### Handling, and judging risk of bias associated with missing participant data in meta-analyses of binary and continuous outcomes

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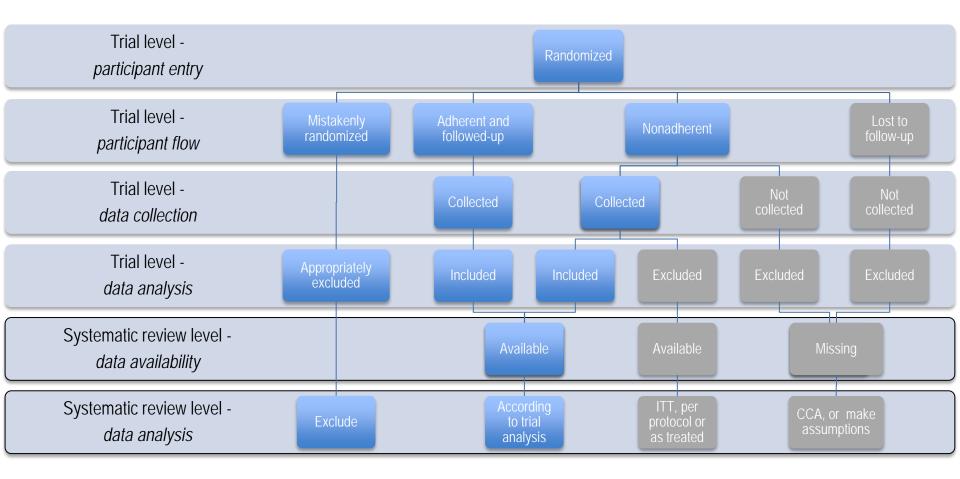


• No conflicts of interest to declare

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## Objective

 To develop guidance for systematic review authors on how to handle, and judge risk of bias associated with missing participant data in meta-analyses of binary and continuous outcomes



### Proposal to handle MPD

- For the primary analysis: exclude participants with missing data (complete case analysis)
- To assess the risk of bias, and when the primary analysis suggests important effect, we suggest sensitivity meta-analyses making different assumptions about the outcome of participants with missing data

Assumptions about missing participant data in control arm

				Extreme		
	Same incidence as the trial intervention arm	Increased incidence relative to the trial intervention arm RI <sub>LTFU/FU</sub> >1	Same incidence as the trial control arm	Highest incidence among intervention arms of all included trials	Highest incidence among control arms of all included trials	All had event
Same incidence as the trial control arm						
Decreased incidence relative to the trial control arm (RI <sub>LTFU/FU</sub> <1)						
Same incidence as the trial intervention arm						
Lowest incidence among control arms of all included trials						
Lowest incidence among intervention arms of all included trials						
None had event						Worst case scenario

### Judging RoB dichotomous MPD

 Results robust to a worst case scenario → missing data does not represent a risk of bias

 Results not robust to worst case scenario → test progressively more extreme assumptions culminating in a "worst plausible case"

 Important changes in results with such sensitivity analyses suggest serious RoB

### Example

 Meta-analysis assessing effects of probiotics for prevention clostridium difficile-associated diarrhea

### Complete case analysis

	Experim		Contr			Risk Ratio	Risk Ratio
Study or Subgroup	Events	Total	Events			M-H, Random, 95% C	M-H, Random, 95% Cl
Arvola 1999	1	61	1	58	1.7%	0.95 [0.06, 14.85]	
Beasoleil 2007	1	44	7	45	3.0%	0.15 [0.02, 1.14]	
Bravo 2008	0	41	0	45		Not estimable	
Can 2006	0	73	2	78	1.4%	0.21 [0.01, 4.37]	
Duman 2005	0	196	1	180	1.2%	0.31 [0.01, 7.47]	
Gao 2010	9	171	20	84	23.0%	0.22 [0.11, 0.46]	
Hickson 2007	0	56	9	53	1.6%	0.05 [0.00, 0.84]	·
Kotowska 2005	3	119	10	127	7.9%	0.32 [0.09, 1.14]	
Lonnermark 2010	1	80	0	83	1.3%	3.11 [0.13, 75.26]	
McFarland 1995	3	97	4	96	5.9%	0.74 [0.17, 3.23]	
Miller 2008 (1)	4	95	7	94	8.9%	0.57 [0.17, 1.87]	
Miller 2008 (2)	2	157	0	159	1.4%	5.06 [0.25, 104.63]	
Plummer 2004	2	69	5	69	4.9%	0.40 [0.08, 1.99]	
Psaradellis 2010	1	216	4	221	2.7%	0.26 [0.03, 2.27]	
Rafiq 2007	5	45	22	55	16.1%	0.28 [0.11, 0.67]	
Ruszczynski 2008	3	120	7	120	7.2%	0.43 [0.11, 1.62]	
Safdar 2008	0	23	1	17	1.3%	0.25 [0.01, 5.79]	
Selinger 2011	0	62	0	62		Not estimable	
Surawicz 1989	3	116	5	64	6.5%	0.33 [0.08, 1.34]	
Thomas 2001	2	133	3	134	4.0%	0.67 [0.11, 3.96]	
Total (95% CI)		1974		1844	100.0%	0.34 [0.24, 0.49]	◆
Total events	40		108				
Heterogeneity: Tau <sup>2</sup> =	0.00; Chi2 :	= 12.09,	df = 17 (	P = 0.7	9); l² = 0%		
Test for overall effect:							0.01 0.1 1 10 10 avours experimental Favours control

### Event rate: 1.5:1

	Experim	ental	Contr	ol		<b>Risk Ratio</b>	Risk I	Ratio	
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% C	M-H, Rando	om, 95% Cl	
Arvola 1999	2	89	1	78	2.0%	1.75 [0.16, 18.96]		•	
Beasoleil 2007	1	44	7	45	2.7%	0.15 [0.02, 1.14]			
Bravo 2008	0	41	0	45		Not estimable			
Can 2006	0	73	2	78	1.3%	0.21 [0.01, 4.37]			
Duman 2005	0	204	1	185	1.1%	0.30 [0.01, 7.38]			
Gao 2010	9	171	20	84	20.9%	0.22 [0.11, 0.46]			
Hickson 2007	0	69	11	66	1.5%	0.04 [0.00, 0.69]	<		
Kotowska 2005	3	132	11	137	7.3%	0.28 [0.08, 0.99]			
Lonnermark 2010	2	118	0	121	1.3%	5.13 [0.25, 105.66]			
McFarland 1995	4	97	5	96	7.0%	0.79 [0.22, 2.86]			
Miller 2008 (1)	4	95	7	94	8.1%	0.57 [0.17, 1.87]			
Miller 2008 (2)	2	157	0	159	1.3%	5.06 [0.25, 104.63]			
Plummer 2004	2	69	5	69	4.5%	0.40 [0.08, 1.99]			
Psaradellis 2010	1	233	5	239	2.5%	0.21 [0.02, 1.74]			
Rafiq 2007	5	45	22	55	14.6%	0.28 [0.11, 0.67]			
Ruszczynski 2008	3	120	7	120	6.5%	0.43 [0.11, 1.62]		_	
Safdar 2008	0	23	1	17	1.2%	0.25 [0.01, 5.79]			
Selinger 2011	0	62	0	62		Not estimable			
Surawicz 1989	7	212	9	106	12.5%	0.39 [0.15, 1.02]			
Thomas 2001	2	152	3	150	3.7%	0.66 [0.11, 3.88]			
Total (95% CI)		2206		2006	100.0%	0.36 [0.26, 0.50]	•		
Total events	47		117						
Heterogeneity: Tau <sup>2</sup> =	0.00; Chi <sup>2</sup>	= 15.72,	df = 17 (	P = 0.5	4); l² = 0%	, D			400
Test for overall effect:					,		0.01 0.1 1	10	100
			,			Fa	avours experimental	Favours cont	roi

### Event rate: 3:1

	Experim	ental	Contr	ol		Risk Ratio	Risk Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI	M-H, Random, 95% Cl
Arvola 1999	2	89	1	78	2.2%	1.75 [0.16, 18.96]	
Beasoleil 2007	1	44	7	45	2.9%	0.15 [0.02, 1.14]	
Bravo 2008	0	41	0	45		Not estimable	
Can 2006	0	73	2	78	1.4%	0.21 [0.01, 4.37]	
Duman 2005	0	204	1	185	1.3%	0.30 [0.01, 7.38]	
Gao 2010	9	171	20	84	16.1%	0.22 [0.11, 0.46]	
Hickson 2007	0	69	11	66	1.6%	0.04 [0.00, 0.69]	←
Kotowska 2005	4	132	11	137	8.7%	0.38 [0.12, 1.16]	
Lonnermark 2010	3	118	0	121	1.5%	7.18 [0.37, 137.44]	
McFarland 1995	5	97	5	96	7.6%	0.99 [0.30, 3.31]	<b>+</b>
Miller 2008 (1)	4	95	7	94	7.8%	0.57 [0.17, 1.87]	
Miller 2008 (2)	2	157	0	159	1.4%	5.06 [0.25, 104.63]	
Plummer 2004	2	69	5	69	4.6%	0.40 [0.08, 1.99]	
Psaradellis 2010	2	233	5	239	4.5%	0.41 [0.08, 2.09]	
Rafiq 2007	5	45	22	55	12.5%	0.28 [0.11, 0.67]	
Ruszczynski 2008	3	120	7	120	6.5%	0.43 [0.11, 1.62]	
Safdar 2008	0	23	1	17	1.3%	0.25 [0.01, 5.79]	
Selinger 2011	0	62	0	62		Not estimable	
Surawicz 1989	11	212	9	106	13.3%	0.61 [0.26, 1.43]	
Thomas 2001	3	152	3	150	4.7%	0.99 [0.20, 4.81]	
Total (95% CI)		2206		2006	100.0%	0.43 [0.30, 0.62]	•
Total events	56		117			- •	
Heterogeneity: Tau <sup>2</sup> =	0.07; Chi <sup>2</sup>	= 19.28.		P = 0.3	1); l² = 12	%	
Test for overall effect:							0.01 0.1 1 10 10
rest for overall effect.	2 - 4.00 (F	\$ 0.000				Fa	vours experimental Favours control

