

References

Chapter 12

- 1 Kohn L, Corrigan J, Donaldson M. To err is human. Building a safer health system. Committee on Quality of Healthcare in America. Institute of Medicine. Washington, DC, National Academy Press, 1999.
- 2 Garattini S, Bertele V, Godman B, Haycox A, Wettermark B, Gustafsson LL. Enhancing the rational use of new medicines across European health care systems. *European Journal of Clinical Pharmacology*. 2008;**64**:1137–8.
- 3 Godman B, Paterson K, Malmstrom RE, Selke G, Fagot JP, Mrak J. Improving the managed entry of new medicines: sharing experiences across Europe. *Expert Review of Pharmacoeconomics & Outcomes Research*. 2012;**12**:439–41.
- 4 Wettermark B, Godman B, Jacobsson B, Haaijer-Ruskamp FM. Soft regulations in pharmaceutical policy making: an overview of current approaches and their consequences. *Applied Health Economics and Health Policy*. 2009;**7**:137–47.
- 5 World Health Organization. The rational use of drugs. WHO Report of the Conference of Experts, Nairobi. Geneva, World Health Organization, 1985.
- 6 Sjöqvist F, Borgå O, Dahl ML, Orme MLE. Fundamentals of clinical pharmacology. In: Speight T, ed. *Avery's Drug Treatment*, 4th edn. Auckland: Adis Press, 1997: 1–73.
- 7 Zolnierek KB, Dimatteo MR. Physician communication and patient adherence to treatment: a meta-analysis. *Medical Care*. 2009;**47**:826–34.
- 8 Spinewine A, Fialova D, Byrne S. The role of the pharmacist in optimizing pharmacotherapy in older people. *Drugs & Aging*. 2012;**29**:495–510.
- 9 Avery AJ, Rodgers S, Cantrill JA, et al. A pharmacist-led information technology intervention for medication errors (PINCER): a multicentre, cluster randomised, controlled trial and cost-effectiveness analysis. *Lancet*. 2012;**379**:1310–19.
- 10 Ojeleye O, Avery A, Gupta V, Boyd M. The evidence for the effectiveness of safety alerts in electronic patient medication record systems at the point of pharmacy order entry: a systematic review. *BMC Medical Informatics and Decision Making*. 2013;**13**:69.
- 11 Osterberg L, Blaschke T. Adherence to medication. *The New England Journal of Medicine*. 2005;**353**:487–97.
- 12 Makoul G, Arntson P, Schofield T. Health promotion in primary care: physician-patient communication and decision making about prescription medications. *Social Science & Medicine (1982)*. 1995;**41**:1241–54.
- 13 McCann LM, Haughey SL, Parsons C, et al. A patient perspective of pharmacist prescribing: 'crossing the specialisms-crossing the illnesses'. *Health Expectations*. 2015;**18**(1):58–68.
- 14 Sabate E. *Adherence to Long Term Therapies: Evidence for Action*. Geneva, World Health Organization, 2003.
- 15 Haaijer-Ruskamp FM, Hoven JL, Mol PGM. A Conceptual Framework for Constructing Prescribing Quality Indicators. DURQUIM Meeting Report, 2004.
- 16 Avery AJ, Dex GM, Mulvaney C, et al. Development of prescribing-safety indicators for GPs using the RAND Appropriateness Method. *British Journal of General Practice*. 2011;**61**:e526–36.
- 17 Morris CJ, Rodgers S, Hammersley VS, Avery AJ, Cantrill JA. Indicators for preventable drug related morbidity: application in primary care. *Quality & Safety in Health Care*. 2004;**13**:181–5.
- 18 van Zwanenberg TD, Grant GB, Gregory DA. Can rational prescribing be assessed? *Journal of the Royal College of General Practitioners*. 1987;**37**:308–10.
- 19 Bateman DN, Eccles M, Campbell M, Soutter J, Roberts SJ, Smith JM. Setting standards of prescribing performance in primary care: use of a consensus group of general practitioners and application of standards to practices in the north of England. *British Journal of General Practice*. 1996;**46**:20–5.

