

Appendix 1

Search strategy for PubMed

#1

("nivolumab"[MeSH] OR nivolumab*[tw] OR "opdivo"[tiab] OR "ono-4538"[tiab] OR "ono 4538"[tiab] OR "ono4538" [tiab] OR "mdx-1106"[tiab] OR "mdx 1106"[tiab] OR "mdx1106"[tiab] OR "bms-936558"[tiab] OR "bms 936558"[tiab] OR "bms936558"[tiab] OR "pembrolizumab" [Supplementary Concept] OR pembrolizumab*[tw] OR "sch-900475"[tiab] OR "keytruda" [tiab] OR "mk-3475" OR lambrolizumab*[tiab] OR "atezolizumab"[Supplementary Concept] OR atezolizumab*[tw] OR "mpdl3280a"[tiab] OR "mpdl-3280a"[tiab] OR "tecentriq"[tiab] OR "rg7446"[tiab] OR "rg-7446"[tiab] OR "durvalumab" [Supplementary Concept] OR durvalumab*[tw] OR "medi4736"[tiab] OR "medi-4736"[tiab] OR "imfinzi"[tiab] OR "ipilimumab"[MeSH] OR ipilimumab*[tw] OR "yervoy"[tiab] OR "mdx 010"[tiab] OR "mdx010"[tiab] OR "mdx-010"[tiab] OR "mdx-ctla-4"[tiab] OR "mdx ctla 4"[tiab] OR "tremelimumab"[Supplementary Concept] OR tremelimumab*[tw] OR "ticilimumab"[tiab] OR "cp 675"[tiab] OR "cp675 cpd"[tiab] OR "cp-675"[tiab] OR "cp-675,206"[tiab] OR "cp-675206"[tiab] OR "cp675206"[tiab] OR "cp 675206"[tiab] OR "avelumab"[Supplementary Concept] OR avelumab*[tw] OR "bavencio"[tiab] OR "msb-0010682"[tiab] OR "msb0010682"[tiab] OR "msb0010718c"[tiab] OR "msb-0010718c"[tiab] OR "cemiplimab"[Supplementary Concept] OR cemiplimab*[tw] OR "cemiplimab-rlwlc"[tiab] OR "regn2810"[tiab] OR "libtayo"[tw] OR "toripalimab"[Supplementary Concept] OR toripalimab*[tw] OR "js001"[tiab] OR "camrelizumab"[Supplementary Concept] OR camrelizumab*[tw] OR "shr-1210"[tiab] OR "shr 1210"[tiab] OR "sintilimab"[Supplementary Concept] OR sintilimab*[tw] OR "ibi 308"[tiab] OR "ibi308"[tiab] OR "ibi-308"[tiab] OR "tislelizumab"[Supplementary Concept] OR tislelizumab*[tw] OR "bgb-a317"[tiab] OR immune checkpoint inhibitor*[tiab] OR immune check-point inhibitor*[tiab])

#2

("adrenal insufficiency"[MeSH] OR "adrenal insufficiencies"[tiab] OR "hypoadrenalism"[tiab] OR "adrenal gland hypofunction"[tiab] OR "hypofunction, adrenal gland"[tiab] OR "hypopituitarism"[tiab] OR "panhypopituitarism"[tiab] OR "hypophysitis"[tiab] OR "hypophysitides"[tiab] OR "adrenitis"[tiab] OR "autoimmunity"[tiab] OR isolated ACTH syndrome*[tiab] OR isolated adrenocorticotrophic hormone (ACTH) syndrome*[tiab] OR (("adrenal"[tiab] OR "adrenocortical"[tiab] OR "pituitary"[tiab] OR "pituitary gland"[tiab]) AND (insufficienc*[tiab] OR disturbanc*[tiab] OR disorder*[tiab] OR abnormal*[tiab] OR dysfunction*[tiab] OR hypofunction*[tiab] OR toxicit*[tiab] OR complication*[tiab] OR deficienc*[tiab] OR failure*[tiab] OR side-effect*[tiab] OR sideeffect*[tiab] OR side effect*[tiab] OR adverse event*[tiab] OR adverse effect*[tiab]))))

