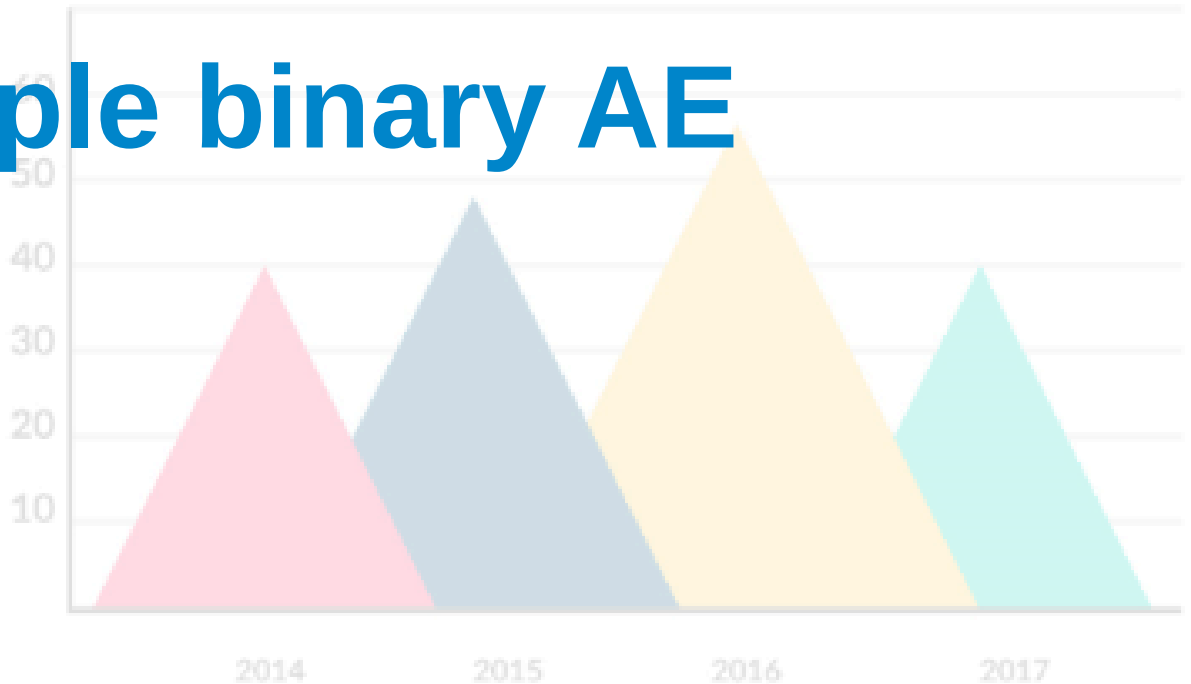
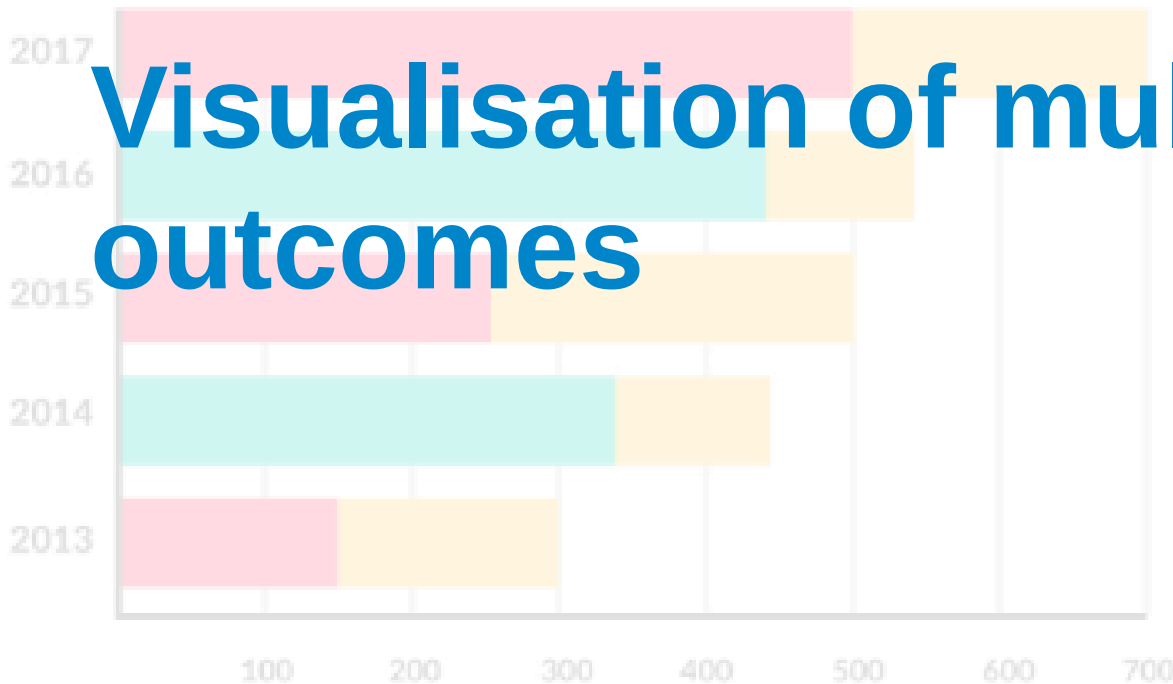
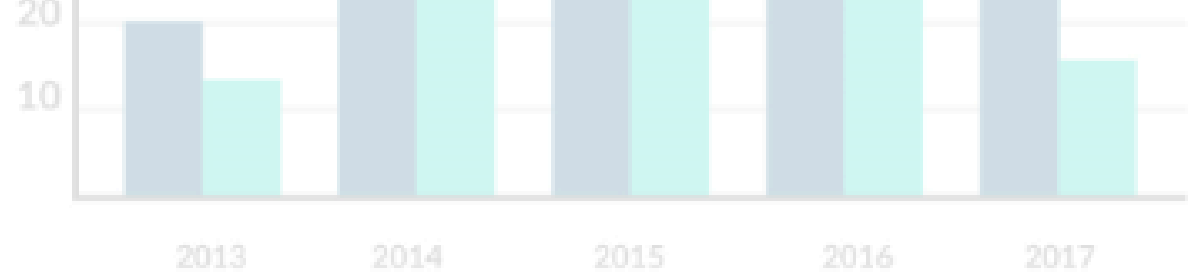




