Table 6: Estimates of agreement, sensitivity, specificity, and predictive value for all forms of arthritis algorithms

# Years		Algorithm	κ	Sens. (%)	Spec. (%)	Youden	PPV (%)	NPV (%)
1	1	1+ P	0.32	43.1	87.6	0.31	48.5	85.1
	2	2+ P	0.28	26.7	95.4	0.22	61.2	82.8
	3	1+ H or 2+ P	0.28	27.2	95.4	0.23	61.3	82.9
	4	1+ H or 2+ P or (1 P & 2+ Rx)	0.34	34.2	94.2	0.28	61.5	84.1
2	5	1+ P	0.33	58.8	79.0	0.38	43.1	87.6
	6	2+ P	0.35	41.6	90.4	0.32	54.1	85.1
	7	1+ H or 2+ P	0.35	41.8	90.3	0.32	54.0	85.1
	8	1+ H or 2+ P or (1 P & 2+ Rx)	0.38	48.7	88.0	0.37	52.4	86.4
3	9	1+ P	0.31	68.1	71.3	0.39	39.1	89.2
	10	2+ P	0.37	51.8	85.7	0.38	49.5	86.8
	11	1+ H or 2+ P	0.37	51.9	85.6	0.37	49.4	86.8
	12	1+ H or 2+ P or (1 P & 2+ Rx)	0.36	58.6	81.4	0.40	46.1	87.9
5	13	1+ P	0.28	78.2	61.5	0.40	35.5	91.2
	14	2+ P	0.37	66.6	76.9	0.44	43.9	89.5
	15	1+ H or 2+ P	0.36	66.7	76.7	0.43	43.7	89.5
	16	1+ H or 2+ P or (1 P & 2+ Rx)	0.35	71.7	72.3	0.44	41.2	90.4

Notes:

* \# Years = number of years of administrative data to which the case ascertainment algorithm was applied. For example, 1+P in one year identifies individuals as disease cases if they had one or more physician billing claims with the relevant diagnosis code(s) in a one-year period. The algorithm 1+H or 2+P in one year identifies individuals as disease cases if they had one or more hospitalization or two or more physician claims with the relevant diagnosis code(s) in a one-year period.
* H = Hospital separation; P = Physician billing claim; Rx = Prescription drug record; PPV = Positive Predictive Value; NPV = Negative Predictive Value

Source: Lix L, Yogendran M, Mann J. *Defining and Validating Chronic Diseases: An Administrative Data Approach. An Update with ICD-10-CA*. Winnipeg, MB: Manitoba Centre for Health Policy, November 2008.

Table 7: Estimates of agreement, sensitivity, specificity, and predictive values for rheumatoid arthritis algorithms

# Years		Algorithm	κ	Sens. (%)	Spec. (%)	Youden	PPV (%)	NPV (%)
1	1	1+ P	0.17	10.6	99.8	0.10	70.0	96.0
	2	2+ P	0.16	9.6	99.9	0.10	81.1	95.9
	3	1+ H or 2+ P	0.17	9.9	99.9	0.10	81.4	95.9
	4	1+ H or 2+ P or (1 P & 2+ Rx)	0.17	10.1	99.9	0.10	78.7	95.9
2	5	1+ P	0.18	11.2	99.6	0.11	57.7	96.0
	6	2+ P	0.17	10.2	99.8	0.10	69.2	95.9
	7	1+ H or 2+ P	0.17	10.2	99.8	0.10	69.2	95.9
	8	1+ H or 2+ P or (1 P & 2+ Rx)	0.17	10.4	99.8	0.10	66.5	95.9
3	9	1+ P	0.19	12.4	99.6	0.12	57.6	96.0
	10	2+ P	0.17	10.6	99.8	0.10	69.3	95.9
	11	1+ H or 2+ P	0.17	10.6	99.8	0.10	69.3	95.9
	12	1+ H or 2+ P or (1 P & 2+ Rx)	0.18	11.3	99.7	0.11	67.7	96.0
5	13	1+ P	0.21	14.4	99.3	0.14	49.7	96.1
	14	2+ P	0.20	14.4	99.3	0.14	49.7	96.1
	15	1+ H or 2+ P	0.20	13.2	99.6	0.13	59.7	96.1
	16	1+ H or 2+ P or (1 P & 2+ Rx)	0.20	13.3	99.6	0.13	58.5	96.1

Notes:

* # Years = number of years of administrative data to which the case ascertainment algorithm was applied. For example, 1+P in one year identifies individuals as disease cases if they had one or more physician billing claims with the relevant diagnosis code(s) in a one-year period. The algorithm 1+H or 2+P in one year identifies individuals as disease cases if they had one or more hospitalization or two or more physician claims with the relevant diagnosis code(s) in a one-year period.
* H = Hospital separation; P = Physician billing claim; Rx = Prescription drug record; PPV = Positive Predictive Value; NPV = Negative Predictive Value

Source: Lix L, Yogendran M, Mann J. *Defining and Validating Chronic Diseases: An Administrative Data Approach. An Update with ICD-10-CA*. Winnipeg, MB: Manitoba Centre for Health Policy, November 2008.

Table 8: Estimates of agreement, sensitivity, specificity, and predictive values for osteoarthritis algorithms

# Years		Algorithm	κ	Sens. (%)	Spec. (%)	Youden	PPV (%)	NPV (%)
1	1	1+ P	0.30	27.5	96.8	0.24	48.9	92.4
	2	2+ P	0.23	16.4	98.9	0.15	61.6	91.5
	3	1+ H or 2+ P	0.23	16.8	98.8	0.16	60.6	91.5
	4	1+ H or 2+ P or (1 P & 2+ Rx)	0.29	22.9	98.0	0.21	56.3	92.1
2	5	1+ P	0.33	35.4	94.8	0.30	42.9	93.0
	6	2+ P	0.29	23.8	97.9	0.22	55.4	92.1
	7	1+ H or 2+ P	0.29	23.9	97.8	0.22	54.3	92.1
	8	1+ H or 2+ P or (1 P & 2+ Rx)	0.33	31.2	96.6	0.28	50.0	92.7
3	9	1+ P	0.35	42.9	93.2	0.36	41.1	93.7
	10	2+ P	0.31	28.0	97.0	0.25	50.6	92.5
	11	1+ H or 2+ P	0.31	28.1	96.9	0.25	49.7	92.5
	12	1+ H or 2+ P or (1 P & 2+ Rx)	0.34	36.7	94.9	0.32	44.1	93.2
5	13	1+ P	0.35	52.4	90.0	0.42	36.5	94.5
	14	2+ P	0.34	35.3	95.4	0.31	45.9	93.1
	15	1+ H or 2+ P	0.34	35.4	95.3	0.31	45.3	93.1
	16	1+ H or 2+ P or (1 P & 2+ Rx)	0.35	46.2	92.1	0.38	39.2	94.0

Notes:

* * # Years = number of years of administrative data to which the case ascertainment algorithm was applied. For example, 1+P in one year identifies individuals as disease cases if they had one or more physician billing claims with the relevant diagnosis code(s) in a one-year period. The algorithm 1+H or 2+P in one year identifies individuals as disease cases if they had one or more hospitalization or two or more physician claims with the relevant diagnosis code(s) in a one-year period.
* * H = Hospital separation; P = Physician billing claim; Rx = Prescription drug record; PPV = Positive Predictive Value; NPV = Negative Predictive Value

Source: Lix L, Yogendran M, Mann J. *Defining and Validating Chronic Diseases: An Administrative Data Approach. An Update with ICD-10-CA*. Winnipeg, MB: Manitoba Centre for Health Policy, November 2008.