

CMS Chronic Conditions Data Warehouse (CCW)

CCW Chronic Condition Reference List

Updated 10/10/2011

Algorithms	References
Acquired Hypothyroidism	<p>1. Briesacher, B. A., Andrade, S. E., Fouayzi, H., & Chan, K. A. (2009). Medication adherence and use of generic drug therapies. <i>The American Journal of Managed Care</i>, 15(7), 450-456.</p> <p>2. Quan, H., Sundararajan, V., Halfon, P., Fong, A., Burnand, B., Luthi, J. C., et al. (2005). Coding algorithms for defining comorbidities in ICD-9-CM and ICD-10 administrative data. <i>Medical Care</i>, 43(11), 1130-1139.</p>
Acute Myocardial Infarction	<p>1. Kiyota Y, Schneeweiss S, Glynn RJ, Cannuscio CC, Avorn J, Solomon DH. (2004) Accuracy of Medicare claims-based diagnosis of acute myocardial infarction: estimating positive predictive value on the basis of review of hospital records. <i>Am Heart J</i>. 148(1):99-104.</p> <p>2. Krumholz, H. M., Wang, Y., Chen, J., Drye, E. E., Spertus, J. A., Ross, J. S., et al. (2009). Reduction in acute myocardial infarction mortality in the united states: Risk-standardized mortality rates from 1995-2006. <i>JAMA: The Journal of the American Medical Association</i>, 302(7), 767-773.</p>
Alzheimer's Disease	<p>1. Taylor DH, Fillenbaum GG, Ezell ME. (2002) The accuracy of Medicare claims data in identifying Alzheimer's disease. <i>J Clinical Epidemiology</i>. 55:929-937.</p>
Alzheimer's Disease and Related Disorders or Senile Dementia	<p>1. Taylor DH, Fillenbaum GG, Ezell ME. (2002) The accuracy of Medicare claims data in identifying Alzheimer's disease. <i>J Clinical Epidemiology</i>. 55:929-937.</p>
Anemia	<p>1. Herzog, C. A., Muster, H. A., Li, S., & Collins, A. J. (2004). Impact of congestive heart failure, chronic kidney disease, and anemia on survival in the Medicare population. <i>Journal of Cardiac Failure</i>, 10(6), 467-472.</p> <p>2. Sandgren, P. E., Murray, A. M., Herzog, C. A., Solid, C. A., Gilbertson, D. T., Collins, A. J., et al. (2005). Anemia and new-onset congestive heart failure in the general Medicare population. <i>Journal of Cardiac Failure</i>, 11(2), 99-105.</p>

CMS Chronic Conditions Data Warehouse (CCW)

CCW Chronic Condition Reference List

Updated 10/10/2011

Algorithms	References
Asthma	<p>1. Elixhauser A, Steiner C, Palmer L. Clinical Classifications Software (CCS), (2011). U.S. Agency for Healthcare Research and Quality. Available: http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp</p> <p>2. Dombkowski, K. J., Wasilevich, E. A., Lyon-Callo, S., Nguyen, T. Q., Medvesky, M. G., & Lee, M. A. (2009). Asthma surveillance using Medicaid administrative data: A call for a national framework. Journal of Public Health Management and Practice : JPHMP, 15(6), 485-493.</p>
Atrial Fibrillation	<p>1. Ellis, E. R., Culler, S. D., Simon, A. W., & Reynolds, M. R. (2009). Trends in utilization and complications of catheter ablation for atrial fibrillation in Medicare beneficiaries. Heart Rhythm, 6(9), 1267-1273.</p> <p>2. Gage BF, Boechler M, Doggette AL, et al. (2000) Adverse outcomes and predictors of underuse of antithrombotic therapy in medicare beneficiaries with chronic atrial fibrillation. Stroke. 31(4):822-827.</p>
Benign Prostatic Hyperplasia	<p>1. Black, L., Naslund, M. J., Gilbert, T. D., Jr, Davis, E. A., & Ollendorf, D. A. (2006). An examination of treatment patterns and costs of care among patients with benign prostatic hyperplasia. The American Journal of Managed Care, 12(4 Suppl), S99-S110.</p> <p>2. Fenter, T. C., Runken, M. C., Black, L., & Eaddy, M. (2007). Finasteride versus dutasteride: A real-world economic evaluation. The American Journal of Managed Care, 13 Suppl 1, S23-8.</p>
Cataract	<p>1. Ellwein LB, Urato CJ. (2002). Use of eye care and associated charges among the Medicare population, 1991-98. Arch Ophthalmol, 120, 804-811.</p> <p>2. Salm, M., Belsky, D., & Sloan, F. A. (2006). Trends in cost of major eye diseases to Medicare, 1991 to 2000. Am J of Ophthalmology, 142(6), 976-982.</p>