### Event rate: 5:1

	Experim	ental	Contr	ol		Risk Ratio	Risk Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% Cl	M-H, Random, 95% Cl
Arvola 1999	3	89	1	78	2.8%	2.63 [0.28, 24.76]	
Beasoleil 2007	2	44	7	45	5.4%	0.29 [0.06, 1.33]	
Bravo 2008	0	41	0	45		Not estimable	
Can 2006	0	73	2	78	1.7%	0.21 [0.01, 4.37]	
Duman 2005	0	204	1	185	1.5%	0.30 [0.01, 7.38]	
Gao 2010	9	171	20	84	12.7%	0.22 [0.11, 0.46]	
Hickson 2007	0	69	11	66	1.9%	0.04 [0.00, 0.69]	<
Kotowska 2005	5	132	11	137	9.1%	0.47 [0.17, 1.32]	
Lonnermark 2010	4	118	0	121	1.8%	9.23 [0.50, 169.51]	
McFarland 1995	6	97	5	96	7.9%	1.19 [0.38, 3.76]	
Miller 2008 (1)	4	95	7	94	7.6%	0.57 [0.17, 1.87]	
Miller 2008 (2)	2	157	0	159	1.7%	5.06 [0.25, 104.63]	
Plummer 2004	2	69	5	69	5.0%	0.40 [0.08, 1.99]	
Psaradellis 2010	2	233	5	239	4.8%	0.41 [0.08, 2.09]	
Rafiq 2007	5	45	22	55	10.8%	0.28 [0.11, 0.67]	
Ruszczynski 2008	3	120	7	120	6.6%	0.43 [0.11, 1.62]	
Safdar 2008	0	23	1	17	1.5%	0.25 [0.01, 5.79]	
Selinger 2011	0	62	0	62		Not estimable	
Surawicz 1989	16	212	9	106	12.1%	0.89 [0.41, 1.94]	
Thomas 2001	3	152	3	150	5.1%	0.99 [0.20, 4.81]	
Total (95% CI)		2206		2006	100.0%	0.50 [0.34, 0.76]	•
Total events	66		117				
Heterogeneity: Tau <sup>2</sup> =	0.19; Chi <sup>2</sup>	= 23.73,	df = 17 (	P = 0.1	3); l² = 28	%	
Test for overall effect:							0.01 0.1 1 10 10 vours experimental Favours control

## Handling continuous MPD

- Strategies to combine imputations for participants with missing data with those with complete data
- Progressively more stringent strategies to challenge estimates

Ebrahim et al. J Clin Epidemiol. 2013 Sep;66(9):1014-1021.e1

## **Imputing effect & precision**

#### **Measure of effect**

- **5** sources of data reflecting real observed mean scores in participants followed-up in individual trials in a meta-analysis:
- Ranging from:
  - o Best mean score among intervention arms
  - Worst mean score among control arms

### Measure of precision

• Median SD (plausible)

## **Imputation strategies**

 Developed 4 progressively more stringent imputation strategies for participants with missing data in both arms

		Assumptions a	bout the means of p INTERVENTION	participants in
		<i>C:</i> Mean score from the control arm of the same trial	<b>D</b> : Worst mean among intervention arms	<i>E:</i> Worst mean among control arms
Assumptions	<b>A</b> : Best mean among intervention arms			4 <u>Intervention</u> : Worst mean among control arms <u>Control</u> : Best mean among intervention arms
about the means of participants in CONTROL	<b>B</b> : Best mean among the control arms		2 Intervention: Worst mean among intervention arms Control: Best mean among control arms	3 Intervention: Worst mean among control arms Control: Best mean among control arms
	<i>C:</i> Mean score from the control arm of the same trial	1 <u>Intervention and control</u> : Mean score from the control arm of the same trial		

### **Combining observed & imputed data**

3-step method for each strategy:

- [1] Combine observed means and SDs of those with available data with imputed means and SDs for those with missing data
- [2] Use pooled estimates to calculate treatment effect per study
- [3] Perform a standard random-effects meta-analysis to pool

# **Application of approach: 1**

- Cognitive behavioural therapy (CBT) versus minimal or no treatment for depression in patients receiving disability benefits
- 8 RCTs: Beck Depression Inventory
- Median missing participant data rate = 21% (range 0 to 41%)

Ebrahim et al. PLoS One. 2012;7(11):e50202

		СВТ			ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean		Total			Total	Weight	IV, Random, 95% Cl	IV, Random, 95% CI
1.1.1 Complete case									
DeGraaf 2009	17.87	10.72	75	19.69	9.62	81	2.7%	-1.82 [-5.03, 1.39]	
Dozois 2009		10.29	17		10.35	20	1.3%	-4.15 [-10.82, 2.52]	
Faramarzi 2007	7.7	4.8	29	19.7	8.4	30	2.6%	-12.00 [-15.48, -8.52]	
Hollon 1992	6.8	9.5	16	10.5	9.5	32	1.6%	-3.70 [-9.40, 2.00]	
Miranda 2003	13.3	7.34	90	14.47	7.3	89	3.3%	-1.17 [-3.31, 0.97]	-+
Misri 2004	7	8.27	19	5.25	4.98	16	2.1%	1.75 [-2.70, 6.20]	
Naeem 2011	16.8	8.1	17	28.5	8.7	17	1.6%	-11.70 [-17.35, -6.05]	
Rahman 2008	5.25	7	418	10.15	8.63	400	3.7%	-4.90 [-5.98, -3.82]	~
Subtotal (95% CI)	5.25		681	10.10	0.03	685	19.0%	-4.56 [-7.35, -1.76]	•
Heterogeneity: Tau <sup>2</sup> =	11.93	Chi <sup>2</sup> –		df – 7 (	P < 0.0		-		•
Test for overall effect:				ui – 7 (	0.0	0001),			
			,						
1.1.2 Strategy 1									
DeGraaf 2009 (1)	18.05	10.56	83	19.69	9.52	92	2.8%	-1.64 [-4.63, 1.35]	+
Dozois 2009 (1)	9.88	10.29	18	13.8	10.44	20	1.4%	-3.92 [-10.52, 2.68]	
Faramarzi 2007 (1)	11.41	6.22	42	19.7	8.48	43	2.7%	-8.29 [-11.45, -5.13]	
Hollon 1992 (1)	8.13	9.22	25	10.5	9.15	57	2.2%	-2.37 [-6.69, 1.95]	
Miranda 2003 (1)	13.3	7.32	90	14.47	7.28	89	3.3%	-1.17 [-3.31, 0.97]	-+
Misri 2004 (1)	6.83	8.29	21	5.25	7.07	32	2.2%	1.58 [-2.73, 5.89]	_ <b>_</b>
Naeem 2011 (1)	18.56	8.16	20	28.5	8.68	34	2.2%		
			469			401	2.0%	-9.94 [-14.56, -5.32]	
Rahman 2008 (1) Subtotal (95% CI)	5.78	7.2	469 768	10.15	8.63	768	3.7% 20.3%	-4.37 [-5.44, -3.30]	<b>▲</b>
Subtotal (95% Cl)	6 6 7 . 6	-h:2 -		E_ 7/2	- 0.00			-3.69 [-5.86, -1.51]	▼
Heterogeneity: Tau <sup>2</sup> =					< 0.00	01); F	= 77%		
Test for overall effect:	2 = 3.3	53 (P = 1	0.0009	,					
1.1.3 Strategy 2									
DeGraaf 2009 (2)	17 87	10.56	83	17.96	9.52	92	2.8%	-0.09 [-3.08, 2.90]	
Dozois 2009 (2)		10.29	18		10.44	20	1.4%	-3.69 [-10.29, 2.91]	
	10.85								
Faramarzi 2007 (2)		6.22	42	15.33	8.48	43	2.7%	-4.48 [-7.64, -1.32]	
Hollon 1992 (2)	10.79	9.22	25	8.2	9.15	57	2.2%	2.59 [-1.73, 6.91]	
Miranda 2003 (2)	13.3	7.32	90	14.47	7.28	89	3.3%	-1.17 [-3.31, 0.97]	<b>-T</b>
Misri 2004 (2)	8.04	8.29	21	5.25	7.07	32	2.2%	2.79 [-1.52, 7.10]	
Naeem 2011 (2)	16.96	8.16	20	16.88	8.68	34	2.0%	0.08 [-4.54, 4.70]	
Rahman 2008 (2)	6.62	7.2	469	10.14	8.63	401	3.7%	-3.52 [-4.59, -2.45]	-
Subtotal (95% CI)			768			768	20.3%	-1.20 [-3.06, 0.66]	•
Heterogeneity: Tau <sup>2</sup> =			-	f = 7 (P	= 0.00	3); I <sup>z</sup> =	67%		
Test for overall effect:	Z = 1.2	27 (P = 1)	0.21)						
1.1.4 Strategy 3									
				1 - 00			0.000		
DeGraaf 2009 (3)		10.56		17.96	9.52	92	2.8%	0.93 [-2.06, 3.92]	
Dozois 2009 (3)		10.29	18		10.44	20	1.4%	-3.10 [-9.70, 3.50]	
Faramarzi 2007 (3)	14.14	6.22	42	15.33	8.48	43	2.7%	-1.19 [-4.35, 1.97]	-+
Hollon 1992 (3)	14.61	9.22	25	8.2	9.15	57	2.2%	6.41 [2.09, 10.73]	—
Miranda 2003 (3)	13.3	7.32	90	14.47	7.28	89	3.3%	-1.17 [-3.31, 0.97]	-+
Misri 2004 (3)	9.05	8.29	21	5.25	7.07	32	2.2%	3.80 [-0.51, 8.11]	<b>├</b> ──
Naeem 2011 (3)	18.56	8.16	20	16.88	8.68	34	2.0%	1.68 [-2.94, 6.30]	- <b> -</b>
Rahman 2008 (3)	7.78	7.2	469	10.14	8.63	401	3.7%	-2.36 [-3.43, -1.29]	-
Subtotal (95% CI)			768			768	20.3%	0.36 [-1.65, 2.37]	▲
Heterogeneity: Tau <sup>2</sup> =	5.23: C	2 hi² = 2		f = 7 (P	= 0.00				Ť
Test for overall effect:									
1.1.5 Strategy 4		-							
	10.00	10 - 0		17.00	0		0.00	0.021.200.200	
DeGraaf 2009 (4)		10.56	83	17.96	9.52	92	2.8%	0.93 [-2.06, 3.92]	
Dozois 2009 (4)		10.29	18	13.8		20	1.4%	-3.10 [-9.70, 3.50]	
Faramarzi 2007 (4)	14.14	6.22	42	15.33	8.48	43	2.7%	-1.19 [-4.35, 1.97]	-+
Hollon 1992 (4)	14.61	9.22	25	8.2	9.15	57	2.2%	6.41 [2.09, 10.73]	
Miranda 2003 (4)	13.3	7.32	90	14.47	7.28	89	3.3%	-1.17 [-3.31, 0.97]	-+
Misri 2004 (4)	9.05	8.29	21	5.25	7.07	32	2.2%	3.80 [-0.51, 8.11]	<u>├</u>
Naeem 2011 (4)	18.56	8.16		16.88	8.68	34	2.0%	1.68 [-2.94, 6.30]	- <b> </b>
Rahman 2008 (4)	7.78	7.2	469	10.14	8.63	401	3.7%	-2.36 [-3.43, -1.29]	
Subtotal (95% CI)			768		2.05	768	20.3%	0.36 [-1.65, 2.37]	★
Heterogeneity: Tau <sup>2</sup> =	5.23; 0	chi <sup>2</sup> = 2		f = 7 (P	= 0.00				T
Test for overall effect						.,			
									-20 -10 0 10
									Favours CBT Favours control

