articles

■ This patient is dead

But is 'EBM' trustworthy?

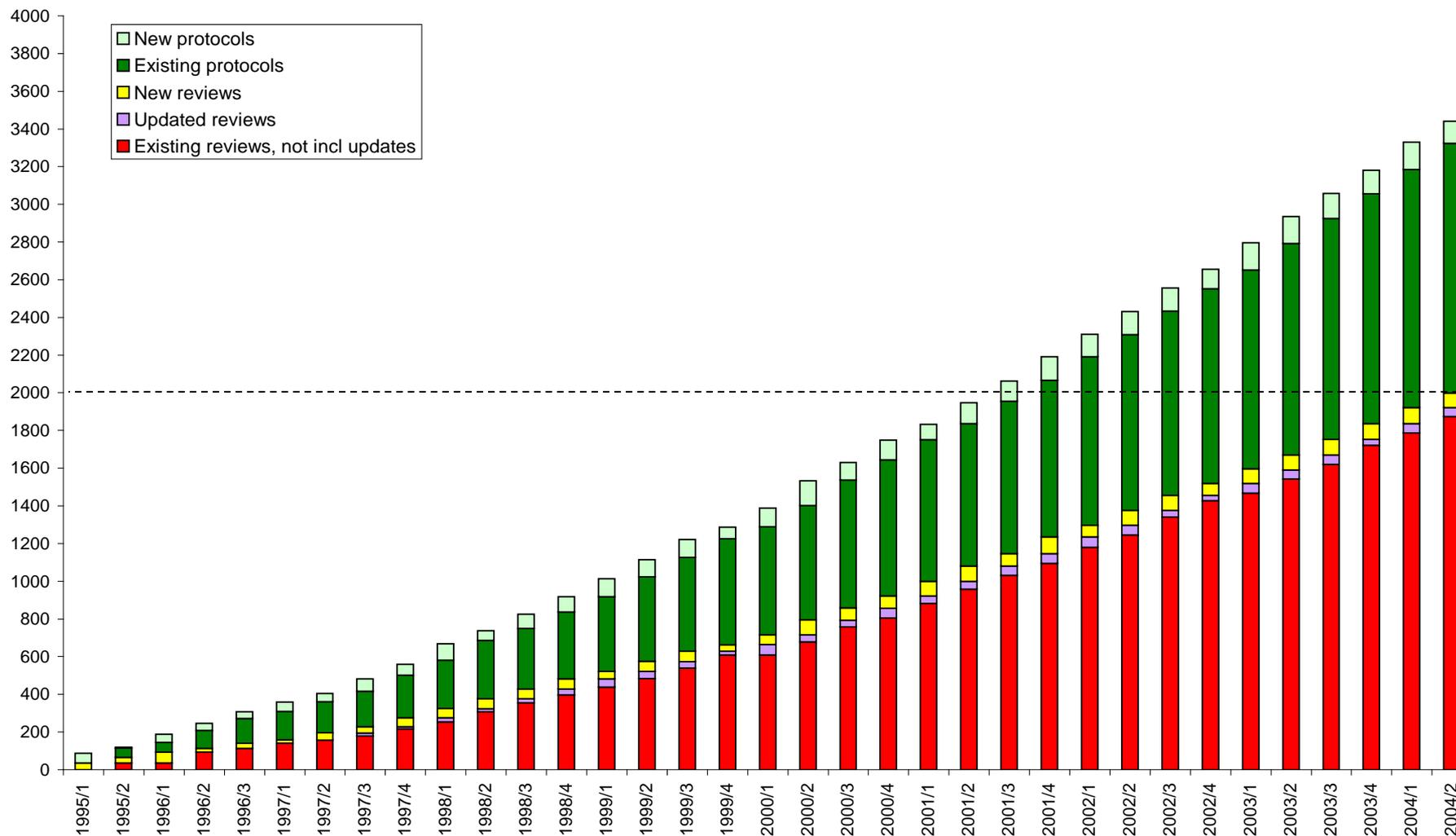


Systematic Reviews

2,000 done of 10,000 needed (20%) for therapy

Reviews and protocols for reviews on
The Cochrane Database of Systematic Reviews
Issue 1/2005

Alderson, 2005



Methods

- Random sample of 200 Cochrane Systematic Reviews from 2,000 in CDSR
- Data extracted for main outcome only
- Compared largest* trial with SR results
 - Estimates of effect
 - P-values
- *Largest trial defined as:
 - the trial with the greatest weight