Visualisation of multiple binary AE outcomes

Rachel Phillips, Victoria Cornelius & Anca Chis Ster

FUNDED BY
NIHR | National Institute for Health Research

DISCLAIMER: This work is funded by the National Institute for Health Research (NIHR) (grant reference number DRF-2017-10-131). The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health & Social Care.

Example AE dataset

	usubjid	arm	armn	ae_pt	aebodsys	severity	serious	severn	sern
1	2001	Placebo	2	Anemia	Blood and lymphatic	Severe	Yes	Severe	Yes
2	2001	Placebo	2	Cold	Respiratory	Mild	No	Mild	No
3	2001	Placebo	2	Proteinuria	Renal and urinary	Mild	No	Mild	No
4	2001	Placebo	2	Anemia	Blood and lymphatic	Moderate	No	Moderate	No
5	2001	Placebo	2	Cold	Respiratory	Mild	No	Mild	No
6	2001	Placebo	2	Vomiting	Gastrointestinal	Mild	No	Mild	No
7	2001	Placebo	2	Leukocytosis	Blood and lymphatic	Moderate	Yes	Moderate	Yes
8	2001	Placebo	2	Anemia	Blood and lymphatic	Mild	No	Mild	No
9	2001	Placebo	2	Nausea	Gastrointestinal	Mild	No	Mild	No
10	2001	Placebo	2	Anxiety	Psychiatric	Mild	No	Mild	No
11	2001	Placebo	2	Nausea	Gastrointestinal	Mild	No	Mild	No
12	2002	Intervention	1	Toothache	Other	Mild	No	Mild	No
13	2002	Intervention	1	Other	Blood and lymphatic	Mild	No	Mild	No
14	2002	Intervention	1	Accident	Other	Severe	Yes	Severe	Yes
15	2004	Placebo	2	Dry skin	Dermatological	Mild	No	Mild	No
16	2004	Placebo	2	Cystitis	Renal and urinary	Mild	No	Mild	No
17	2004	Placebo	2	Vomiting	Gastrointestinal	Mild	No	Mild	No
18	2004	Placebo	2	Acid reflux	Gastrointestinal	Mild	No	Mild	No
19	2004	Placebo	2	Photosensitivity	Dermatological	Mild	No	Mild	No
20	2004	Placebo	2	Vomiting	Gastrointestinal	Mild	No	Mild	No
21	2004	Placebo	2	Vomiting	Gastrointestinal	Mild	No	Mild	No