CMS Chronic Conditions Data Warehouse (CCW)

CCW Chronic Condition Reference List

Updated 10/10/2011

Algorithms	References
Chronic Kidney Disease	<p>1. Collins, A. J., Chen, S. C., Gilbertson, D. T., & Foley, R. N. (2009). CKD surveillance using administrative data: Impact on the health care system. <i>American Journal of Kidney Diseases : The Official Journal of the National Kidney Foundation</i>, 53(3 Suppl 3), S27-36.</p> <p>2. Foley RN, Murray AM, Li S, Herzog CA, McBean AM, Eggers PW, Collins AJ. (2005). Chronic kidney disease and the risk of cardiovascular disease, renal replacement, and death in the United States Medicare population, 1998 to 1999. <i>J Am Society of Nephrology</i>, 16, 2, 489-495.</p> <p>3. Winkelmayer, W. C., Schneeweiss, S., Mogun, H., Patrick, A. R., Avorn, J., & Solomon, D. H. (2005). Identification of individuals with CKD from Medicare claims data: A validation study. <i>American Journal of Kidney Diseases : The Official Journal of the National Kidney Foundation</i>, 46(2), 225-232</p>
Chronic Obstructive Pulmonary Disease	<p>1. Medstat contract with CMS 500-00-034.</p> <p>2. Singh, J. A. (2009). Accuracy of veterans' affairs databases for diagnoses of chronic diseases. <i>Preventing Chronic Disease</i>, 6(4), A126.</p>
Depression	<p>1. National Committee for Quality Assurance. (1999). HEDIS 1999 technical specifications: Volume 2. Washington D.C.: National Committee for Quality Assurance.</p> <p>2. Frayne, S. M., Miller, D. R., Sharkansky, E. J., Jackson, V. W., Wang, F., Halanych, J. H., et al. (2010). Using administrative data to identify mental illness: What approach is best? <i>American Journal of Medical Quality</i>, 25(1):42-50.</p> <p>3. Spettell, C. M., Wall, T. C., Allison, J., Calhoun, J., Kobylicki, R., Fargason, R., et al.(2003). Identifying physician-recognized depression from administrative data: Consequences for quality measurement. <i>Health Services Research</i>, 38(4), 1081-1102.</p>
Diabetes	<p>1. Hebert PA, Geiss LS, Tierney EF, Engelgau MM, Yawn BP, McBean AM. (1999) Identifying persons with diabetes using Medicare claims data. <i>Am J of Medical Quality</i>. 14:270-277.</p> <p>2. Rector, T. S., Wickstrom, S. L., Shah, M., Thomas Greenlee, N., Rheault, P., Rogowski, J., et al. (2004). Specificity and sensitivity of claims-based algorithms for identifying members of Medicare+Choice health plans that have chronic medical conditions. <i>Health Services Research</i>, 39(6 Pt 1), 1839-1857.</p>

CMS Chronic Conditions Data Warehouse (CCW)