- 20 Buetow SA, Sibbald B, Cantrill JA, Halliwell S. Prevalence of potentially inappropriate long term prescribing in general practice in the United Kingdom, 1980–95: systematic literature review. *British Medical Journal (Clinical Research Edition)*. 1996;**313**:1371–4.
- 21 Campbell SM, Cantrill JA, Roberts D. Prescribing indicators for UK general practice: Delphi consultation study. *British Medical Journal (Clinical Research Edition)*. 2000;**321**:425–8.
- 22 Crooks J. The concept of medical auditing. In: *Drug Utilization Studies: Implications for Medical Care. Proceedings from ANIS symposium, Sånge-Såby, Sweden*. Apoteksbolaget AB, Stockholm, 1982.
- 23 Frischer M, Heatlie H, Chapman S, Norwood J, Bashford J, Millson D. Should the corticosteroid to bronchodilator ratio be promoted as a quality prescribing marker? *Public Health*. 1999;**113**:247–50.
- 24 Campbell SM, Braspenning J, Hutchinson A, Marshall MN. Research methods used in developing and applying quality indicators in primary care. *British Medical Journal (Clinical Research Edition)*. 2003;**326**:816–19.
- 25 Wollersheim H, Hermens R, Hulscher M, et al. Clinical indicators: development and applications. *The Netherlands Journal of Medicine*. 2007;**65**:15–22.
- 26 Braspenning J, Hermens R, Calsbeek H, Westert G, Campbell S, Grol R. Quality and safety of care: the role of indicators. In: Grol R, Wensing M, Eccles M, Davis D, eds. *Improving Patient Care: The Implementation of Change in Health Care*, 2nd edn. Chichester, Wiley-Blackwell, 2013.
- 27 Sketris IS, Fisher JE, Langille Ingram EM, Bergman U, Andersen M, Vlahovic-Palckevski V. Prescribing indicators: what can Canada learn from European countries? *Journal of Population Therapeutics and Clinical Pharmacology*. 2012;**19**:e78–98.
- 28 Wettermark B, Pehrsson A, Juhasz-Haverinen M, et al. Financial incentives linked to self-assessment of prescribing patterns: a new approach for quality improvement of drug prescribing in primary care. *Quality in Primary Care*. 2009;**17**:179–89.
- 29 Scott A, Sivey P, Ait Ouakrim D, et al. The effect of financial incentives on the quality of health care provided by primary care physicians. *The Cochrane Database of Systematic Reviews*. 2011:CD008451.
- 30 Gillam SJ, Siriwardena AN, Steel N. Pay-for-performance in the United Kingdom: impact of the quality and outcomes framework: a systematic review. *Annals of Family Medicine*. 2012;**10**:461–8.
- 31 Eijkenaar F, Emmert M, Scheppach M, Schoffski O. Effects of pay for performance in health care: a systematic review of systematic reviews. *Health Policy*. 2013;**110**:115–30.
- 32 Lawrence M, Olesen F. Indicators of quality in healthcare. *European Journal of General Practice*. 1997;**3**:103–8.
- 33 Haaijer-Ruskamp FM, Andersen M, Vander Stichele RH. Prescribing quality indicators. In: Hartzema AG, Tilson HH, Chan AK, eds. *Pharmacoepidemiology and Therapeutic Risk Assessment*. Cincinnati, OH, Harwey Whitney Books, 2008.
- 34 Shekelle PG. Quality indicators and performance measures: methods for development need more standardization. *Journal of Clinical Epidemiology*. 2013;**66**:1338–9.
- 35 Berwick DM, Nolan TW, Whittington J. The triple aim: care, health, and cost. *Health Affairs (Project Hope)*. 2008;**27**:759–69.
- 36 Stiefel M, Nolan K. Measuring the triple aim: a call for action. *Population Health Management*. 2013;**16**:219–20.
- 37 Institute of Medicine. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC, National Academies Press, 2001.
- 38 Campbell SM, Roland MO, Buetow SA. Defining quality of care. *Social Science & Medicine (1982)*. 2000;**51**:1611–25.
- 39 Donabedian A. *The Definition of Quality and Approaches to Its Assessment. Vol. 1. Explorations in Quality Assessment and Monitoring*. Ann Arbor, MI, Health Administration Press, 1980.