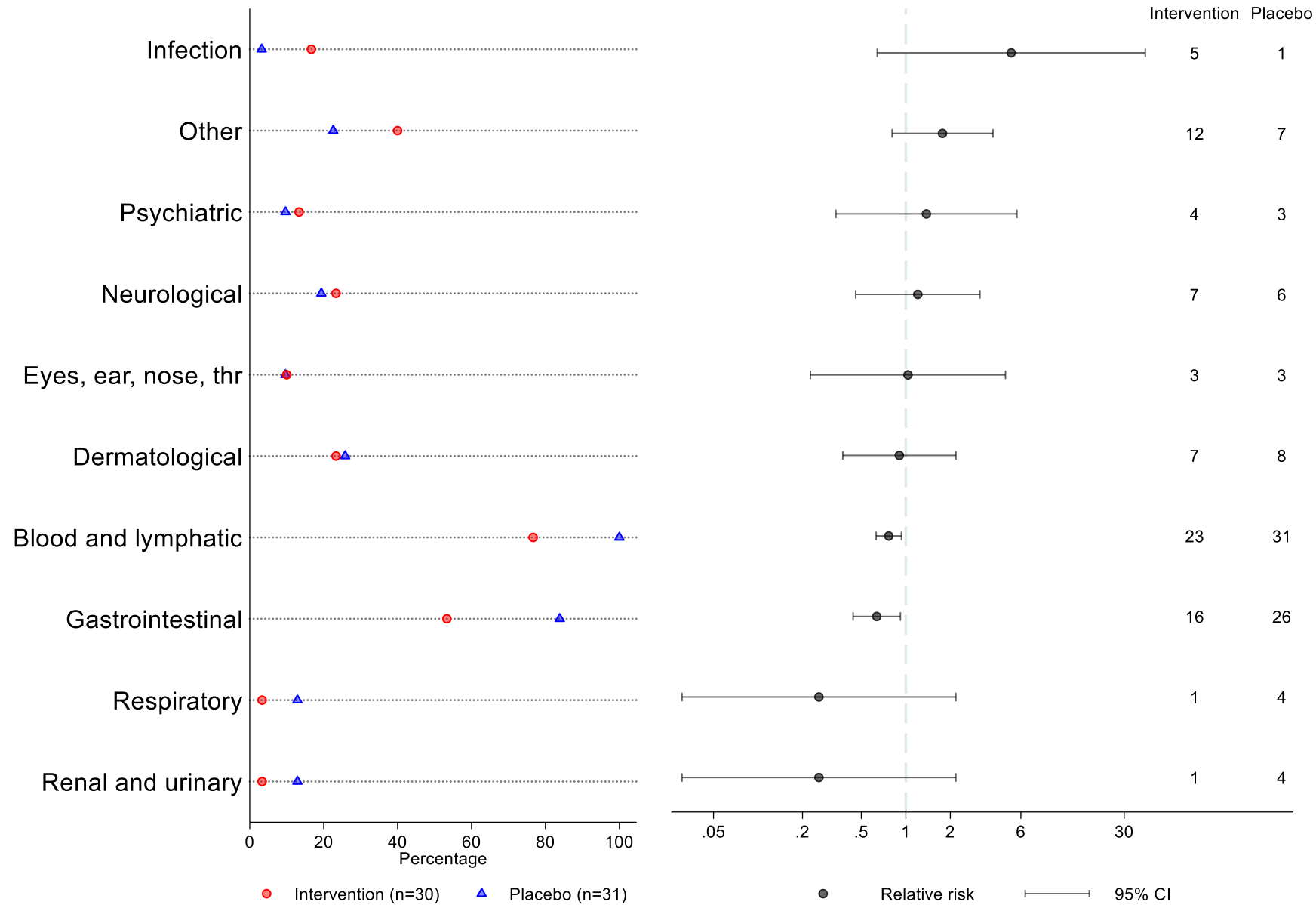
Example AE table 1

	Intervention (N=30)		Placebo (N=31)	
AE (Body System)	Number with at least one AE		Number with at least one AE	
	n	%	n	%
Blood and lymphatic	23	77	31	100
Dermatological	7	23	8	26
Eyes, ear, nose, throat	3	10	3	10
Gastrointestinal	16	53	26	84
Infection	5	17	1	3
Neurological	7	23	6	19
Other	12	40	7	23
Psychiatric	4	13	3	10
Renal and urinary	1	3	4	13
Respiratory	1	3	4	13

Questions for consideration

- What do you think the merits and weakness are for each of the plots I show?
 - What situations (final report, DMC report, publications) would you be likely to use these plots in?
 - Which do you prefer to communicate the data I've shown you?
-

