Table D: Studies on the identification of actions taken to address patient safety risks in primary care

Author, Year Country	*Design, Level of Evidence*	*Setting Target population*	*Study groups Solution category Incident*	*Outcomes*	*Conclusions*
Bergkvist et al. 2009[4] Sweden	Prospective cohort, Level 2+	Transition from 1 hospital to several clinics Hospital physicians (n=NR)	G1: Pharmacist review and feedback on errors in discharge summary G2: Standard care Supervision/Assistance Medication monitoring	No. medication errors per patient decreased by 45% in G1 (p=0.012) Patients without medication errors: G1=73.1%, G2=63.5% (p=0.319)	Pharmacist review and feedback regarding errors in discharge summaries reduced medication errors in transition from hospital to primary care.
Bregnhoj et al. 2009[9] Denmark	RCT, Level 1+	41 primary care practices General practitioners (n=41)	G1: Interactive educational meeting and feedback on patients' medication G2: Interactive educational meeting G3: Control Training and Supervision/ Assistance Medication prescribing	Mean change in medication appropriateness index: G1=5.1 (p<0.05), G2=–0.7 (NS), G3=–0.8 (NS) Mean change in number of medications: G1=0.9 (p<0.05), G2=–0.5 (NS), G3=–0.2 (NS)	A combined intervention of an interactive educational meeting and pharmacist feedback concerning specific patients can improve the appropriateness of prescribing.
Fick et al. 2004[31] USA	RCT, Level 1-	Primary care practices Primary care physicians (n=355)	G1: Educational brochure listing PIM, list of PIM alternatives, and letter specifying patients receiving PIMs G2: Standard care Training Medication prescribing	Response rate of 71% among physicians in G1; 15.4% of response forms indicated a change in PIM use.	This educational intervention resulted in a high physician response rate and overall decrease in prescribing of PIM. The study reported no data for the comparison group.

Author, Year Country	*Design, Level of Evidence*	*Setting Target population*	*Study groups Solution category Incident*	*Outcomes*	*Conclusions*
Gandhi et al. 2005[38] USA	Prospective cohort, Level 2+	4 primary care practices Internists (n=24)	G1: Computerized prescribing G2: Hand-written prescribing Availability of checklists/ protocols/ policies Medication prescribing	Rates of medication errors: G1=4.3%, G2=11.0% (p=0.31) Rates of potential adverse drug reactions: G1=2.6%, G2=4.0% (p=0.16)	Basic computer prescribing systems may not be sufficient to reduce errors.
MacDonald et al. 2006[57] UK	CCT, Level 1-	Community Patients with inherited metabolic disorders (n=62)	G1: Home delivery service for essential dietary products G2: Traditional system Making arrangements for access to a service Nutrition: prescribing/ requesting, delivery	No. protein substitute errors: G1=1, G2=12 (p=0.01) No. flavour of protein substitute errors: G1=1, G2=11 (p=0.03) Patients with delayed receipt: G1=1, G2=16 (p=0.001) Median change in blood phenylalanine concentration between groups: NS	The long-term use of a home delivery system for essentially dietary products is safer and more reliable than traditional systems.

Author, Year Country	*Design, Level of Evidence*	*Setting Target population*	*Study groups Solution category Incident*	*Outcomes*	*Conclusions*
Midlov et al. 2008[64] Sweden	Retrospective cohort, Level 2-	Transition from 1 hospital to nursing homes or community Hospital physicians (n=NR)	G1: Medication report documenting all medication changes during hospital stay and reason for these changes G2: Standard discharge information Availability of checklists/ protocols/policies Medication monitoring	Patients with at least one medication error: G1=32%, G2=66% (p<0.001) Errors considered to be of moderate of high risk in G1 compared to G2: RR=0.46; 95% CI 0.30 to 0.69 Patients needing medical care due to medication errors: G1=4.4%; G2=8.9% (p=0.049) Risk of consequences due to medication errors, RR=0.47; 95% CI, 0.26 to 0.79	The medication report is a simple tool that is effective in reducing medication errors.
O'Connor et al. 2009[70] USA	RCT, Level 1+	18 primary care practices Family medicine (n=25) and internal medicine physicians (n=32)	G1: No intervention G2: Simulated physician learning intervention G3: Simulated physician learning intervention with feedback Training Clinical process: general care/management / Medication prescribing	Reduction in risky prescribing events, favouring G2 and G3 (p=0.03) Better glycemic control in G2 compared with G1 and G3 (p=0.04) Lipid management and glucose-lowering drugs NS between groups	The simulated physician learning intervention significantly reduced risky prescribing events and marginally improved patient outcomes. Opinion leader feedback did not improve the intervention.