#3

#1 AND #2

Appendix 2

Search strategy for Embase

#1

('nivolumab'/exp OR 'nivolumab*' OR 'opdivo':ti,ab OR 'ono-4538':ti,ab OR 'ono 4538':ti,ab OR 'ono4538':ti,ab OR 'mdx-1106':ti,ab OR 'mdx 1106':ti,ab OR 'mdx1106':ti,ab OR 'bms-936558':ti,ab OR 'bms 936558':ti,ab OR 'bms936558':ti,ab OR 'pembrolizumab'/exp OR 'pembrolizumab*' OR 'sch-900475':ti,ab OR 'sch 900475':ti,ab OR 'sch900475':ti,ab OR 'keytruda':ti,ab OR 'mk-3475':ti,ab OR 'mk3475':ti,ab OR 'mk 3475':ti,ab OR 'lambrolizumab*':ti,ab OR 'atezolizumab'/exp OR atezolizumab* OR 'mpdl3280a':ti,ab OR 'mpdl-3280a':ti,ab OR 'tecentriq' OR 'rg7446':ti,ab OR 'rg-7446':ti,ab OR 'durvalumab'/exp OR durvalumab* OR 'medi4736':ti,ab OR 'medi-4736':ti,ab OR 'imfinzi':ti,ab OR 'ipilimumab'/exp OR 'ipilimumab*' OR 'yervoy':ti,ab OR 'mdx 010':ti,ab OR 'mdx010':ti,ab OR 'mdx-010':ti,ab OR 'mdx-ctla-4':ti,ab OR 'mdx ctla 4':ti,ab OR 'tremelimumab'/exp OR tremelimumab* OR 'ticilimumab':ti,ab OR 'cp 675':ti,ab OR 'cp675 cpd':ti,ab OR 'cp-675':ti,ab OR 'cp-675,206':ti,ab OR 'cp-675206':ti,ab OR 'cp675206':ti,ab OR 'cp 675206':ti,ab OR 'cp 675206':ti,ab OR 'avelumab'/exp OR 'avelumab*' OR 'bavencio':ti,ab OR 'msb-0010682':ti,ab OR 'msb0010682':ti,ab OR 'msb0010718c':ti,ab OR 'msb-0010718c':ti,ab OR 'cemiplimab'/exp OR 'cemiplimab*' OR 'cemiplimab-rlwlc':ti,ab OR 'regn2810':ti,ab OR 'libtayo' OR 'toripalimab'/exp OR 'toripalimab*' OR 'js001':ti,ab OR 'camrelizumab'/exp OR 'camrelizumab*' OR 'shr-1210':ti,ab OR 'shr 1210':ti,ab OR 'sintilimab'/exp OR 'sintilimab*' OR 'ibi 308':ti,ab OR 'ibi308':ti,ab OR 'ibi-308':ti,ab OR 'tislelizumab'/exp OR 'tislelizumab*' OR 'bgb-a317':ti,ab OR 'immune checkpoint inhibitor*':ti,ab OR 'immune check-point inhibitor*':ti,ab)