tudy or Subgroup	C	CBT		-	ontrol				Differenc		Mean Difference
	Mean	SD	Total	Mean	SD	Total	Weight	IV, Ra	ndom, 95	5% CI	IV, Random, 95% Cl
<b>.1.1 Complete case</b> a	analysis										
eGraaf 2009	17.87 1	10.72	75	19.69	9.62	81	2.7%	-1.82	2 [-5.03,	1.39]	
ozois 2009	9.65 1	10.29	17	13.8	10.35	20	1.3%	-4.15	[-10.82,	2.52]	<del>_</del>
aramarzi 2007	7.7	4.8	29	19.7	8.4	30	2.6%	-12.00 [-	-15.48, -	8.52]	
ollon 1992	6.8	9.5	16	10.5	9.5	32	1.6%	-3.70	) [-9.40,	2.00]	
iranda 2003	13.3	7.34	90	14.47	7.3		3.3%		7 [-3.31,	-	
isri 2004	7	8.27	19	5.25	4.98	16	2.1%		5 [-2.70,		
aeem 2011	16.8	8.1	17		8.7			-11.70 [			
ahman 2008	5.25	7	418		8.63	400	3.7%		[-5.98, -		
ubtotal (95% CI)			681			685	1 <b>9.0%</b>		[-7.35, -:		◆
eterogeneity: Tau <sup>2</sup> =	11.93: C	hi² =	44.20.	df = 7 (	P < 0.0	0001):	<sup>2</sup> = 84%				-
est for overall effect:	-					,, .					
Naeem 2		10.30	0.10	20 28.3	0.90	34 2.0	78 -9.94 -	14.30, -3.32]			
Rahman	2008 (1)	5.78		469 10.15	8.63	401 3.7	7% -4.37	[-5.44, -3.30]		-	
	l <b>(95% CI)</b> eneity: Tau <sup>2</sup> =	6.51: 0		768 88. df = 7 (I		<b>768 20.3</b> ): $I^2 = 77\%$	-3.69	-5.86, -1.51]		-	
	overall effect:					,, ,,,					
1.1.3 Str	ratery 2										
DeGraaf		17.87	10.56	83 17.96	9.52	92 2.8	-0.09	[-3.08, 2.90]			
Dozois 2	2009 (2)	10.11	10.29	18 13.8	10.44	20 1.4	4% -3.69	-10.29, 2.91]			
	zi 2007 (2)	10.85		42 15.33		43 2.7		[-7.64, -1.32]			
Hollon 19 Miranda 2		10.79	9.22	25 8.2 90 14.47		57 2.2 89 3.3		[–1.7 <b>3, 6.9</b> 1] [–3.31, 0.97]			
Misri 200		8.04	8.29	21 5.25		32 2.2		[-1.52, 7.10]		+	
Naeem 2		16.96	8.16	20 16.88		34 2.0		[-4.54, 4.70]			-
Rahman	2008 (2)	6.62	7.2	469 10.14		401 3.7	7% -3.52	[-4.59, -2.45]		-	
	l (95% CI) eneity: Tau <sup>2</sup> =	4.10 0	$hi^2 = 21$	768 40. df = 7 (I		768 20.3 1 <sup>2</sup> = 67%	5% -1.20	[-3.06, 0.66]			
	overall effect:				0.000),	0.70					
1146-	rategy 3										
1.1.4 Str.	-	18.89	10.56	83 17.96	9.52	92 2.8	3% 0.93	[-2.06, 3.92]			-
1.1.4 Stra DeGraaf 2	2009 (3)										
DeGraaf 2 Dozois 20	2009 (3)	10.7	10.29	18 13.8		20 1.4		[-9.70, 3.50]			
DeGraaf 2 Dozois 2 Faramarz	2009 (3) zi 2007 (3)	10.7 14.14	10.29 6.22	42 15.33	8.48	43 2.7	7% -1.19	[-4.35, 1.97]		·+_	
DeGraaf 3 Dozois 20 Faramarz Hollon 19	2009 (3) zi 2007 (3) 992 (3)	10.7 14.14 14.61	10.29 6.22 9.22	42 15.33 25 8.2	8.48 9.15	43 2.7 57 2.2	7% -1.19 2% 6.41	[-4.35, 1.97] [2.09, 10.73]			
DeGraaf 2 Dozois 2 Faramarz	2009 (3) zi 2007 (3) 992 (3) 2003 (3)	10.7 14.14	10.29 6.22	42 15.33	8.48 9.15 7.28	43 2.7	7% -1.19 2% 6.41 3% -1.17	[-4.35, 1.97]		-+	 
DeGraaf 3 Dozois 24 Faramarz Hollon 19 Miranda 3 Misri 200 Naeem 24	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 2011 (3)	10.7 14.14 14.61 13.3 9.05 18.56	10.29 6.22 9.22 7.32 8.29 8.16	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88	8.48 9.15 7.28 7.07 8.68	43       2.7         57       2.2         89       3.3         32       2.2         34       2.0	7% -1.19 2% 6.41 3% -1.17 2% 3.80 0% 1.68	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30]		-+	
DeGraaf Dozois 2 Faramarz Hollon 19 Miranda Misri 200 Naeem 20 Rahman	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 2011 (3) 2008 (3)	10.7 14.14 14.61 13.3 9.05	10.29 6.22 9.22 7.32 8.29 8.16 7.2	42 15.33 25 8.2 90 14.47 21 5.25	8.48 9.15 7.28 7.07 8.68 8.63	43 2.7 57 2.2 89 3.3 32 2.2 34 2.0 401 3.7	7% -1.19 2% 6.41 3% -1.17 2% 3.80 0% 1.68 7% -2.36	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30] [-3.43, -1.29]			
DeGraaf 2 Dozois 2 Faramarz Hollon 19 Miranda 2 Misri 200 Naeem 2 Rahman 2 <b>Subtotal</b> Heteroge	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 2011 (3) 2008 (3) I (95% CI) eneity: Tau <sup>2</sup> =	10.7 14.14 14.61 13.3 9.05 18.56 7.78	10.29 6.22 9.22 7.32 8.29 8.16 7.2 hi2 = 25.2	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (f	8.48 9.15 7.28 7.07 8.68 8.63	43         2.7           57         2.2           89         3.3           32         2.2           34         2.0           401         3.7 <b>768 20</b> .3	7% -1.19 2% 6.41 3% -1.17 2% 3.80 0% 1.68 7% -2.36	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30]			
DeGraaf 3 Dozois 2 Faramarz Hollon 19 Miranda 3 Misri 200 Naeem 2 Rahman 3 <b>Subtotal</b> Heteroge Test for o	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 2011 (3) 2008 (3) 1 (95% Cl) eneity: Tau <sup>2</sup> = overall effect:	10.7 14.14 14.61 13.3 9.05 18.56 7.78	10.29 6.22 9.22 7.32 8.29 8.16 7.2 hi2 = 25.2	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (f	8.48 9.15 7.28 7.07 8.68 8.63	43         2.7           57         2.2           89         3.3           32         2.2           34         2.0           401         3.7 <b>768 20</b> .3	7% -1.19 2% 6.41 3% -1.17 2% 3.80 0% 1.68 7% -2.36	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30] [-3.43, -1.29]			
DeGraaf 2 Dozois 2 Faramarz Hollon 1 Miranda 2 Misri 200 Naeem 2 Rahman 2 <b>Subtotal</b> Heteroge Test for 0	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 2011 (3) 2008 (3) 1 (95% Cl) eneity: Tau <sup>2</sup> = overall effect: rategy 4	10.7 14.14 14.61 13.3 9.05 18.56 7.78 5.23; C Z = 0.3	10.29 6.22 9.22 7.32 8.29 8.16 7.2 $hi^2 = 25.15$ 5 (P = 0.7)	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (1 72)	8.48 9.15 7.28 7.07 8.68 8.63 9 = 0.0007	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	7% -1.19 2% 6.41 3% -1.17 2% 3.80 0% 1.68 7% -2.36 3% 0.36	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30] [-3.43, -1.29] [-1.65, 2.37]			
DeGraaf 2 Dozois 2 Faramarz Hollon 19 Miranda 2 Misri 200 Naeem 2 Rahman 2 <b>Subtota</b> l Heteroge Test for 0 <b>1.1.5 Str</b> DeGraaf 2	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 2011 (3) 2008 (3) 1 (95% Cl) eneity: Tau <sup>2</sup> = overall effect: rategy 4 2009 (4)	10.7 14.14 14.61 13.3 9.05 18.56 7.78 5.23; C Z = 0.3 18.89	10.29 6.22 9.22 7.32 8.29 8.16 7.2 $hi^2 = 25.15$ 5 (P = 0.7	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (1 72) 83 17.96	8.48 9.15 7.28 7.07 8.68 8.63 9 = 0.0007 9.52	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7% -1.19 2% 6.41 3% -1.17 2% 3.80 0% 1.68 7% -2.36 1% 0.36	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-3.31, 0.97] [-2.51, 8.11] [-2.94, 6.30] [-3.43, -1.29] [-1.65, 2.37]	I		 
DeGraaf Dozois 2 Faramarz Hollon 19 Miranda Misri 200 Naeem 20 Rahman Subtotal Heteroge Test for c 1.1.5 Str DeGraaf Dozois 2	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 2011 (3) 2008 (3) 1 (95% Cl) eneity: Tau <sup>2</sup> = overall effect: rategy 4 2009 (4) 2009 (4)	10.7 14.14 14.61 13.3 9.05 18.56 7.78 5.23; C Z = 0.3 18.89 10.7	10.29 6.22 9.22 7.32 8.29 8.16 7.2 $hi^2 = 25.15$ 5 (P = 0.7) 10.56 10.29	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (f 72) 83 17.96 18 13.8	8.48 9.15 7.28 7.07 8.68 8.63 9 = 0.0007 9.52 10.44	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7% -1.19 2% 6.41 3% -1.17 2% 3.80 3% 1.62 7% -2.36 3% 0.36 8% 0.93 4% -3.10	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30] [-3.43, -1.29] [-1.65, 2.37] [-1.65, 2.37]	-		  
DeGraaf Dozois 2 Faramarz Hollon 19 Miranda Misri 200 Naeem 20 Rahman Subtotal Heteroge Test for c 1.1.5 Str DeGraaf Dozois 2	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 2011 (3) 2008 (3) 1 (95% C1) eneity: Tau <sup>2</sup> = overall effect: rategy 4 2009 (4) zi 2007 (4)	10.7 14.14 14.61 13.3 9.05 18.56 7.78 5.23; C Z = 0.3 18.89	10.29 6.22 9.22 7.32 8.29 8.16 7.2 $hi^2 = 25.25$ 5 (P = 0.22) 10.56 10.29 6.22	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (1 72) 83 17.96	8.48 9.15 7.28 7.07 8.68 8.63 9 = 0.0007 9.52 10.44 8.48	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7% -1.19 9% 6.41 3% -1.17 7% 3.80 9% 1.66 7% -2.36 9% 0.36 8% 0.93 4% -3.10 7% -1.19	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-3.51, 0.97] [-2.51, 8.11] [-2.94, 6.30] [-1.65, 2.37] [-1.65, 2.37] [-1.65, 2.37]	-		 
DeGraaf 3 Dozois 20 Faramarz Hollon 19 Miranda 3 Misri 200 Naeem 20 Rahman 3 <b>Subtotal</b> Heteroge Test for c <b>1.1.5 Str</b> DeGraaf 3 Dozois 2 Faramarz Hollon 19	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 2011 (3) 2008 (3) 1 (95% C1) eneity: Tau <sup>2</sup> = overall effect: rategy 4 2009 (4) zi 2007 (4)	10.7 14.14 14.61 13.3 9.05 18.56 7.78 5.23; C Z = 0.3 18.89 10.7 14.14 14.61	10.29 6.22 9.22 7.32 8.29 8.16 7.2 $hi^2 = 25.25$ 5 (P = 0.22) 10.56 10.29 6.22	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 469 10.14 768 37, df = 7 (1 72) 83 17.96 18 13.8 42 15.33	8.48 9.15 7.28 7.07 8.68 8.63 P = 0.0007 9.52 10.44 8.48 9.15	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7% -1.19 9% 6.41 3% -1.17 7% 3.80 0% 1.68 7% -2.36 8% 0.99 4% -3.10 7% -1.19 2% 6.41	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30] [-3.43, -1.29] [-1.65, 2.37] [-1.65, 2.37]	-	· 	
DeGraaf Dozois 2 Faramarz Hollon 19 Miranda Misri 200 Naeem 20 Rahman Subtotal Heteroge Test for c 1.1.5 Str DeGraaf Dozois 2 Faramarz Hollon 19 Miranda Misri 200	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 1011 (3) 2008 (3) 1 (95% Cl) eneity: Tau <sup>2</sup> = overall effect: rategy 4 2009 (4) 2009 (4) zi 2007 (4) .992 (4) 2003 (4) 04 (4)	10.7 14.14 14.61 13.3 9.05 18.56 7.78 5.23; C Z = 0.3 18.89 10.7 14.14 14.61 13.3 9.05	$10.29 6.22 9.22 7.32 8.29 8.16 7.2 hi^2 = 25.5(P = 0.7)10.5610.296.229.227.328.29$	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (f 72) 83 17.96 18 13.8 42 15.33 25 8.2 90 14.47 21 5.25	8.48 9.15 7.28 7.07 8.68 8.63 9 = 0.0007 9.52 10.44 8.48 9.15 7.28 7.07	43 2.7 57 2.2 89 3.3 32 2.2 34 2.0 401 3.7 <b>768 20.3</b> ); 1 <sup>2</sup> = 72% 92 2.4 20 1.4 43 2.7 57 2.7 89 3.3 32 2.2	7% -1.19 9% 6.41 3% -1.17 3% 1.66 7% -2.36 9% 0.36 9% 0.36 9% 0.36 9% 0.36 9% 0.41 3% -1.12 2% 3.80	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-3.31, 0.97] [-3.43, -1.29] [-1.65, 2.37] [-1.65, 2.37] [-1.65, 2.37] [-9.70, 3.50] [-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97]		· 	