Author, Year Country	*Design, Level of Evidence*	*Setting Target population*	*Study groups Solution category Incident*	*Outcomes*	*Conclusions*
Palen et al. 2006[71] USA	RCT, Level 1+	16 primary care practices Internal medicine and family practice physicians (n=207)	G1: Drug laboratory monitoring alerts G2: No monitoring alerts Availability of checklists/ protocols/policies Medication prescribing	Overall rate of compliance with ordering laboratory monitoring: G1=56.6%, G2=57.1% (p=0.31) Rate of compliance significantly favoured G1 for some drugs (gemfibrozil, statins, methotrexate)	Nonintrusive reminders may not improve adherence to guideline recommendations.
Pringle et al. 1995[75] UK	RCT, Level 1-	20 multiple-partner practices 78 physicians	G1: Event auditing using significant event analysis G2: Event auditing using a conventional cohort-based approach Performing risk assessment/ root cause analysis Various incident types	No significant difference between groups on the recording of diabetes variables. Significantly fewer RBS results, fewer HbA1 results and higher levels of RBS in G2 versus G1. No significant difference in glycaemic control or systolic blood pressure between groups.	Significant event analysis has something to offer in the auditing and improvement of care in general practice.

Author, Year Country	*Design, Level of Evidence*	*Setting Target population*	*Study groups Solution category Incident*	*Outcomes*	*Conclusions*
Roughead et al. 2007[81] Australia	Retrospective cohort, Level 2-	Primary care practices General practitioners (n=15,014)	G1: Patient-specific prescriber feedback and written educational material for patients regarding home medication review G2: Patient-specific prescriber feedback and written educational material for only a subset of patients G3: No intervention Training and Supervision Medication monitoring	Home medication review rate was significantly different between G1 than G3 (RR=1.45; 95% CI, 0.99 to 2.13) Home medication review rate was significantly different between G2 patients who received educational materials and those who did not (RR=1.79; 95% CI, 1.58 to 2.02)	Patient-specific physician feedback and educational material directed to their patients was effective in increasing home medication review rates.
Schnipper et al. 2006[90] USA	RCT, Level 1+	Transition from 1 teaching hospital to community Patients (n=178)	G1: Pharmacist counselling at discharge and telephone follow-up G2: Usual care Provision of patient education Medication monitoring	Rate of preventable adverse drug events: G1=1%, G2=11% (p=0.01) No difference between groups for total adverse drug events or healthcare utilization.	Patients with pharmacist medication review, patient counselling, and telephone follow-up had a lower rate of preventable adverse drug events 30 days after hospital discharge.