Dot Plot



Volcano Plot

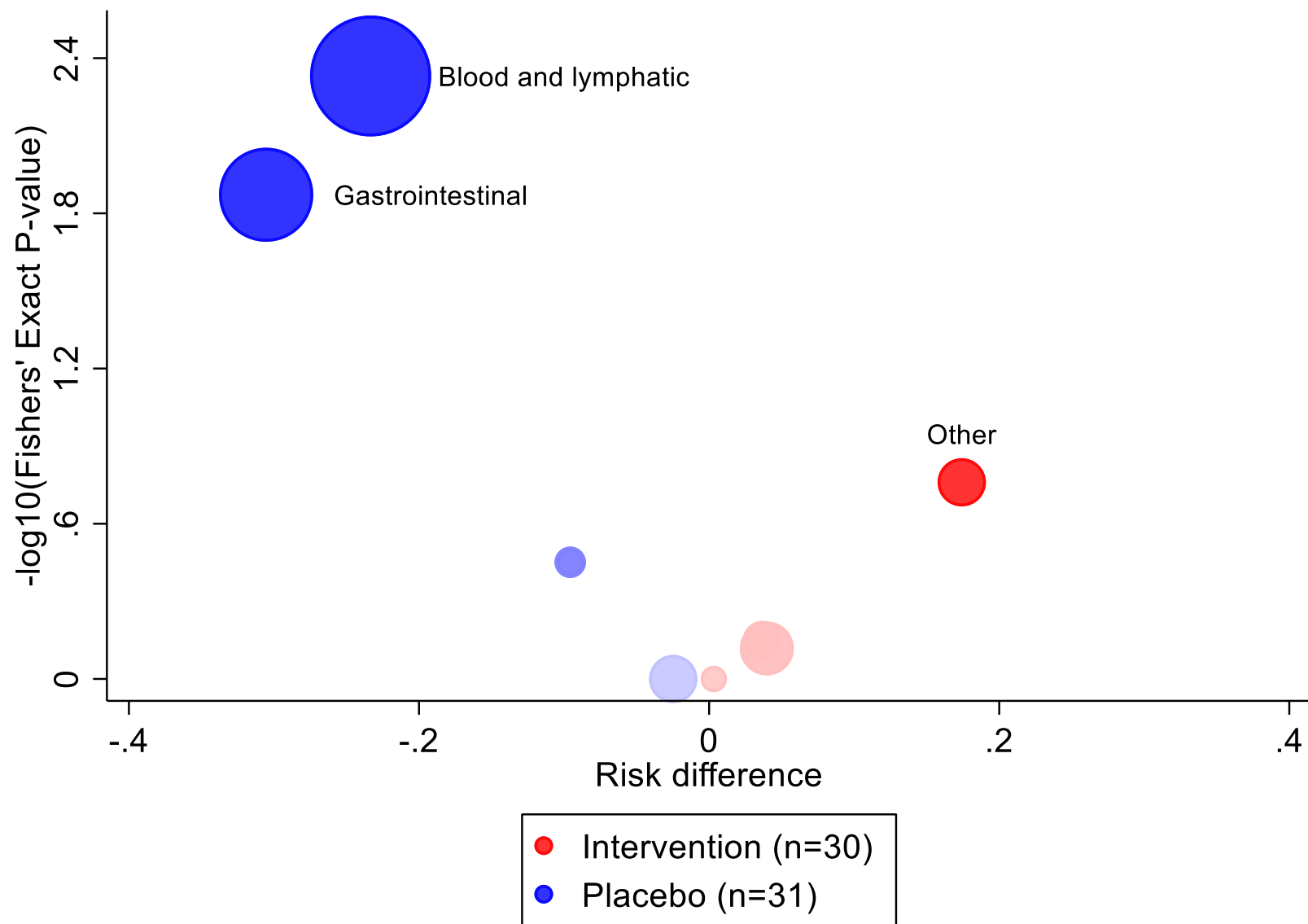