DeGraaf 3 Dozois 2 Faramarz Hollon 19 Miranda 3 Misri 200 Naeem 21 Rahman 3 Subtotal Heteroge Test for c 1.1.5 Str Dozois 2 Faramarz Hollon 19 Miranda 3 Misri 200 Naeem 2	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 2011 (3) 2008 (3) 1 (95% Cl) eneity: Tau <sup>2</sup> = overall effect: rategy 4 2009 (4) zi 2007 (4) 992 (4) 2003 (4) 04 (4) 2011 (4)	10.7 14.14 14.61 13.3 9.05 18.56 7.78 5.23; C Z = 0.3 18.89 10.7 14.14 14.61 13.3 9.05 18.56	10.29 6.22 9.22 7.32 8.29 8.16 7.2 hi2 = 25.5 5 (P = 0.7 10.56 10.29 6.22 9.22 7.32 8.29 8.16	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (1 72) 83 17.96 18 13.8 42 15.33 25 8.2 90 14.47 21 5.25 20 16.88	8.48 9.15 7.28 7.07 8.68 8.63 9 = 0.0007 9.52 10.44 8.48 9.15 7.28 7.07 8.68	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7%         -1.19           8%         6.41           3%         -1.17           7%         3.80           9%         1.66           9%         -2.36           9%         0.36           8%         0.93           4%         -3.10           7%         -3.12           2%         6.41           3%         -1.15           2%         6.42           3%         -1.12           2%         6.42           3%         -1.12           2%         6.42           3%         -1.12           2%         6.42           3%         -1.15           2%         3.88           0%         1.66	<pre>[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-3.31, 0.97] [-2.51, 8.11] [-2.94, 6.30] [-1.65, 2.37] [-1.65, 2.37] [-1.65, 2.37] [-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11]</pre>	-		
DeGraaf 3 Dozois 2 Faramarz Hollon 19 Miranda 3 Misri 200 Naeem 2 Rahman 3 <b>Subtotal</b> Heteroge Test for 0 <b>1.1.5 Str.</b> DeGraaf 3 Dozois 2 Faramarz Hollon 1 Miranda 3 Misri 200 Naeem 2 Rahman 3	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 1011 (3) 2008 (3) 1 (95% Cl) eneity: Tau <sup>2</sup> = overall effect: rategy 4 2009 (4) 2009 (4) zi 2007 (4) .992 (4) 2003 (4) 04 (4)	10.7 14.14 14.61 13.3 9.05 18.56 7.78 5.23; C Z = 0.3 18.89 10.7 14.14 14.61 13.3 9.05	10.29 6.22 9.22 7.32 8.29 8.16 7.2 h12 = 25.5 5 (P = 0.5 10.56 10.29 6.22 9.22 7.32 8.29 8.26 10.56 10.29 6.22 9.22 7.32 8.29 8.16 7.2 10.56 10.29 8.29 8.29 8.20 7.2 10.56 10.29 8.29 8.29 8.20 7.2 10.56 10.29 8.29 8.29 8.20 7.2 10.56 10.29 8.29 8.29 8.20 7.2 10.56 10.29 8.29 8.29 8.20 7.2 10.56 10.29 8.29 8.29 8.29 8.29 8.20 10.56 7.2 7.32 7.32 7.32 10.56 7.32 7.32 7.32 7.32 8.29 8.2	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (f 72) 83 17.96 18 13.8 42 15.33 25 8.2 90 14.47 21 5.25	8.48 9.15 7.28 7.07 8.68 8.63 9 = 0.0007 9.52 10.44 8.48 9.15 7.28 7.07 8.68 8.63	43 2.7 57 2.2 89 3.3 32 2.2 34 2.0 401 3.7 <b>768 20.3</b> ); 1 <sup>2</sup> = 72% 92 2.4 20 1.4 43 2.7 57 2.7 89 3.3 32 2.2	7%         -1.19           2%         6.41           3%         -1.17           7%         3.82           0%         1.68           7%         -2.36           8%         0.93           4%         -3.10           7%         -1.12           2%         6.41           3%         -1.12           2%         6.41           3%         -1.12           2%         6.41           3%         -1.12           2%         6.42           3%         -1.12           2%         6.41           3%         -1.12           2%         3.80           0%         1.61           7%         -2.36	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-3.31, 0.97] [-3.43, -1.29] [-1.65, 2.37] [-1.65, 2.37] [-1.65, 2.37] [-9.70, 3.50] [-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97]	-		
DeGraaf 3 Dozois 2 Faramarz Hollon 19 Miranda 3 Misri 200 Naeem 2 Rahman 3 <b>Subtotal</b> Heteroge Test for 0 <b>1.1.5 str</b> Dozois 2 Faramarz Hollon 19 Miranda 3 Subtotal Misri 200 Naeem 2 Rahman 3 <b>Subtotal</b> Heteroge	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 1011 (3) 2008 (3) 1 (95% CI) eneity: Tau <sup>2</sup> = overall effect: rategy 4 2009 (4) zi 2007 (4) 2009 (4) 2003 (4) 04 (4) 2011 (4) 2008 (4) 1 (95% CI) eneity: Tau <sup>2</sup> =	10.7 14.14 14.61 13.3 9.05 18.56 7.78 5.23; C Z = 0.3 18.89 10.7 14.14 14.61 13.3 9.05 18.56 7.78	10.29 6.22 9.22 7.32 8.29 8.16 7.2 10.56 10.29 6.22 9.22 7.32 8.29 8.16 7.2 hi2 = 25. 10.56 10.29 6.22 9.22 7.32 8.29 8.16 7.2 hi2 = 25. 10.56 10.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 hi2 = 25. 7.2 8.29 8.29 8.16 7.2	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (1 72) 83 17.96 18 13.8 42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (1	8.48 9.15 7.28 7.07 8.68 8.63 9 = 0.0007 9.52 10.44 8.48 9.15 7.28 7.07 8.68 8.63	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7%         -1.19           2%         6.41           3%         -1.17           7%         3.82           0%         1.68           7%         -2.36           8%         0.93           4%         -3.10           7%         -1.12           2%         6.41           3%         -1.12           2%         6.41           3%         -1.12           2%         6.41           3%         -1.12           2%         6.42           3%         -1.12           2%         6.41           3%         -1.12           2%         3.80           0%         1.61           7%         -2.36	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30] [-3.43, -1.29] [-1.65, 2.37] [-1.65, 2.37] [-1.65, 2.37] [-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30] [-3.43, -1.29]	-	· 	
DeGraaf 3 Dozois 2 Faramarz Hollon 19 Miranda 3 Misri 200 Naeem 2 Rahman 3 <b>Subtotal</b> Heteroge Test for 0 <b>1.1.5 str</b> Dozois 2 Faramarz Hollon 19 Miranda 3 Subtotal Misri 200 Naeem 2 Rahman 3 <b>Subtotal</b> Heteroge	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 2011 (3) 2008 (3) 1 (95% CI) eneity: Tau <sup>2</sup> = overall effect: rategy 4 2009 (4) 2009 (4) 2009 (4) 2009 (4) 2003 (4) 04 (4) 2011 (4) 2008 (4) 1 (95% CI)	10.7 14.14 14.61 13.3 9.05 18.56 7.78 5.23; C Z = 0.3 18.89 10.7 14.14 14.61 13.3 9.05 18.56 7.78	10.29 6.22 9.22 7.32 8.29 8.16 7.2 10.56 10.29 6.22 9.22 7.32 8.29 8.16 7.2 hi2 = 25. 10.56 10.29 6.22 9.22 7.32 8.29 8.16 7.2 hi2 = 25. 10.56 10.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 hi2 = 25. 7.2 8.29 8.29 8.16 7.2	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (1 72) 83 17.96 18 13.8 42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (1	8.48 9.15 7.28 7.07 8.68 8.63 9 = 0.0007 9.52 10.44 8.48 9.15 7.28 7.07 8.68 8.63	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7%         -1.19           2%         6.41           3%         -1.17           7%         3.82           0%         1.68           7%         -2.36           8%         0.93           4%         -3.10           7%         -1.12           2%         6.41           3%         -1.12           2%         6.41           3%         -1.12           2%         6.41           3%         -1.12           2%         6.42           3%         -1.12           2%         6.42           3%         -1.12           2%         3.80           0%         1.62           0%         1.62           0%         1.62           0%         -2.36	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30] [-3.43, -1.29] [-1.65, 2.37] [-1.65, 2.37] [-1.65, 2.37] [-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30] [-3.43, -1.29]	-	· 	
DeGraaf 3 Dozois 2 Faramarz Hollon 19 Miranda 3 Misri 200 Naeem 2 Rahman 3 <b>Subtotal</b> Heteroge Test for 0 <b>1.1.5 str</b> Dozois 2 Faramarz Hollon 19 Miranda 3 Subtotal Misri 200 Naeem 2 Rahman 3 <b>Subtotal</b> Heteroge	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 1011 (3) 2008 (3) 1 (95% CI) eneity: Tau <sup>2</sup> = overall effect: rategy 4 2009 (4) zi 2007 (4) 2009 (4) 2003 (4) 04 (4) 2011 (4) 2008 (4) 1 (95% CI) eneity: Tau <sup>2</sup> =	10.7 14.14 14.61 13.3 9.05 18.56 7.78 5.23; C Z = 0.3 18.89 10.7 14.14 14.61 13.3 9.05 18.56 7.78	10.29 6.22 9.22 7.32 8.29 8.16 7.2 10.56 10.29 6.22 9.22 7.32 8.29 8.16 7.2 hi2 = 25. 10.56 10.29 6.22 9.22 7.32 8.29 8.16 7.2 hi2 = 25. 10.56 10.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 hi2 = 25. 7.2 8.29 8.29 8.16 7.2	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (1 72) 83 17.96 18 13.8 42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (1	8.48 9.15 7.28 7.07 8.68 8.63 9 = 0.0007 9.52 10.44 8.48 9.15 7.28 7.07 8.68 8.63	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7%         -1.19           2%         6.41           3%         -1.17           7%         3.82           0%         1.68           7%         -2.36           8%         0.93           4%         -3.10           7%         -1.12           2%         6.41           3%         -1.12           2%         6.41           3%         -1.12           2%         6.41           3%         -1.12           2%         6.42           3%         -1.12           2%         6.42           3%         -1.12           2%         3.80           0%         1.62           0%         1.62           0%         1.62           0%         -2.36	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30] [-3.43, -1.29] [-1.65, 2.37] [-1.65, 2.37] [-1.65, 2.37] [-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30] [-3.43, -1.29]	-	· 	
DeGraaf 3 Dozois 2 Faramarz Hollon 19 Miranda 3 Misri 200 Naeem 2 Rahman 3 <b>Subtotal</b> Heteroge Test for 0 <b>1.1.5 str</b> Dozois 2 Faramarz Hollon 19 Miranda 3 Subtotal Misri 200 Naeem 2 Rahman 3 <b>Subtotal</b> Heteroge	2009 (3) zi 2007 (3) 992 (3) 2003 (3) 04 (3) 1011 (3) 2008 (3) 1 (95% CI) eneity: Tau <sup>2</sup> = overall effect: rategy 4 2009 (4) zi 2007 (4) 2009 (4) 2003 (4) 04 (4) 2011 (4) 2008 (4) 1 (95% CI) eneity: Tau <sup>2</sup> =	10.7 14.14 14.61 13.3 9.05 18.56 7.78 5.23; C Z = 0.3 18.89 10.7 14.14 14.61 13.3 9.05 18.56 7.78	10.29 6.22 9.22 7.32 8.29 8.16 7.2 10.56 10.29 6.22 9.22 7.32 8.29 8.16 7.2 hi2 = 25. 10.56 10.29 6.22 9.22 7.32 8.29 8.16 7.2 hi2 = 25. 10.56 10.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 8.29 8.16 7.2 hi2 = 25. 7.2 8.29 8.29 8.16 7.2	42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (1 72) 83 17.96 18 13.8 42 15.33 25 8.2 90 14.47 21 5.25 20 16.88 469 10.14 768 37, df = 7 (1	8.48 9.15 7.28 7.07 8.68 8.63 9 = 0.0007 9.52 10.44 8.48 9.15 7.28 7.07 8.68 8.63	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7%         -1.19           2%         6.41           3%         -1.17           7%         3.82           0%         1.68           7%         -2.36           8%         0.93           4%         -3.10           7%         -1.12           2%         6.41           3%         -1.12           2%         6.41           3%         -1.12           2%         6.41           3%         -1.12           2%         6.42           3%         -1.12           2%         6.42           3%         -1.12           2%         3.80           0%         1.62           0%         1.62           0%         1.62           0%         -2.36	[-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30] [-3.43, -1.29] [-1.65, 2.37] [-1.65, 2.37] [-1.65, 2.37] [-4.35, 1.97] [2.09, 10.73] [-3.31, 0.97] [-0.51, 8.11] [-2.94, 6.30] [-3.43, -1.29]	-		