CCW Chronic Condition Reference List

Updated 10/10/2011

Algorithms	References
Glaucoma	<p>1. Ellwein LB, Urato CJ. (2002) Use of eye care and associated charges among the Medicare population, 1991-98. Arch Ophthalmol. 120:804-811.</p> <p>2. Rector, T. S., Wickstrom, S. L., Shah, M., Thomas Greenlee, N., Rheault, P., Rogowski, J., et al. (2004). Specificity and sensitivity of claims-based algorithms for identifying members of Medicare+Choice health plans that have chronic medical conditions. Health Services Research, 39(6 Pt 1), 1839-1857.</p> <p>3. Salm, M., Belsky, D., & Sloan, F. A. (2006). Trends in cost of major eye diseases to Medicare, 1991 to 2000. Am J of Ophthalmology, 142(6), 976-982.</p>
Heart Failure	<p>1. BirmanDeych, E., Waterman, A. D., Yan, Y., Nilasena, D. S. M. S. P. H., Radford, M. J., & Gage. B. F. (2005). Accuracy of ICD-9-CM codes for identifying cardiovascular and stroke risk factors. Medical Care, 43(5), 480-485.</p> <p>2. Rector TS, Wickstrom SL, Shah M, et al. (2004). Specificity and sensitivity of claims-based algorithms for identifying members of Medicare+Choice health plans that have chronic medical conditions. Health Services Research, 39(6 Pt 1), 1839-1857.</p>
Hip/Pelvic Fracture	<p>1. Baxter NN, Habermann EB, Tepper JE, Durham SB, Virnig BA. (2005) Risk of pelvic fractures in older women following pelvic irradiation. JAMA, 23, 204(20):2587-93.</p>

CMS Chronic Conditions Data Warehouse (CCW)

CCW Chronic Condition Reference List

Updated 10/10/2011

Algorithms	References
Hyperlipidemia	<ol style="list-style-type: none"> 1. Black, L., Runken, M. C., Eaddy, M., & Shah, M. (2007). Chronic disease prevalence and burden in elderly men: An analysis of Medicare medical claims data. <i>Journal of Health Care Finance</i>, 33(4), 68-78. 2. Elixhauser A, Steiner C, Palmer L. Clinical Classifications Software (CCS). (2011) U.S. Agency for Healthcare Research and Quality. Available: http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp. 3. Isetts, B. J., Schondelmeyer, S. W., Artz, M. B., Lenarz, L. A., Heaton, A. H., Wadd, W. B., et al. (2008). Clinical and economic outcomes of medication therapy management services: The Minnesota experience. <i>Journal of the American Pharmacists Association: JAPhA</i>, 48(2), 203-11; 3 p following 211. 4. Southern, D. A., Norris, C. M., Quan, H., Shrive, F. M., Galbraith, P. D., Humphries, K., et al. (2008). An administrative data merging solution for dealing with missing data in a clinical registry: Adaptation from ICD-9 to ICD-10. <i>BMC Medical Research Methodology</i>, 8, 1.

CMS Chronic Conditions Data Warehouse (CCW)