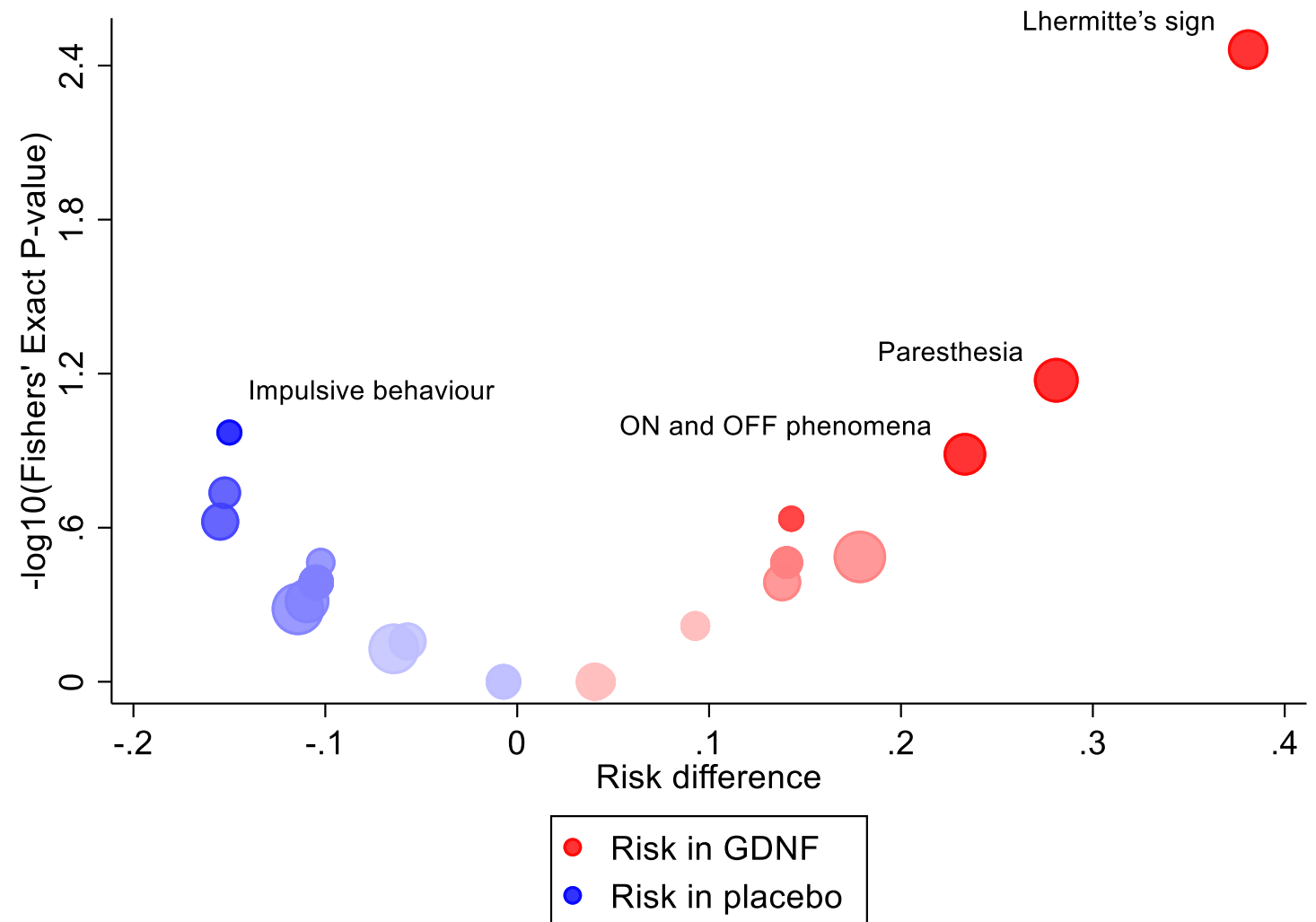