		СВТ	Control		Mean Difference	Mean Difference	
	or Subgroup Mean	n SD Total M		l Weight	IV, Random, 95% Cl	IV, Random, 95% Cl	
	omplete case analys		60 0.63 P	1 2 794			
DeGraa Dozois		7 10.72 75 19 5 10.29 17 1	.69 9.62 8 3.8 10.35 20		-1.82 [-5.03, 1.39] -4.15 [-10.82, 2.52]		
	rzi 2007 7.7		9.7 8.4 30		-12.00 [-15.48, -8.52]		
Hollon Mirand			0.5 9.5 32 .47 7.3 89		-3.70 [-9.40, 2.00] -1.17 [-3.31, 0.97]		
Misri 2			.25 4.98 10		1.75 [-2.70, 6.20]		
Naeem			8.5 8.7 1		-11.70 [-17.35, -6.05]		
Rahma Subtot	n 2008 5.25 al (95% CI)	5 7 418 10 681	.15 8.63 400 68		-4.90 [-5.98, -3.82] -4.56 [-7.35, -1.76]		
	geneity: $Tau^2 = 11.93$				-4.50 [-7.55, -1.76]	•	
Test fo	r overall effect: Z = 3	.20 (P = 0.001)					
1.1.2 Strategy 1							
DeGraaf 2009 (1)	18.05 10.56	5 83 19.0	9 9.52	92	2.8% -1.64	- [-4.63, 1.35]	-+
Dozois 2009 (1)	9.88 10.29	) 18 13	8 10.44	20	1.4% -3.92	[-10.52, 2.68]	
Faramarzi 2007 (1)	11.41 6.22			43	-	-11.45, -5.13]	
Hollon 1992 (1)	8.13 9.22			57		· [-6.69, 1.95] —	<u>_</u>
Miranda 2003 (1)	13.3 7.32			89		' [-3.31, 0.97]	<b> </b>
Misri 2004 (1)	6.83 8.29			32		[-2.73, 5.89]	_ <b>_</b>
Naeem 2011 (1)	18.56 8.16			34			
					-	-14.56, -5.32]	
Rahman 2008 (1) <b>Subtotal (95% CI)</b>	5.78 7.2	2 469 10.3 768	.5 8.63	401 <b>768</b> 2		[-5.44, -3.30] - - <b>5.86, -1.5</b> 1] -	
Heterogeneity: Tau <sup>2</sup> =	• 6.51: Chi <sup>2</sup> = 3	29.88. df = 7	(P < 0.000)	1): $ ^2 = 7$			
Test for overall effect				-,,			
					1111 [ 5151, 0151]		
Misri 2	004 (2) 8.04 2011 (2) 16.96				2.79 [-1.52, 7.10] 0.08 [-4.54, 4.70]		
	n 2008 (2) 6.62				-3.52 [-4.59, -2.45]	-	
	al (95% CI)	768	768		-1.20 [-3.06, 0.66]	◆	
	geneity: Tau <sup>2</sup> = 4.10; r overall effect: Z = 1		7 (P = 0.003); $I^2$	= 67%			
1145	trategy 3						
	÷.	9 10.56 83 17	.96 9.52 92	2 2.8%	0.93 [-2.06, 3.92]	<u> </u>	
	2009 (3) 10.7	7 10.29 18 1	3.8 10.44 20	0 1.4%	-3.10 [-9.70, 3.50]		
	rzi 2007 (3) 14.14 1992 (3) 14.61		.33 8.48 43 8.2 9.15 57		-1.19 [-4.35, 1.97] 6.41 [2.09, 10.73]		
	a 2003 (3) 13.3				-1.17 [-3.31, 0.97]	-+	
Misri 2	004 (3) 9.05	5 8.29 21 5	.25 7.07 32	2 2.2%	3.80 [-0.51, 8.11]	———	
	2011 (3) 18.56 1 2008 (3) 7.78		.88 8.68 34 .14 8.63 40		1.68 [-2.94, 6.30] -2.36 [-3.43, -1.29]	-	
	al (95% Cl)	768	768		0.36 [-1.65, 2.37]	•	
	geneity: Tau <sup>2</sup> = 5.23; r overall effect: Z = 0		7 (P = 0.0007); I <sup>2</sup>	2 = 72%			
1.1.5 \$	trategy 4					Ì	
			.96 9.52 9		0.93 [-2.06, 3.92]	+	
	2009 (4) 10.3 rzi 2007 (4) 14.14		3.8 10.44 20 .33 8.48 4		-3.10 [-9.70, 3.50] -1.19 [-4.35, 1.97]		
	1992 (4) 14.6		8.2 9.15 5		6.41 [2.09, 10.73]		
Mirand	a 2003 (4) 13.	3 7.32 90 14	.47 7.28 8	9 3.3%	-1.17 [-3.31, 0.97]	-+	
	004 (4) 9.0 2011 (4) 18.5				3.80 [-0.51, 8.11] 1.68 [-2.94, 6.30]		
	n 2008 (4) 7.78				-2.36 [-3.43, -1.29]	-	
Subtot	al (95% CI)	768	76	8 20.3%	0.36 [-1.65, 2.37]	<b>+</b>	
	geneity: Tau <sup>2</sup> = 5.23; r overall effect: Z = 0		$7 (P = 0.0007); I^{2}$	* = 72%			
		,					
						++	
						-20 -10 0 10 20 Favours CBT Favours control	
						avours Con Favours Control	