Author, Year Country	*Design, Level of Evidence*	*Setting Target population*	*Study groups Solution category Incident*	*Outcomes*	*Conclusions*
Tamblyn et al. 2003[99] Canada	RCT, Level 1+	107 primary care practices Primary care physicians (n=107)	G1: Computerized decision-making support G2: No intervention Availability of checklists/ protocols/policies Medication prescribing	Potentially inappropriate new prescriptions per 1000 visits: G1=43.8, G2=52.2 (RR=0.82; 95% CI, 0.69 to 0.98) Discontinuation of pre-existing inappropriate prescriptions per 1000 visits: G1=35.5, G2=32.1 (RR=1.14; 95% CI, 0.98 to 1.33)	Computer-based drug decision support reduces the initiation of potentially inappropriate prescriptions yet has a more limited effect on the discontinuation of pre-existing prescriptions.
Tamblyn et al. 2008[100] Canada	RCT, Level 1+	Primary care practices Primary care physicians (n=28)	G1: On-physician-demand drug decision support G2: Computer-triggered drug decision support Availability of checklists/ protocols/policies Medication prescribing	No significant difference between groups in the prevalence of any prescribing problems, (OR=1.03; 95% CI, 0.8 to 1.32) Significant reduction for therapeutic duplications favouring G2 (OR=0.55; 95% CI, 0.33 to 0.90)	The computer-triggered alert system is more useful in identifying and resolving prescribing problems than on-demand alerts, but neither approach was effective in reducing prescribing problems.

Author, Year Country	*Design, Level of Evidence*	*Setting Target population*	*Study groups Solution category Incident*	*Outcomes*	*Conclusions*
Varkey et al. 2007[106] USA	Prospective cohort, Level 2+	1 outpatient clinic Patients (n=104), physicians (n=12), nurse practitioners (n=5), fellows (n=3)	G1: Standard care G2: Multifaceted intervention, including letter to remind patients to bring medication bottles to visits, verification and correction of medication lists, physician education on medication reconciliation and audit/feedback Provision of patient and staff education/training Medication monitoring	Visits with any discrepancy related to inadequate reconciliation of all medications: G1=98.2%, G2=84% (p=0.013) Medication lists with ≥1 discrepancies related to inadequate reconciliation in prescription medications only: G1=88.9%, G2=66.0% (p=0.005)	Multifaceted interventions directed to care provider team and patients are crucial for enhancing medication reconciliation.
Weingart et al. 2008[109] **USA**	Retrospective cohort, Level 2-	3 primary care practices Patients (n=267)	G1: Patients who responded to an electronic medication safety message G2: Patients who did not respond to the safety message Provision of monitoring equipment Medication monitoring	No. of adverse drug events reported: G1=17, G2=4 No. of PatientSite messages exchanged between patient and physician: G1=8.8, G2=4.6 (p=0.001)	An electronic medication safety e-mail elicited patients' medication problems and facilitated electronic dialogue with their physicians.

CCT = controlled clinical trial; CI = confidence interval; G = group; n = number enrolled; No. = number; NR = not reported; NS = not statistically significant; OR = odds ratio; PDA = personal digital assistant; PIM = potentially inappropriate medication; RBS = random blood sugars; RCT = randomized controlled trial; RR = relative risk; UK = United Kingdom; USA = United States of America

Table E: Studies on the identification of patient safety incidents in primary care

Author, Year Country	*Design, Level of Evidence*	*Objective, Duration*	*Study Groups, Data capture, Incident*	*Outcomes*
Ashcroft, 2005[1] UK	Prospective cohort, Level 2-	To determine the incidence, nature and causes of dispensing errors in community pharmacies - Duration: 4 wk	Community pharmacies (n = 35) Audit documentation (RPSGB) Prescription items (n = 125,395)	"Near miss" incidents, dispensing errors NR
Bhasale, 1998[5] Australia	Cross-sectional study, Level 3	To identify how diagnostic incidents occur and to illuminate preventable and system causes of such incidents - Duration: NR	General practice (n = NR) Incident monitoring method Dispensing process incidents (n = 500)	Diagnostic incidents NR
Bhasale et al., 1998[6] Australia	Prospective cohort, Level 2-	To collect data on incidents of potential or actual harm to general practice patients - Duration: 20 mo	General practice (n = NR) Incident monitoring method Incident reports (n = 805)	Pharmacological, nonpharmacological, diagnostic, equipment NR
Bregnhoj et al., 2007[10] Denmark	Cross-sectional study, Level 3	To describe the prevalence of inappropriate prescribing in primary care - Duration: 3 mo	General practice (n = NR) Drug subsidy system database Patient records (n = 212)	Inappropriate prescribing Medication Appropriate Index
Brekke et al., 2008[11] Norway	Retrospective cohort, Level 2-	To assess Norwegian general practitioners' (GPs') level of potentially harmful drug prescribing for elderly patients - Duration: 12 mo	General practice (n = NR) Norwegian Prescription Database (NorPD) Patient records (n = 86,000)	Inappropriate prescribing Quality indicators based on the Beers criteria, Swedish recommendations and previous Norwegian studies