Table 3 Treatment-emergent adverse events experienced by at least three patients of a treatment group (overall population from both study stages)

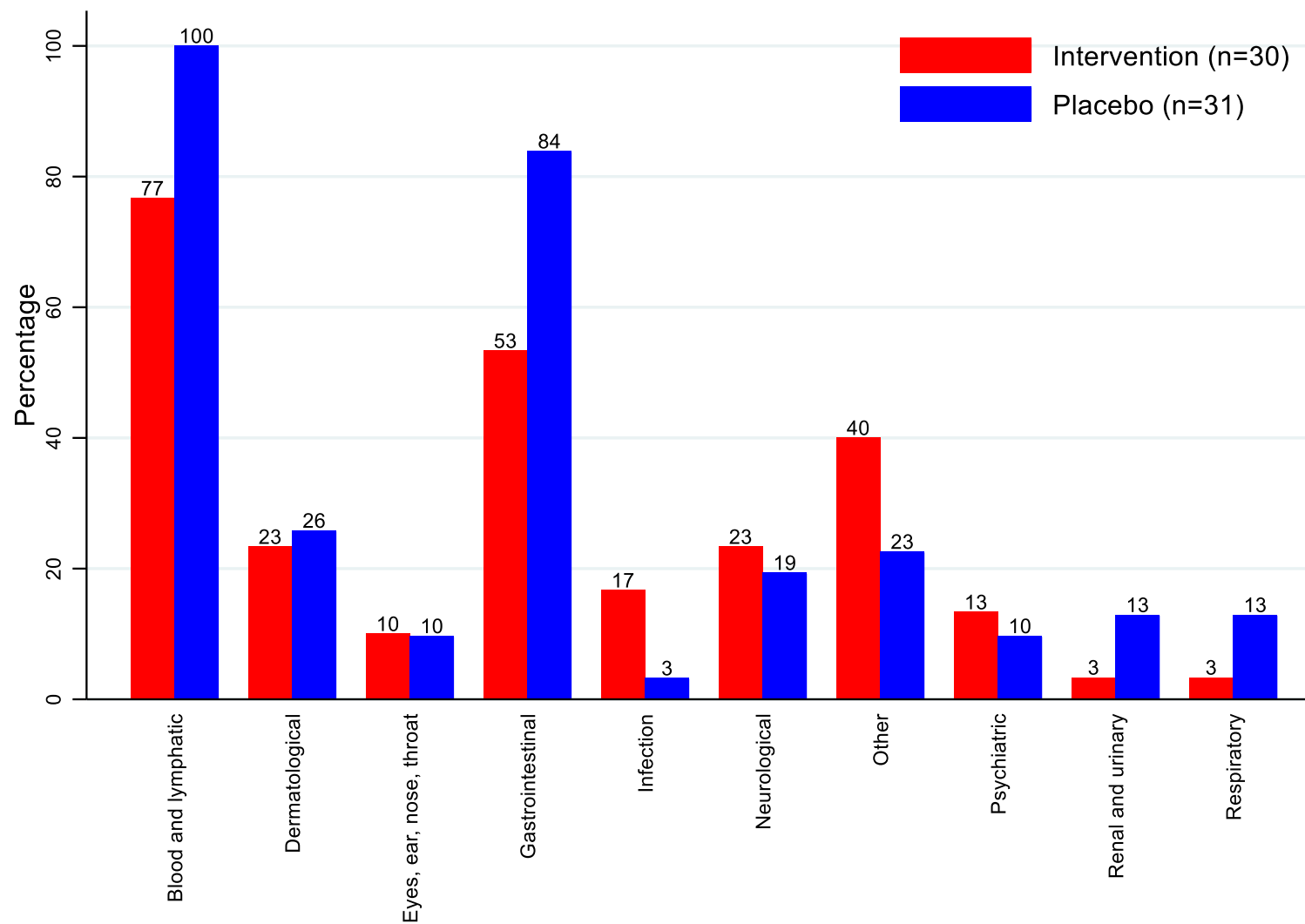
Adverse event	GDNF (n = 21) n (%)	Placebo (n = 20) n (%)
Patients with at least one TEAE	21 (100)	20 (100)
Dyskinesia	9 (43)	5 (25)
Paresthesia	8 (38)	2 (10)
Lhermitte's sign	8 (38)	0
ON and OFF phenomena	7 (33)	2 (10)
Nasopharyngitis	6 (29)	8 (40)
Headache	6 (29)	7 (35)
Application site infection	5 (24)	2 (10)
Fall	4 (19)	6 (30)
Freezing phenomenon	4 (19)	3 (15)
Muscle spasms	4 (19)	3 (15)
Constipation	4 (19)	1 (5)
Dizziness	4 (19)	1 (5)
Pain in extremity	4 (19)	1 (5)
Cough	3 (14)	4 (20)
Application site erythema	3 (14)	3 (15)
Pre-existing condition improved	3 (14)	3 (15)
Fatigue	3 (14)	2 (10)
Urinary tract infection	3 (14)	2 (10)
Lethargy	3 (14)	1 (5)
Nausea	3 (14)	1 (5)
PD-related symptoms	3 (14)	1 (5)
Diarrhea	3 (14)	0
Diplopia	3 (14)	0
Back pain	2 (10)	5 (25)
Drug effect decreased	2 (10)	4 (20)
Head injury	2 (10)	4 (20)
Joint injury	2 (10)	4 (20)
Application site pain	1 (5)	4 (20)
Insomnia	1 (5)	3 (15)
Impulsive behaviour	0	3 (15)