			вт	Control			Mean Diffe		Mean Difference	
	Study or Subgroup 1.1.1 Complete case		SD Tota	l Mean SD	Total	Weight	IV, Random	1, 95% CI	IV, Random, 95% Cl	
	DeGraaf 2009	17.87		5 19.69 9.62		2.7%	-1.82 [-5.			
	Dozois 2009 Faramarzi 2007	9.65 1 7.7	10.29 13 4.8 29			1.3% 2.6%	-4.15 [-10. -12.00 [-15.4			
	Hollon 1992 Missada 2002	6.8	9.5 10			1.6%	-3.70 [-9.			
	Miranda 2003 Misri 2004	13.3 7	7.34 90 8.27 19			3.3% 2.1%	-1.17 [-3. 1.75 [-2.			
	Naeem 2011 Rahman 2008	16.8 5.25	8.1 1 7 41			1.6% 3.7%	-11.70 [-17.3 -4.90 [-5.9			
	Subtotal (95% CI)		68:	1	685	1 <b>9.0%</b>	-4.56 [-7.3		•	
	Heterogeneity: Tau <sup>2</sup> Test for overall effec				00001);	l <sup>2</sup> = 84%				
	1.1.2 Strategy 1									
	DeGraaf 2009 (1) Dozois 2009 (1)	18.05 1 9.88 1		3 19.69 9.52 8 13.8 10.44		2.8% 1.4%	-1.64 [-4. -3.92 [-10.			
	Faramarzi 2007 (1)	11.41	6.22 42	2 19.7 8.48	8 43	2.7%	-8.29 [-11.4	5, -5.13]		
	Hollon 1992 (1)	8.13	9.22 2	5 10.5 9.15	57	2.2%	-2.37 [-6.	69, 1.95]		
1.1.3 Strategy	2									
DeGraaf 2009 (	2) 17.87	10.56	83 3	L7.96 9.	52	92	2.8%	-0.09	[-3.08, 2.90]	_ <b>_</b>
Dozois 2009 (2	) 10.11	10.29	18	13.8 10.4	44	20	1.4%	-3.69 [	–10.29, 2.91] —	
Faramarzi 2007	7 (2) 10.85	6.22	42	L5.33 8.4	48	43	2.7%	-4.48 [	[-7.64, -1.32]	
Hollon 1992 (2)	) 10.79	9.22	25	8.2 9.3	15	57	2.2%		[-1.73, 6.91]	+
Miranda 2003 (		7.32		L4.47 7.2		89	3.3%		[-3.31, 0.97]	
Misri 2004 (2)	8.04	8.29	21	5.25 7.0		32	2.2%		[-1.52, 7.10]	
Naeem 2011 (2	•	8.16		L6.88 8.0		34	2.0%		[-4.54, 4.70]	
Rahman 2008 ( Subtotal (95%		7.2	469 1 768	LO.14 8.0		401 7 <b>68</b>	3.7% 20.3%	-	[-4.59, -2.45] [- <b>3.06, 0.66]</b>	
Heterogeneity:	•	hi <sup>2</sup> — 71		— 7 (P — 0				-1.20	[-3.00, 0.00]	
Test for overall	-		-	- / (r - 0.	005),	1 – 02	70			
			,							
	1.1.4 Strategy 3									
	DeGraaf 2009 (3) Dozois 2009 (3)	18.89 1 10.7 1		3 17.96 9.52 8 13.8 10.44		2.8% 1.4%	0.93 [-2. -3.10 [-9.			
	Faramarzi 2007 (3)	14.14	6.22 42	2 15.33 8.48	43	2.7%	-1.19 [-4.	35, 1.97]	-+	
	Hollon 1992 (3) Miranda 2003 (3)	14.61 13.3	9.22 25 7.32 90	5 8.2 9.15 0 14.47 7.28		2.2% 3.3%	6.41 [2.0 -1.17 [-3.			
	Misri 2004 (3)	9.05	8.29 2	1 5.25 7.07	32	2.2%	3.80 [-0.	51, 8.11]	<u> </u>	
	Naeem 2011 (3) Rahman 2008 (3)	18.56 7.78	8.16 20 7.2 46	0 16.88 8.68 9 10.14 8.63		2.0% 3.7%	1.68 [-2. -2.36 [-3.4		-	
	Subtotal (95% CI)		768	8	768	20.3%	0.36 [-1.		+	
	Heterogeneity: Tau <sup>2</sup> Test for overall effec			df = 7 (P = 0.00)	007); l* =	= 72%				
	1.1.5 Strategy 4 DeGraaf 2009 (4)	18.89	10 56 9	3 17.96 9.52	2 92	2.8%	0.021.2	06, 3.92]		
	Dozois 2009 (4)	10.7					-3.10 [-9.			
	Faramarzi 2007 (4)	14.14	6.22 4	2 15.33 8.48	3 43	2.7%	-1.19 [-4.	35, 1.97]	-+	
	Hollon 1992 (4) Miranda 2003 (4)	14.61 13.3	9.22 2. 7.32 9	5 8.2 9.15 0 14.47 7.28		2.2% 3.3%	6.41 [2.0 -1.17 [-3.		-+	
	Misri 2004 (4) Naeem 2011 (4)	9.05 18.56	8.29 2 8.16 2			2.2% 2.0%	3.80 [-0. 1.68 [-2.			
	Rahman 2008 (4)	7.78	7.2 46	9 10.14 8.63	401	3.7%	-2.36 [-3.4	3, -1.29]	~	
	Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup>	- 5 23· Ch	76 1 <sup>2</sup> - 25 37		768		0.36 [-1.	65, 2.37]	<b>•</b>	
	Test for overall effec			a. – 7 (r = 0.0		- 72.70				