- 40 Donabedian A. The quality of care. How can it be assessed? *Journal of the American Medical Association*. 1988;**260**:1743–8.
- 41 Brook RH, McGlynn EA, Cleary PD. Quality of health care. Part 2: measuring quality of care. *New England Journal of Medicine*. 1996;**335**:966–70.
- 42 Salzer MS, Nixon CT, Schut LJ, Karver MS, Bickman L. Validating quality indicators. Quality as relationship between structure, process, and outcome. *Evaluation Review*. 1997;**21**:292–309.
- 43 Eichler HG, Abadie E, Breckenridge A, et al. Bridging the efficacy-effectiveness gap: a regulator’s perspective on addressing variability of drug response. *Nature Reviews Drug Discovery*. 2011;**10**:495–506.

- 44 Campbell SM, Eriksson T. Multiple strategies for quality improvement and patient safety – money alone is not the answer, nor is trust. Conclusions of the 6th EQuIP Invitational Conference April 2011. *European Journal of General Practice*. 2011;**17**:238–40.
- 45 Campbell S, Tickle M. What is quality primary dental care? *British Dental Journal*. 2013;**215**:135–9.
- 46 Godman B, Finlayson AE, Cheema PK, et al. Personalizing health care: feasibility and future implications. *BMC Medicine*. 2013;**11**:179.
- 47 Finlayson AE, Godman B, Paterson K, et al. Personalizing healthcare: from genetics through payment to improving care? *Journal of the Royal Society of Medicine*. 2013;**106**:41–4.
- 48 Martirosyan L, Markhorst J, Denig P, Haaijer-Ruskamp FM, Braspenning J. A pilot qualitative study to explore stakeholder opinions regarding prescribing quality indicators. *BMC Health Services Research*. 2012;**12**:191.
- 49 Adams AS, Soumerai SB, Lomas J, Ross-Degnan D. Evidence of self-report bias in assessing adherence to guidelines. *International Journal for Quality in Health Care*. 1999;**11**:187–92.
- 50 Powell AE, Davies HT, Thomson RG. Using routine comparative data to assess the quality of health care: understanding and avoiding common pitfalls. *Quality & Safety in Health Care*. 2003;**12**:122–8.
- 51 Andersen M. Is it possible to measure prescribing quality using only prescription data? *Basic & Clinical Pharmacology & Toxicology*. 2006;**98**:314–19.
- 52 Sorensen HT, Sabroe S, Olsen J. A framework for evaluation of secondary data sources for epidemiological research. *International Journal of Epidemiology*. 1996;**25**:435–42.
- 53 Hippisley-Cox J, Coupland C. Unintended effects of statins in men and women in England and Wales: population based cohort study using the QResearch database. *British Medical Journal (Clinical Research Edition)*. 2010;**340**:c2197.
- 54 World Health Organization. World Health Statistics 2014. Available from: http://apps.who.int/iris/bitstream/10665/112738/1/9789240692671_eng.pdf (last accessed 18 November 2015).
- 55 Björnberg A. Euro Health Consumer Index 2013. Available from: <http://www.healthpowerhouse.com/files/ehci-2013/ehci-2013-report.pdf> (last accessed 18 November 2015).
- 56 Marshall MN, Shekelle PG, McGlynn EA, Campbell S, Brook RH, Roland MO. Can health care quality indicators be transferred between countries? *Quality & Safety in Health Care*. 2003;**12**:8–12.
- 57 Klazinga N, Fischer C, ten Asbroek A. Health services research related to performance indicators and benchmarking in Europe. *Journal of Health Services Research & Policy*. 2011;**16**(Suppl. 2):38–47.
- 58 Bradley CP. Decision making and prescribing patterns – a literature review. *Family Practice*. 1991;**8**:276–87.
- 59 Holden J, Wilson R. The quality of prescribing in general practice. *International Journal of Health Care Quality Assurance*. 1996;**9**:17–23.
- 60 de Vries CS, Tromp TF, Blijleven W, de Jong-van den Berg LT. Prescription data as a tool in pharmacotherapy audit (I). General considerations. *Pharmacy World & Science*. 1999;**21**:80–4.