CCW Chronic Condition Reference List

Updated 10/10/2011

Algorithms	References
Hypertension	<ol style="list-style-type: none"> 1. Black, L., Runken, M. C., Eaddy, M., & Shah, M. (2007). Chronic disease prevalence and burden in elderly men: An analysis of Medicare medical claims data. <i>Journal of Health Care Finance</i>, 33(4), 68-78. 2. Borzecki, A. M., Wong, A. T., Hickey, E. C., Ash, A. S., & Berlowitz, D. R. (2004). Identifying hypertension-related co morbidities from administrative data: What's the optimal approach? <i>American Journal of Medical Quality: The Official Journal of the American College of Medical Quality</i>, 19(5), 201-206. 3. Dutro, M. P., Gerthoffer, T. D., Peterson, E. D., Tang, S. S., & Goldberg, G. A. (2007). Treatment of hypertension and dyslipidemia or their combination among US managed-care patients. <i>Journal of Clinical Hypertension (Greenwich, Conn.)</i>, 9(9), 684-691. 4. Elixhauser A, Steiner C, Palmer L. Clinical Classifications Software (CCS). (2011) U.S. Agency for Healthcare Research and Quality. Available: http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp. 5. Halpern, M. T., Khan, Z. M., Schmier, J. K., Burnier, M., Caro, J. J., Cramer, J., et al. (2006). Recommendations for evaluating compliance and persistence with hypertension therapy using retrospective data. <i>Hypertension</i>, 47(6), 1039-1048. 6. Quan, H., Khan, N., Hemmelgarn, B. R., Tu, K., Chen, G., Campbell, N., et al. (2009). Validation of a case definition to define hypertension using administrative data. <i>Hypertension</i>, 54(6) : 1423-8. 7. Rector, T. S., Wickstrom, S. L., Shah, M., Thomas Greenlee, N., Rheault, P., Rogowski, J., et al. (2004). Specificity and sensitivity of claims-based algorithms for identifying members of Medicare+Choice health plans that have chronic medical conditions. <i>Health Services Research</i>, 39(6 Pt 1), 1839-1857. 8. Quam, L., Ellis, L. B., Venus, P., Clouse, J., Taylor, C. G., & Leatherman, S. (1993). Using claims data for epidemiologic research. The concordance of claims-based criteria with the medical record and patient survey for identifying a hypertensive population. <i>Medical Care</i>, 31(6), 498-507.
Ischemic Heart Disease	<ol style="list-style-type: none"> 1. DiMartino, L. D., Hammill, B. G., Curtis, L. H., Gottdiener, J. S., Manolio, T. A., Powe, N. R., et al. (2009). External validity of the cardiovascular health study: A comparison with the Medicare population. <i>Medical Care</i>, 47(8), 916-923. 2. Johnson, M. L., Petersen, L. A., Sundaravaradan, R., Byrne, M. M., Hasche, J. C., Osemene, N. I., et al. (2009). The association of Medicare drug coverage with use of evidence-based medications in the veterans' health administration. <i>The Annals of Pharmacotherapy</i>, 43(10), 1565-1575.

CMS Chronic Conditions Data Warehouse (CCW)

CCW Chronic Condition Reference List

Updated 10/10/2011

Algorithms	References
Osteoporosis	<p>1 Cheng, H., Gary, L. C., Curtis, J. R., Saag, K. G., Kilgore, M. L., Morrisey, M. A., et al.(2009). Estimated prevalence and patterns of presumed osteoporosis among older Americans based on Medicare data. <i>Osteoporosis International: A Journal Established as Result of Cooperation between the European Foundation for Osteoporosis and the National Osteoporosis Foundation of the USA</i>, 20(9), 1507-1515.</p> <p>2. Krupski TL, Smith MR, Chan Lee W, Pashos CL, Brandman J, Wang Q, Botteman M, Litwin MS. (2004) Natural history of bone complications in men with prostate carcinoma initiating androgen deprivation therapy. <i>Cancer</i>. 2004 Aug 1;101(3):541-9.</p> <p>3. Shahinian VB, Kuo YF, Freeman JL, Goodwin JS. (2005) Risk of fracture after androgen deprivation for prostate cancer. <i>N Engl J Med</i>. 2005 Jan 13;352(2):154-64.</p>
RA/OA (Rheumatoid Arthritis/ Osteoarthritis)	<p>1. Harrold, L. R., Li, W., Yood, R. A., Fuller, J., & Gurwitz, J. H. (2008). Identification of patients with arthritis and arthritis-related functional limitation using administrative data. <i>Journal of Public Health Management and Practice : JPHMP</i>, 14(5), 487-497.</p> <p>2. Losina E., et. al. (2003) Accuracy of Medicare claims data for rheumatologic diagnoses in total hip replacement recipients, <i>Journal of Clinical Epidemiology</i> 56(6):515-9.</p>
Stroke / Transient Ischemic Attack	<p>1. Benesch C, Witter DM, Wilder AL, Duncan PW, Samsa GP, Matchar DB. (1998). Inaccuracy of the ICD-9 CM in identifying the diagnosis of ischemic cerebrovascular disease. <i>Neurology</i>, 50(1): 306.</p> <p>2. BirmanDeych, E., Waterman, A. D., Yan, Y., Nilasena, D. S. M. S. P. H., Radford, M. J., & Gage, B. F. (2005). Accuracy of ICD-9-CM codes for identifying cardiovascular and stroke risk factors. <i>Medical Care</i>, 43(5), 480-485.</p> <p>3. Goldstein LB. (1998). Accuracy of ICD9-CM coding for the identification of patients with acute ischemic stroke. Effect of modifier codes. <i>Stroke</i>, 29, 1602-1604.</p> <p>4. Tirschwell DL, Longstreth WT. (2002). Validating administrative data in stroke Research. <i>Stroke</i>, 33: 2465-2470.</p>