-20 -10 0 10 20 Favours CBT Favours control

s	tudy or Subgroup		CBT SD Tot	Ci tal Mean	ontrol SD Tot	al Weight	Mean Diff	erence m, 95% Cl	Mean Differ IV, Random, 9		
1	.1.1 Complete cas				55 100	a. neight	11, 100100				
	eGraaf 2009	17.87		75 19.69		31 2.7%		5.03, 1.39]			
	ozois 2009 aramarzi 2007	9.65 7.7		17 13.8 29 19.7		20 1.3% 30 2.6%		0.82, 2.52] .48, -8.52]			
н	Iollon 1992	6.8	9.5	16 10.5	9.5 3	32 1.6%	-3.70 [-9	9.40, 2.00]			
	Airanda 2003 Aisri 2004	13.3 7		90 14.47 19 5.25		39 3.3% 6 2.1%		3.31, 0.97] 2.70, 6.20]		_	
	laeem 2011	16.8		17 28.5		1.6%					
	ahman 2008 Jubtotal (95% CI)	5.25		18 10.15 81	8.63 40 68			.98, -3.82]	-		
н	leterogeneity: Tau <sup>2</sup> est for overall effe		Chi <sup>2</sup> = 44.2	20, df = 7 (f			-4.50 [-7.	33, -1.70]			
	.1.2 Strategy 1	ct: z = 3.2t	) (P = 0.00	1)							
	eGraaf 2009 (1)	18.05	10.56	83 19.69	9.52 9	2.8%	-1.64 [-4	4.63, 1.35]	-+		
	ozois 2009 (1)	9.88		18 13.8		20 1.4%		0.52, 2.68]			
	aramarzi 2007 (1) Iollon 1992 (1)	11.41 8.13		42 19.7 25 10.5		13 2.7% 57 2.2%		.45, -5.13] 6.69, 1.95]			
м	liranda 2003 (1)	13.3	7.32	90 14.47	7.28 8	39 3.3%	-1.17 [-	3.31, 0.97]	-+		
	Aisri 2004 (1) Iaeem 2011 (1)	6.83 18.56		21 5.25 20 28.5		32 2.2% 34 2.0%		2.73, 5.89] .56. –5.321		_	
R	ahman 2008 (1)	5.78	7.2 4	69 10.15	8.63 40	3.7%	-4.37 [-5	.44, -3.30]	-		
	ubtotal (95% CI)	C 51. CL	-	68 	76		-3.69 [-5.	86, -1.51]	◆		
	leterogeneity: Tau <sup>2</sup> est for overall effe				< 0.0001);	= 77%					
1.1.4 Strategy 3	10.00	10 50		1 - 00			2 00/				
DeGraaf 2009 (3)			83		9.52	92	2.8%		3 [-2.06, 3.92]	-	
Dozois 2009 (3)		10.29	18		10.44	20	1.4%		) [-9.70, 3.50]		
Faramarzi 2007 (3		6.22	42		8.48	43	2.7%		9 [-4.35, 1.97]		
Hollon 1992 (3)	14.61	9.22	25	8.2	9.15	57	2.2%		l [2.09, 10.73]		
Miranda 2003 (3)	13.3	7.32	90	14.47	7.28	89	3.3%	-1.17	7 [–3.31, 0.97]	] –	
Misri 2004 (3)	9.05	8.29	21	5.25	7.07	32	2.2%	3.80	) <mark>[-0.51, 8.</mark> 11]	]	<u> </u>
Naeem 2011 (3)	18.56	8.16	20	16.88	8.68	34	2.0%	1.68	8 [-2.94, 6.30]	] -	
Rahman 2008 (3)	7.78	7.2	469	10.14	8.63	401	3.7%	-2.36	[-3.43, -1.29]	] ¬	-
Subtotal (95% CI)			768			768	20.3%	0.36	[-1.65, 2.37]	]	<b>•</b>
Heterogeneity: Ta				f = 7 (P	= 0.00	07); I <sup>2</sup> =	72%				
Test for overall ef	fect: Z = 0.3	5 (P = 0	0.72)								
1.1.5 Strategy 4											
DeGraaf 2009 (4)		10.56		17.96	9.52	92	2.8%		3 [-2.06, 3.92]		- <b>-</b>
Dozois 2009 (4)	10.7	10.29	18	13.8	10.44	20	1.4%		) [–9.70, 3.50]		
Faramarzi 2007 (4	4) 14.14	6.22	42	15.33	8.48	43	2.7%	-1.19	€ [−4.35, 1.97]	] –	
Hollon 1992 (4)	14.61	9.22	25	8.2	9.15	57	2.2%	6.41	l [2.09, 10.73]	]	—
Miranda 2003 (4)	13.3	7.32	90	14.47	7.28	89	3.3%	-1.17	7 [–3.31, 0.97]	] -	+ I
Misri 2004 (4)	9.05	8.29	21	5.25	7.07	32	2.2%	3.80	) [-0.51, 8.11]	]	<u>+</u>
Naeem 2011 (4)	18.56	8.16	20	16.88	8.68	34	2.0%		3 [-2.94, 6.30]		-+ I
Rahman 2008 (4)	7.78	7.2	469	10.14	8.63	401	3.7%	-2.36	[-3.43, -1.29]	] -	-
Subtotal (95% CI)	)		768			768	20.3%		[-1.65, 2.37]		◆
Heterogeneity: Ta				f = 7 (P	= 0.00	07); l <sup>2</sup> =	- 72%				
Test for overall ef	fect: Z = 0.3	5 (P = 0	0.72)								