- 61 Muijters PE, Janknegt R, Sijbrandij J, Grol RP, Knottnerus JA. Prescribing indicators. Development and validation of guideline-based prescribing indicators as an instrument to measure the variation in the prescribing behaviour of general practitioners. *European Journal of Clinical Pharmacology*. 2004;**60**:739–46.
- 62 Fernandez Urrusuno R, Montero Balosa MC, Perez Perez P, Pascual de la Pisa B. Compliance with quality prescribing indicators in terms of their relationship to financial incentives. *European Journal of Clinical Pharmacology*. 2013;**69**:1845–53.
- 63 Godman B, Shrank W, Andersen M, et al. Policies to enhance prescribing efficiency in Europe: findings and future implications. *Frontiers in Pharmacology*. 2010;**1**:141.
- 64 Robertson J, Fryer JL, O’Connell DL, Smith AJ, Henry DA. Limitations of Health Insurance Commission (HIC) data for deriving prescribing indicators. *Medical Journal of Australia*. 2002;**176**:419–24.
- 65 Avorn J, Soumerai SB. Improving drug-therapy decisions through educational outreach. A randomized controlled trial of academically based ‘detailing’. *New England Journal of Medicine*. 1983;**308**:1457–63.
- 66 Beers MH. Explicit criteria for determining potentially inappropriate medication use by the elderly. An update. *Archives of Internal Medicine*. 1997;**157**:1531–6.

- 67 Carnovale C, Conti V, Perrone V, et al. Paediatric drug use with focus on off-label prescriptions in Lombardy and implications for therapeutic approaches. *European Journal of Pediatrics*. 2013;**172**:1679–85.
- 68 Avery AJ, Heron T, Harris CM, Roberts D, Lloyd D. Assessing measures of the range of non-steroidal anti-inflammatory drugs prescribed by general practices as prescribing performance indicators. *British Journal of Medical Economics*. 1996;**10**:69–78.
- 69 Kamps G, Stewart R, van Der Werf G, Schuling J, Jong BM. Adherence to the guidelines of a regional formulary. *Family Practice*. 2000;**17**:254–60.
- 70 Mackinnon NJ, Hepler CD. Preventable drug-related morbidity in older adults I. Indicator development. *Journal of Managed Care Pharmacy*. 2002;**8**:365–71.
- 71 Bergman U, Popa C, Tomson Y, et al. Drug utilization 90% – a simple method for assessing the quality of drug prescribing. *European Journal of Clinical Pharmacology*. 1998;**54**:113–18.
- 72 Bergman U, Wettermark B. Setting up and using the DU90% technique – a simple indicator for assessing the quality of drug prescribing. In: McGavock H, ed. *Handbook of Drug Use Research Methodology*, 1st edn. Newcastle upon Tyne, United Kingdom Drug Utilization Research Group, 2000: 155–63.
- 73 Wettermark B. Drug Utilization 90%: Using Aggregate Drug Statistics for the Quality Assessment of Prescribing. Stockholm, Karolinska Institutet, 2004.
- 74 Wettermark B, Vlahovic-Palcevski V, Laing R, Bergman U. Adherence to WHO's essential medicines list in two European countries. *WHO Drug Information*. 2006;**20**:78–85.
- 75 Plet HT, Hallas J, Kjeldsen LJ. Adherence to hospital drug formularies and cost of drugs in hospitals in Denmark. *European Journal of Clinical Pharmacology*. 2013;**69**:1837–43.
- 76 Goryachkina K, Babak S, Burbello A, Wettermark B, Bergman U. Quality use of medicines: a new method of combining antibiotic consumption and sensitivity data – application in a Russian hospital. *Pharmacoepidemiology and Drug Safety*. 2008;**17**:636–44.
- 77 Larsen J, Vaccheri A, Andersen M, Montanaro N, Bergman U. Lack of adherence to lipid-lowering drug treatment. A comparison of utilization patterns in defined populations in Funen, Denmark and Bologna, Italy. *British Journal of Clinical Pharmacology*. 2000;**49**:463–71.