#2

('adrenal insufficiency' OR 'adrenal insufficiencies':ti,ab OR 'hypoadrenalism':ti,ab OR 'adrenal gland hypofunction':ti,ab OR 'hypofunction, adrenal gland':ti,ab OR 'hypopituitarism':ti,ab OR 'panhypopituitarism':ti,ab OR 'hypophysitis':ti,ab OR 'hypophysitides':ti,ab OR 'adrenalitis':ti,ab OR 'autoimmunity':ti,ab OR isolated ACTH syndrome*:ti,ab OR isolated adrenocorticotrophic hormone (ACTH) syndrome*:ti,ab OR (('adrenal':ti,ab OR 'adrenocortical':ti,ab OR 'pituitary':ti,ab OR 'pituitary gland':ti,ab) AND ('insufficienc*':ti,ab OR 'disturbanc*':ti,ab OR 'disorder*':ti,ab OR 'abnormal*':ti,ab OR 'dysfunction*':ti,ab OR 'hypofunction*':ti,ab OR 'toxicit*':ti,ab OR 'complication*':ti,ab OR 'deficienc*':ti,ab OR 'failure*':ti,ab OR 'side-effect*':ti,ab OR 'sideeffect*':ti,ab OR 'side effect*':ti,ab OR 'adverse event*':ti,ab OR 'adverse effect*':ti,ab)))

#3

#1 AND #2

Appendix 3

Search strategy for Web of Science

#1

(TS=('nivolumab*' OR 'opdivo' OR 'ono-4538' OR 'ono 4538' OR 'ono4538' OR 'mdx-1106' OR 'mdx 1106' OR 'mdx1106' OR 'bms-936558' OR 'bms 936558' OR 'bms936558' OR 'pembrolizumab*' OR 'sch-900475' OR 'sch 900475' OR 'sch900475' OR 'keytruda' OR 'mk-3475' OR 'mk3475' OR 'mk 3475' OR 'lambrolizumab*' OR 'atezolizumab*' OR 'mpdl3280a' OR 'mpdl-3280a' OR 'tecentriq' OR 'rg7446' OR 'rg-7446' OR 'durvalumab' OR durvalumab* OR 'medi4736' OR 'medi-4736' OR 'imfinzi' OR 'ipilimumab*' OR 'yervoy' OR 'mdx 010' OR 'mdx010' OR 'mdx-010' OR 'mdx-ctla-4' OR 'mdx ctla 4' OR 'tremelimumab*' OR 'ticilimumab*' OR 'cp 675' OR 'cp675 cpd' OR 'cp-675' OR 'cp-675,206' OR 'cp-675206' OR 'cp675206' OR 'cp 675206' OR 'avelumab*' OR 'bavencio' OR 'msb-0010682' OR 'msb0010682' OR 'msb0010718c' OR 'msb-0010718c' OR 'cemiplimab*' OR 'cemiplimab-rwlc' OR 'regn2810' OR 'libtayo' OR 'toripalimab*' OR 'js001' OR 'camrelizumab*' OR 'shr-1210' OR 'shr 1210' OR 'sintilimab*' OR 'ibi 308' OR 'ibi308' OR 'ibi-308' OR 'tislelizumab*' OR 'bgb-a317' OR 'immune checkpoint inhibitor*' OR 'immune checkpoint inhibitor*'))

#2

(TS=('adrenal insufficiency' OR 'adrenal insufficiencies' OR 'hypoadrenalism' OR 'adrenal gland hypofunction' OR 'hypofunction, adrenal gland' OR 'hypopituitarism' OR 'panhypopituitarism' OR 'hypophysitis' OR 'hypophysitides' OR 'adrenalitis' OR 'autoimmunity' OR isolated ACTH syndrome* OR isolated adrenocorticotrophic hormone (ACTH) syndrome* OR (('adrenal' OR 'adrenocortical' OR 'pituitary' OR 'pituitary gland') AND ('insufficienc*' OR 'disturbanc*' OR 'disorder*' OR 'abnormal*' OR 'dysfunction*' OR 'hypofunction*' OR 'toxicit*' OR 'complication*' OR 'deficienc*' OR 'failure*' OR 'side-effect*' OR 'sideeffect*' OR 'side effect*' OR 'adverse event*' OR 'adverse effect*'))))