-20 -10 0

# **Application of approach: 2**

- Finasteride therapy versus placebo on improvement in scalp hair for men with androgenetic alopecia
- 8 RCTs
- Median missing participant data rate = 14% (range 0% to 24%)

Mella et al. Arch Dermatol. 2010 Oct;146(10):1141-50.

	Fin	asterid	e	P	lacebo			Mean Difference		Mean Difference
Study or Subgroup	Mean		Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	Year	IV, Random, 95% Cl
1.2.1 Complete case	analysi	s								
Roberts 1999	7.48	11.07	212	-1.89	11.05	212	3.6%	9.37 [7.26, 11.48]	1998	
Leyden 1999	3.55	9.15	166	-1.96	16.16	160	2.9%	5.51 [2.65, 8.37]		
Van Neste 2000	5.05	10.4	106	-4.06	10.45	106	3.0%	9.11 [6.30, 11.92]		
FMPHLSG 2002	7.99	9.55	779	-2.33	6.5	774	4.6%	10.32 [9.51, 11.13]		-
Price 2002	11.76	9.8	31	6.48	20.7	30	0.8%	5.28 [-2.89, 13.45]		
Stough 2002	9.81	6.93	8	-2.5	9.37	9	0.8%	12.31 [4.53, 20.09]		
Leavitt 2005	8.16	22.3	30	-3.3	16.2	24	0.5%	11.46 [1.18, 21.74]		
Olsen 2006	8.38	9.42	66	-3.51	6.43	50	2.9%	11.89 [9.00, 14.78]		
Subtotal (95% CI)			1398			1365	19.1%	9.42 [7.95, 10.90]		
Heterogeneity: Tau <sup>2</sup> =	= 1.78: 0	$bi^2 = 1$		$\mathbf{f} = 7 (\mathbf{P})$	= 0.05	$1^2 = 5$	50%			
Test for overall effect										
1.2.2 Strategy 1										
Roberts 1999	5.23	10.99	279	-1.89	10.98	279	3.8%	7.12 [5.30, 8.94]	1998	<b></b> -
Leyden 1999	2.84	9.36	190		15.57	184	3.1%	4.80 [2.19, 7.41]		<del></del>
Van Neste 2000			128		10.5	128	3.2%	7.56 [4.99, 10.13]		
Price 2002	10.87	9.95	37		19.51	36	1.0%	4.39 [-2.74, 11.52]		
Stough 2002	6.55	9.73	905	-2.33	7.24	900	4.6%	8.88 [8.09, 9.67]		
FMPHLSG 2002	9.81	6.06	8	-2.5	9.16	9	0.9%	12.31 [5.00, 19.62]		
Leavitt 2005		21.47	34	-3.3	15.66	28	0.6%	10.10 [0.84, 19.36]		
Olsen 2006	7.22	9.54	73	-3.51	7.05	57	2.9%	10.73 [7.88, 13.58]		
Subtotal (95% CI)	1.22	3.34	1654	-3.31	7.03	1621	20.2%	7.95 [6.50, 9.41]	2000	
Heterogeneity: Tau <sup>2</sup> =	- 1 01.0	"hi <sup>2</sup> — 1		f - 7 /P	- 0 03					
Test for overall effect					- 0.03	, ·				
L.2.3 Strategy 2										
Roberts 1999	6.54	10.99	279	0.12	10.98	279	3.8%	6.42 [4.60, 8.24]	1998	· · · ·
Leyden 1999	3.55	9.36		-0.84		184	3.1%	4.39 [1.78, 7.00]		
Van Neste 2000		10.46	128		10.5	128	3.2%	7.07 [4.50, 9.64]		
Price 2002	9.81	6.06	120	-2.5	9.16	9	0.9%	12.31 [5.00, 19.62]		
Stough 2002	10.38	9.95	37		19.51	36	1.0%	3.90 [-3.23, 11.03]		
	7.37	9.95		-1.09	7.24	900				
FMPHLSG 2002							4.6%	8.46 [7.67, 9.25]		
Leavitt 2005 Olsen 2006		21.47	34			28 57	0.6%	9.50 [0.24, 18.76]		
Subtotal (95% CI)	7.91	9.54	73 1654	-2.26	7.05	1621	2.9% 20.2%	10.17 [7.32, 13.02] 7.46 [5.96, 8.96]	2006	
Heterogeneity: Tau <sup>2</sup> =	= 2.10: 0	$chi^2 = 1$		lf = 7 (P	= 0.02			1110 [3130, 6130]		
Test for overall effect										
1.2.4 Strategy 3										
Roberts 1999	4.71	10.99	279	0.12	10.98	279	3.8%	4.59 [2.77, 6.41]	1998	
eyden 1999	2.58	9.36		-0.84	15.57	184	3.1%	3.42 [0.81, 6.03]		———
Van Neste 2000				-2.27	10.5	128	3.2%	5.77 [3.20, 8.34]		
Price 2002	9.11	9.95	37		19.51	36	1.0%	2.63 [-4.50, 9.76]		
MPHLSG 2002	9.81	6.06	8	-2.5	9.16	9	0.9%	12.31 [5.00, 19.62]		
Stough 2002	6.31	9.73	905	-1.09	7.24	900	4.6%	7.40 [6.61, 8.19]	2002	-
Leavitt 2005		21.47	34			28	0.6%	8.60 [-0.66, 17.86]		
Olsen 2006	7.16	9.54	73	-1.89	7.05	28 57	2.9%	9.42 [6.57, 12.27]	2005	
Subtotal (95% CI)	1.10	9.54	1654	-2.20	1.05	1621	20.2%	6.32 [4.61, 8.03]	2000	
Heterogeneity: Tau <sup>2</sup> =			1.78, d		9 = 0.00					
Test for overall effect	2 = 7.2	-+ (+ < )	0.0000	1)						
1.2.5 Strategy 4										
Roberts 1999		10.99	279		10.98	279	3.8%	3.32 [1.50, 5.14]		
Leyden 1999	2.58	9.36		-0.15		184	3.1%	2.73 [0.12, 5.34]		<u> </u>
Van Neste 2000	3.5	10.46	128		10.5	128	3.2%	4.87 [2.30, 7.44]		
FMPHLSG 2002	9.11	9.95	37	7.39		36	1.0%	1.72 [-5.41, 8.85]		— <del>—</del>
Price 2002	9.81	6.06	8	-2.5	9.16	9	0.9%	12.31 [5.00, 19.62]	2002	
Stough 2002	6.31	9.73	905	-0.35	7.24	900	4.6%	6.66 [5.87, 7.45]	2002	-
eavitt 2005	6.71	21.47	34		15.66	28	0.6%	7.84 [-1.42, 17.10]		+
Olsen 2006	7.16	9.54	73	-1.6	7.05	57	2.9%	8.76 [5.91, 11.61]		
Subtotal (95% CI)			1654			1621	20.2%	5.52 [3.66, 7.38]		
Heterogeneity: Tau <sup>2</sup> =	= 3.97: 0	$chi^2 = 2$	5.73. d	$\mathbf{f} = 7 (\mathbf{P})$	= 0.00	06): I <sup>2</sup>	= 73%			
Test for overall effect										
ere of or a full effect				-7						

-20 -10 0 10 20 Favours Placebo Favours Finasteride

## Discussion

#### **CBT review**:

- Effect diminished, lost significance as strategies became more stringent
- Rate down for risk of bias

#### **Finasteride review:**

- Even most stringent: effect important, statistical sig remains
- Do not need to rate down for risk of bias

## Conclusions

- Approach involving progressively more stringent assumptions about results in participants with missing data
- Provides guidance on rigorously determining the extent to which missing data increases risk of bias in systematic reviews
- To the extent that results change with the sensitivity analyses, risk of bias as a result of missing data increases



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#### ORIGINAL ARTICLE

#### Addressing continuous data for participants excluded from trial analysis: a guide for systematic reviewers

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