- 78 Gaist D, Hallas J, Hansen NC, Gram LF. Are young adults with asthma treated sufficiently with inhaled steroids? A population-based study of prescription data from 1991 and 1994. *British Journal of Clinical Pharmacology*. 1996;**41**:285–9.
- 79 Arnlinde MH, Wettermark B, Nokela M, Hjemdahl P, Rehnberg C, Jonsson EW. Regional variation and adherence to guidelines for drug treatment of asthma. *European Journal of Clinical Pharmacology*. 2010;**66**:187–98.
- 80 Frisk P, Mellgren TO, Hedberg N, Berlin A, Granath F, Wettermark B. Utilisation of angiotensin receptor blockers in Sweden: combining survey and register data to study adherence to prescribing guidelines. *European Journal of Clinical Pharmacology*. 2008;**64**:1223–9.
- 81 van Dijk KN, Pont LG, de Vries CS, Franken M, Brouwers JR, de Jong-van den Berg LT. Prescribing indicators for evaluating drug use in nursing homes. *Annals of Pharmacotherapy*. 2003;**37**:1136–41.
- 82 Linnarsson R. Drug interactions in primary health care. A retrospective database study and its implications for the design of a computerized decision support system. *Scandinavian Journal of Primary Health Care*. 1993;**11**:181–6.
- 83 Gaist D, Tsiropoulos I, Sindrup SH, et al. Inappropriate use of sumatriptan: population based register and interview study. *British Medical Journal (Clinical Research Edition)*. 1998;**316**:1352–3.
- 84 Davidsen JR, Hallas J, Sondergaard J, et al. Association between prescribing patterns of anti-asthmatic drugs and clinically uncontrolled asthma: a cross-sectional study. *Pulmonary Pharmacology & Therapeutics*. 2011;**24**:647–53.
- 85 Yeaw J, Benner JS, Walt JG, Sian S, Smith DB. Comparing adherence and persistence across 6 chronic medication classes. *Journal of Managed Care Pharmacy*. 2009;**15**:728–40.
- 86 Qvarnstrom M, Kahan T, Kieler H, et al. Persistence to antihypertensive drug treatment in Swedish primary healthcare. *European Journal of Clinical Pharmacology*. 2013;**69**:1955–64.
- 87 Veninga CC, Denig P, Pont LG, Haaijer-Ruskamp FM. Comparison of indicators assessing the quality of drug prescribing for asthma. *Health Services Research*. 2001;**36**:143–61.
- 88 Dreischulte T, Grant AM, McCowan C, McAnaw JJ, Guthrie B. Quality and safety of medication use in primary care: consensus validation of a new set of

- explicit medication assessment criteria and prioritisation of topics for improvement. *BMC Clinical Pharmacology*. 2012;**12**:5.
- 89** Cheng EM, Fung CH. Quality indicators for the care of stroke and atrial fibrillation in vulnerable elders. *Journal of the American Geriatrics Society*. 2007;**55**(Suppl. 2):S431–7.
- 90** Hermann R, Mattke S; Members of the OECD Mental Health Care Panel. Selecting Indicators for the Quality of Mental Health Care at the Health Systems Level in OECD Countries. Organisation for Economic Co-operation and Development, 2004.
- 91** Strøm H, Sakshaug S, Skurtveit S. Use of statins in patients receiving oral blood glucose-lowering drugs. *Norsk Epidemiologi*. 2008;**18**:191–4.
- 92** Ashworth M, Golding S, Majeed A. Prescribing indicators and their use by primary care groups to influence prescribing. *Journal of Clinical Pharmacy and Therapeutics*. 2002;**27**:197–204.
- 93** Adriaenssens N, Coenen S, Tonkin-Crine S, Verheij TJ, Little P, Goossens H. European Surveillance of Antimicrobial Consumption (ESAC): disease-specific quality indicators for outpatient antibiotic prescribing. *British Medical Journal Quality & Safety*. 2011.
- 94** Campbell SM, Reeves D, Kontopantelis E, Sibbald B, Roland M. Effects of pay for performance on the quality of primary care in England. *New England Journal of Medicine*. 2009;**361**:368–78.