CMS Chronic Conditions Data Warehouse (CCW)

CCW Chronic Condition Reference List

Updated 10/10/2011

Algorithms	References
Breast Cancer, Colorectal Cancer, Prostate Cancer, Lung Cancer, Endometrial Cancer	<ol style="list-style-type: none"> 1. Cooper GS. Yuan Z. Stange KC. Dennis LK. Amini SB. Rimm AA. (1999). The sensitivity of Medicare claims data for case ascertainment of six common cancers. <i>Medical Care</i>, 37(5):436-44. 2. Cooper GS. Yuan Z. Stange KC. Rimm AA. (1998). Use of Medicare claims data to measure county-level variations in the incidence of colorectal carcinoma. <i>Cancer</i>. 83(4):673-8. 3. Freeman JL. Zhang D. Freeman DH. Goodwin JS. (2000.) An approach to identifying incident breast cancer cases using Medicare claims data. <i>Journal of Clinical Epidemiology</i>, 53(6):605-14. 4. Koroukian SM. Cooper GS. Rimm AA. (2003). Ability of Medicaid claims data to identify incident cases of breast cancer in the Ohio Medicaid population. <i>Health Services Research</i>. 38(3):947-60. 5. McBean AM. Warren JL. Babish JD. (1994). Measuring the incidence of cancer in elderly Americans using Medicare claims data. <i>Cancer</i>, 73(9):2417-25. 6. McBean AM. Babish JD. Warren JL. (1993). Determination of lung cancer incidence in the elderly using Medicare claims data. <i>American Journal of Epidemiology</i>, 137(2):226-34. 7. McClish D. Penberthy L. Pugh A. (2003). Using Medicare claims to identify second primary cancers and recurrences in order to supplement a cancer registry. <i>Journal of Clinical Epidemiology</i>, 56(8):760-7. 8. McClish DK. Penberthy L. Whittemore M. Newschaffer C. Woolard D. Desch CE. Retchin S. (1997). Ability of Medicare claims data and cancer registries to identify cancer cases and treatment. <i>American Journal of Epidemiology</i>, 145(3):227-33. 9. McClish D. Penberthy L. (2004). Using Medicare data to estimate the number of cases missed by a cancer registry: a 3-source capture-recapture model. <i>Medical Care</i>, 42(11):1111-6. 10. Moy CS. McCarty DJ. Libman IM. LaPorte RE. (1994). Determination of lung cancer incidence in the elderly using Medicare claims data. <i>American Journal of Epidemiology</i>, 139(4):447-9. 11. Nattinger AB. Laud PW. Bajorunaite R. Sparapani RA. Freeman JL. (2004). An algorithm for the use of Medicare claims data to identify women with incident breast cancer. <i>Health Services Research</i>, 39(6 Pt 1):1733-49. 12. Wang PS. Walker AM. Tsuang MT. Orav EJ. Levin R. Avorn J. (2001). Finding incident breast cancer cases through US claims data and a state cancer registry. <i>Cancer Causes & Control</i>, 12(3):257-65. 13. Warren JL. Feuer E. Potosky AL. Riley GF. Lynch CF. (1999). Use of Medicare hospital and physician data to assess breast cancer incidence. <i>Medical Care</i>, 37(5):445-56. 14. Whittle J. Steinberg EP. Anderson GF. Herbert R. (1991). Accuracy of Medicare claims data for estimation of cancer incidence and resection rates among elderly Americans. <i>Medical Care</i>, 29(12):1226-36.