#3

#1 AND #2

Appendix 4

Search strategy for Cochrane

#1

(nivolumab* OR opdivo OR ono NEXT 4538 OR ono4538 OR mdx NEXT 1106 OR mdx1106 OR bms NEXT 936558 OR bms936558 OR pembrolizumab* OR sch NEXT 900475 OR sch900475 OR keytruda OR mk NEXT 3475 OR mk3475 OR lambrolizumab* OR atezolizumab* OR mpdl3280a OR mpdl NEXT 3280a OR tecentriq OR rg7446 OR rg NEXT 7446 OR durvalumab* OR medi4736 OR medi NEXT 4736 OR imfinzi OR ipilimumab* OR yervoy OR mdx NEXT 010 OR mdx010 OR mdx NEXT 010 OR mdx NEXT ctla NEXT 4 OR tremelimumab* OR ticilimumab OR cp NEXT 675 OR cp675 OR cp NEXT 675 OR cp NEXT 675 NEXT 206 OR cp NEXT 675206 OR cp675206 OR avelumab* OR bavencio OR msb NEXT 0010682 OR msb0010682 OR msb0010718c OR msb NEXT 0010718c OR cemiplimab* OR cemiplimab NEXT rwlc OR regn2810 OR libtayo OR toripalimab* OR js001 OR camrelizumab* OR shr NEXT 1210 OR sintilimab* OR ibi NEXT 308 OR ibi308 OR tisleli-

zumab* OR bgb NEXT a317 OR immune NEXT checkpoint NEXT inhibitor*):ti,ab

#2

(adrenal NEXT insufficiency OR adrenal NEXT insufficiencies OR hypoadrenalism OR adrenal NEXT gland NEXT hypofunction OR hypopituitarism OR panhypopituitarism OR hypophysitis OR hypophysitides OR adrenalitis OR autoimmunity OR isolated NEXT ACTH NEXT syndrome* OR isolated NEXT adrenocorticotrophic NEXT hormone NEXT (ACTH) NEXT syndrome* OR ACTH OR ((adrenal OR adrenocortical OR pituitary OR pituitary gland) AND (insufficienc* OR disturbanc* OR disorder* OR abnormal* OR dysfunction* OR hypofunction* OR toxicit* OR complication* OR deficienc* OR failure* OR side-effect* OR sideeffect* OR side effect* OR adverse event* OR adverse effect*)):ti,ab

#3

#1 AND #2

Table S1 Details of symptoms across different groups

Symptoms	Primary AI cases (n=11)	IAD (n=108)	MPHD (n=83)	Total	P value
Fatigue	10	73	48	131	0.066
Anorexia/loss of appetite	3	59	18	80	0
Headache	1	11	52	64	0
Nausea/vomiting	6	30	18	54	0.064
Weakness	3	14	4	21	0.032
Drowsiness/lethargy	2	6	9	17	0.208
Weight loss	2	9	6	17	0.469
Lightheadedness/dizziness	2	5	7	14	0.189
Malaise	1	8	3	12	0.493
Muscle pain	0	7	4	11	0.631
Diarrhea	2	5	3	10	0.109
Joint pain	5	4	1	10	0
Confused/disorientation	3	5	1	9	0
Decreased libido	0	1	6	7	0.05
Abdominal pain	1	4	1	6	0.283
Walking difficulties due to fatigue/ weakness/malaise	0	5	1	6	0.322
Shortness of breath	1	2	2	5	0.338
Memory impairment	0	3	1	4	0.659
Syncope	0	2	2	4	0.856
Consciousness disturbance	0	3	0	3	0.266
Gait instability	0	1	2	3	0.644
Depression	0	2	0	2	0.415
Insomnia	0	1	1	2	0.926
Postprandial fullness/abdominal bloating	0	1	1	2	0.926
Dysphagia	0	1	1	2	0.926
Photosensitivity	0	0	2	2	0.238
Hot flushes	0	0	2	2	0.238
Cold sensation	1	1	0	2	0.017

AI, adrenal insufficiency; IAD, isolated ACTH insufficiency; ACTH, adrenocorticotrophic hormone; MPHD, multiple pituitary hormone deficiency.