- 95** Schubert, Koster, Ihle P, von Ferber L. Development of indicators for assessing the quality of prescribing of lipid-lowering drugs: data from the pharmacotherapeutic quality circles in Hesse, Germany. *International Journal of Clinical Pharmacology and Therapeutics*. 2001;**39**:492–8.
- 96** Persell SD, Kaiser D, Dolan NC, et al. Changes in performance after implementation of a multifaceted electronic-health-record-based quality improvement system. *Medical Care*. 2011;**49**:117–25.
- 97** Guthrie B, McCowan C, Davey P, Simpson CR, Dreischulte T, Barnett K. High risk prescribing in primary care patients particularly vulnerable to adverse drug events: cross sectional population database analysis in Scottish general practice. *British Medical Journal (Clinical Research Edition)*. 2011;**342**:d3514.
- 98** Fleetcroft R, Cookson R, Steel N, Howe A. Correlation between prescribing quality and pharmaceutical costs in English primary care: national cross-sectional analysis. *The British Journal of General Practice*. 2011;**61**:e556–64.
- 99** Voorham J, Denig P, Wolffenbuttel BH, Haaijer-Ruskamp FM. Cross-sectional versus sequential quality indicators of risk factor management in patients with type 2 diabetes. *Medical Care*. 2008;**46**:133–41.
- 100** van Doorn-Klomborg AL, Braspenning JC, Feskens RC, Bouma M, Campbell SM, Reeves D. Precision of individual and composite performance scores: the ideal number of indicators in an indicator set. *Medical Care*. 2013;**51**:115–21.
- 101** Reeves D, Campbell SM, Adams J, Shekelle PG, Kontopantelis E, Roland MO. Combining multiple indicators of clinical quality: an evaluation of different analytic approaches. *Medical Care*. 2007;**45**:489–96.
- 102** Hoven JL, Haaijer-Ruskamp FM, Vander Stichele RH. Indicators of prescribing quality in drug utilisation research: report of a European meeting (DURQUIM, 13–15 May 2004). *European Journal of Clinical Pharmacology*. 2005;**60**:831–4.
- 103** Rasmussen HM, Sondergaard J, Kampmann JP, Andersen M. General practitioners prefer prescribing indicators based on detailed information on individual patients: a Delphi study. *European Journal of Clinical Pharmacology*. 2005;**61**:237–41.
- 104** Pont LG, Denig P, van der Molen T, van der Veen WJ, Haaijer-Ruskamp FM. Validity of performance indicators for assessing prescribing quality: the case of asthma. *European Journal of Clinical Pharmacology*. 2004;**59**:833–40.
- 105** Buusman A, Kragstrup J, Andersen M. General practitioners choose within a narrow range of drugs when initiating new treatments: a cohort study of cardiovascular drug formularies. *European Journal of Clinical Pharmacology*. 2005;**61**:651–6.
- 106** Skyggedal Rasmussen HM, Sondergaard J, Sokolowski I, Kampmann JP, Andersen M. Factor analysis improves the selection of prescribing indicators. *European Journal of Clinical Pharmacology*. 2006;**62**:953–8.
- 107** Campbell SM, Godman B, Diogene E, et al. Quality indicators as a tool in improving the introduction of new medicines. *Basic Clinical Pharmacology & Toxicology*. 2015;**116**(2):146–57.
- 108** Chassin MR, Loeb JM, Schmaltz SP, Wachter RM. Accountability measures – using measurement to

- promote quality improvement. *New England Journal of Medicine*. 2010;**363**:683–8.
- 109** Martirosyan L, Voorham J, Haaijer-Ruskamp FM, Braspenning J, Wolffenbuttel BH, Denig P. A systematic literature review: prescribing indicators related to type 2 diabetes mellitus and cardiovascular risk management. *Pharmacoepidemiology and Drug Safety*. 2010;**19**:319–34.
- 110** Sidorenkov G, Haaijer-Ruskamp FM, de Zeeuw D, Bilo H, Denig P. Review: relation between quality-of-care indicators for diabetes and patient outcomes: a systematic literature review. *Medical Care Research and Review*. 2011;**68**:263–89.