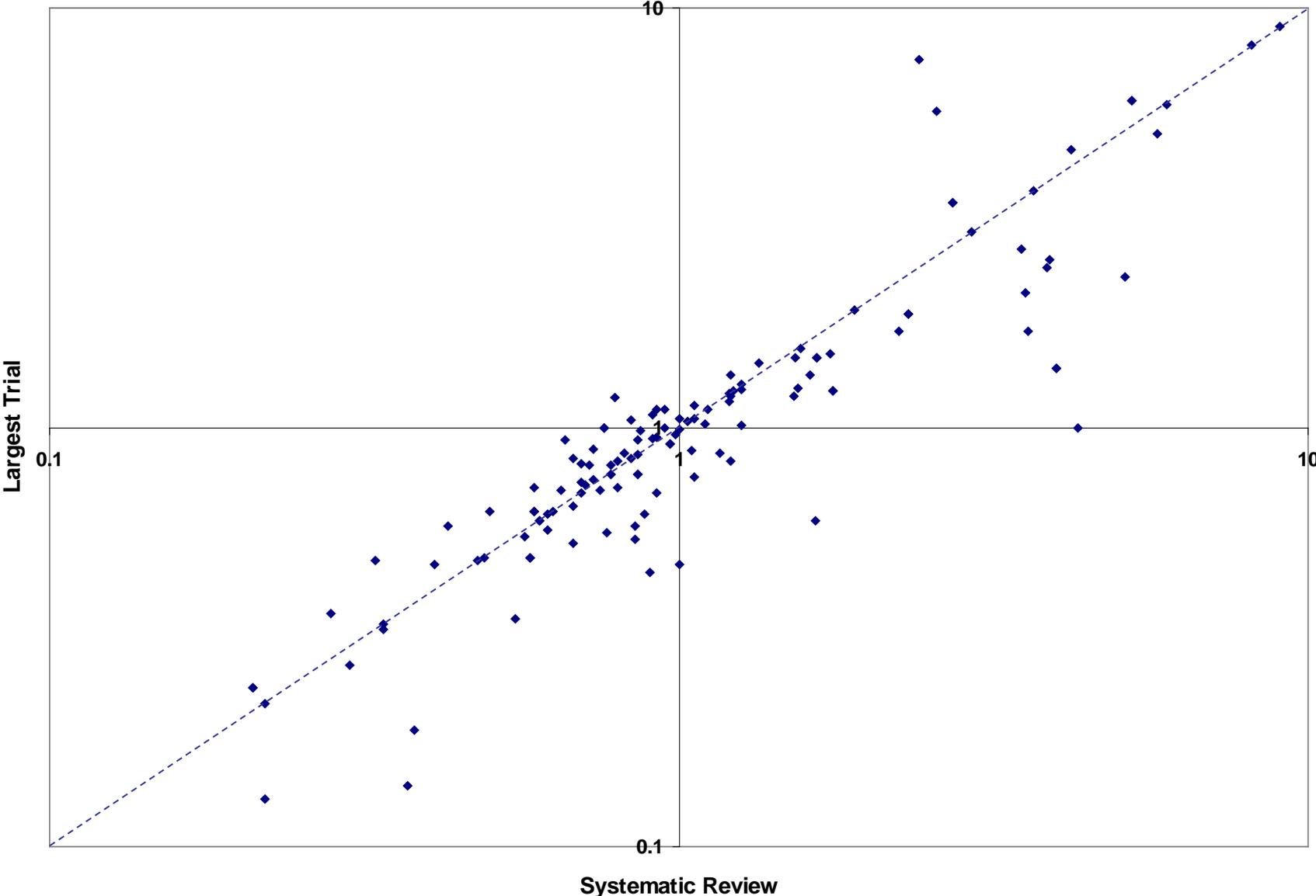


The 200 Systematic Reviews

- 25 trials with either
 - no trials or no meta-analysis
- Average of 6.3 trials per review
 - Include 25 reviews with single trial
- Median weight of largest trial was 55%
- 91/175 (52%) showed statistically significant results



Comparison of Estimates of log Risk Ratio



Comparison of P-Values

P-value (Systematic Review)