Volcano Plot: example 2



1. Whone A, Luz M, Boca M, et al. Randomized trial of intermittent intraputamenal glial cell line-derived neurotrophic factor in Parkinson's disease. *Brain* 2019; 142: 512-525..
2. Zink RC, Wolfinger RD and Mann G. Summarizing the incidence of adverse events using volcano plots and time intervals. *Clinical Trials* 2013; 10: 398-406.

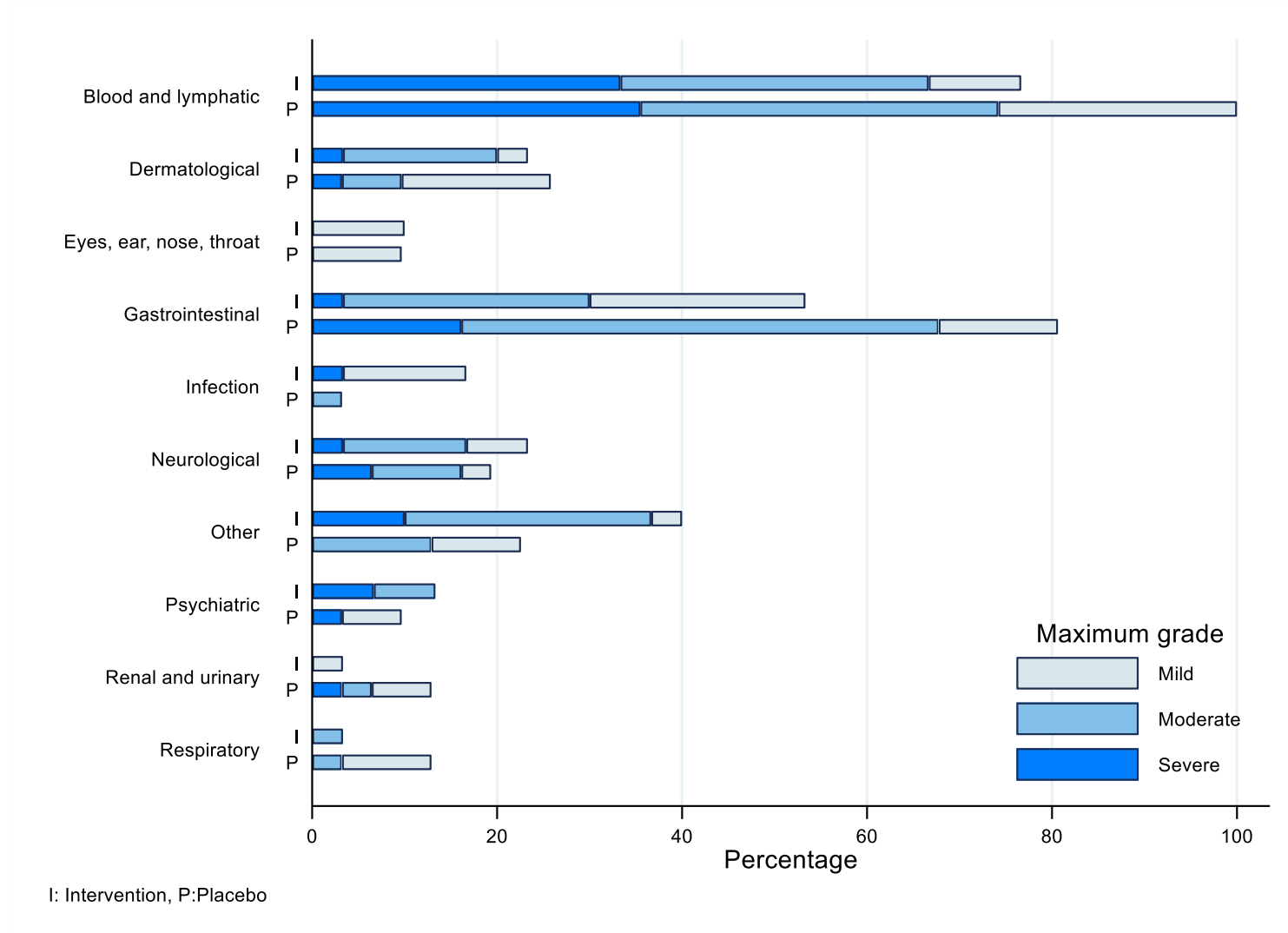
Bar chart



Example AE table 2

	Intervention (N=30)										Placebo (N=31)									
AE (body system)	Number with at least one AE		Number with at least one serious		Maximum grade						Number with at least one AE		Number with at least one serious		Maximum grade					
					Mild		Moderate		Severe						Mild		Moderate		Severe	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Blood and lymphatic	23	77	5	17	3	10	10	33	10	33	31	100	6	19	8	26	12	39	11	35
Dermatological	7	23	0	0	1	3	5	17	1	3	8	26	0	0	5	16	2	6	1	3
Eyes, ear, nose, throat	3	10	0	0	3	10	0	0	0	0	3	10	0	0	3	10	0	0	0	0
Gastrointestinal	16	53	0	0	6	20	8	27	1	3	26	84	0	0	5	16	16	52	5	16
Infection	5	17	1	3	4	13	0	0	1	3	1	3	0	0	0	0	1	3	0	0
Neurological	7	23	1	3	2	7	4	13	1	3	6	19	0	0	1	3	3	10	2	6
Other	12	40	5	17	1	3	8	27	3	10	7	23	2	6	3	10	4	13	0	0
Psychiatric	4	13	1	3	0	0	2	7	2	7	3	10	1	3	2	6	0	0	1	3
Renal and urinary	1	3	0	0	1	3	0	0	0	0	4	13	0	0	2	6	1	3	1	3
Respiratory	1	3	0	0	0	0	1	3	0	0	4	13	0	0	3	10	1	3	0	0

Horizontal stacked bar chart of maximum severity



Heat Map