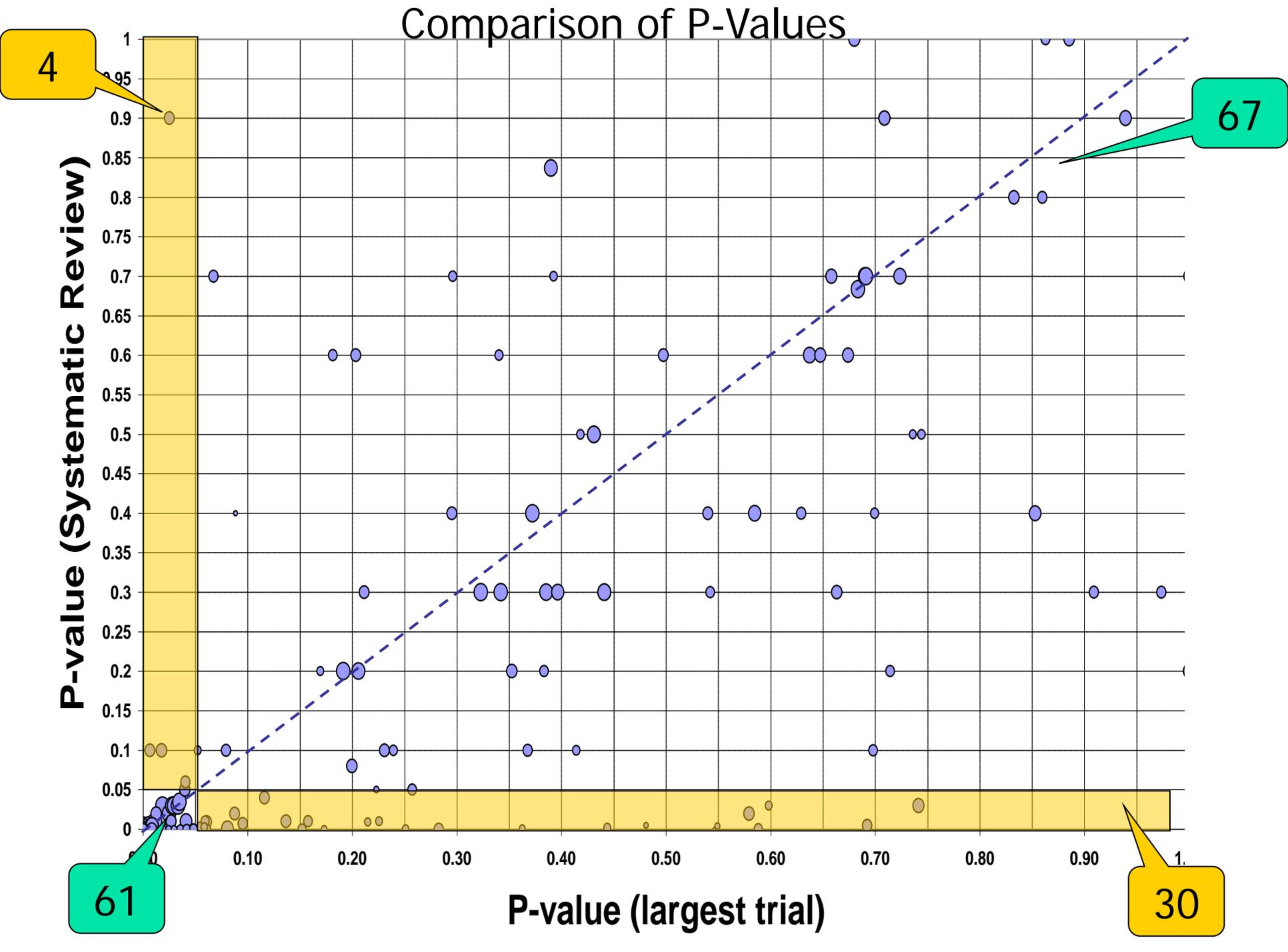
P-value (largest trial)

4

67

61

30



Why do they disagree? - I

- 4 large significant trials disagreed with SR
 - Prophylactic antibiotics for CVP lines
 - P of 0.04 versus 0.06
 - Treatment of infantile spasms
 - 2 discordant trials
 - Laparoscopic culposuspension
 - Significant heterogeneity
 - Disagree on RR but agree on Odds Ratio
 - DOTS for tuberculosis
 - Large trial used home DOTS (“worked”)
 - Other trials used clinic DOTS (didn’t “work”)



Why do they disagree? - II

- 30 non-significant trials
 - Confidence did include SR result in 25 of 30 cases
 - Insufficient power
 - Confidence interval didn't include SR result in 5 of 30 cases
 - (we are investigating these)



Conclusions

- If largest trial is statistically significant, then results generally agree (64/67)
- If largest trial non-significant, then results often agree (67/97)
- Major disagreement in 5%
 - 4 large trial significant; SR not
 - 5 large trial non-significant and 95% CI did not include the SR estimate
- Some disagreement due to heterogeneity
- EBM “feasible” but with caution!



Further work planned

- Searching
 - Are the large trials on MEDLINE?
 - Filtered by PubMed:ClinicalQueries?
 - Can an EBM searcher find them?
 - Can a searcher find which is the “largest trial”?
- Systematic reviews not ‘gold standard’
 - Do systematic reviews agree?
 - How out-of-date are systematic reviews?