Author, Year Country	*Design, Level of Evidence*	*Objective, Duration*	*Study Groups, Data capture, Incident*	*Outcomes*
Buck et al., 2009[12] USA	Cross-sectional study, Level 3	To compare the prevalence of potentially inappropriate medications (PIMs) among two outpatient clinics - Duration: NR	General practice (n = 2) CPOE database Patient records (n = 61,251)	Potentially inappropriate medications Beers criteria, Zhan criteria
de Wet and Bowie, 2009[20] Scotland	Retrospective cohort, Level 2-	To develop and test a global trigger tool to detect errors and adverse events in primary-care records. - Duration: 12 mo	General practice (n = 5) General Practice Administration System for Scotland (Gpass) database Patient records (n = 500; 2251 consultations)	Medication-related harm, administra- tive harm, procedural harm, other harm National Coordination Council for Medication Error Reporting and Prevention index
de Wilde et al., 2007[21] UK	Retrospective cohort, Level 2-	To examine trends in UK primary care prescribing of medications potentially inappro- priate for older people - Duration: 9 yr	General practice (n = 131) DIN-LINK database Patient records (n = 162,000)	Potentially inappropriate prescribing Beers criteria
Elder et al., 2004[25] USA	Cross-sectional study, Level 3	To describe errors and prevent-able adverse events identified by family physicians during the office-based clinical encounter - Duration: NR	General practice (n = 7) Patient visit data Outpatient visits (n = 351)	Errors (diagnosis, treatment, communication, charting, administra- tion), preventable adverse events NR

Author, Year Country	*Design, Level of Evidence*	*Objective, Duration*	*Study Groups, Data capture, Incident*	*Outcomes*
Fernald et al., 2004[29] USA	Prospective cohort, Level 2-	To describe types of errors reported to a primary care, ambulatory, patient safety reporting system - Duration: 2 yr	Primary practice-based research network (n = 33) ASIPS patient safety reporting system Incident reports (n = 708)	Errors (diagnostic testing, medication, communication) ASIPS medical errors taxonomy
Fischer et al., 1997[32] USA	Cross-sectional study, Level 3	To describe adverse events in an outpatient primary care setting - Duration: 5.6 yr	Primary health care clinics (n = 8) Risk-management database Clinic visits (n = 948,628)	Errors (diagnostic, treatment, preventive, other) Leape classification
Franklin and O'Grady, 2007[34] UK	Cross-sectional study, Level 3	To explore the nature of dispensing errors in community pharmacy - Duration: 6 mo	Community pharmacies (n = 35) Pharmacy dispensing system database Dispensed items (n = 2859)	Dispensing errors (content, labeling) NR
Gandhi et al., 2006[36] USA	Retrospective cohort, Level 2-	To develop a framework for investigating missed and delayed diagnoses - Duration: NR	Malpractice insurance companies (n = 4) Malpractice claims database Malpractice claims (n = 308)	Diagnostic error Institute of Medicine
Gandhi et al., 2003[37] USA	Prospective cohort, Level 2-	To determine the rates, types, severity, and preventability of adverse drug events among outpatients - Duration: 6 mo	Primary care practices (n = 4) Patient medical records and survey Patient records (n = 661)	Adverse drug events, preventable and ameliorable adverse drug events NR

Author, Year Country	*Design, Level of Evidence*	*Objective, Duration*	*Study Groups, Data capture, Incident*	*Outcomes*
Goulding, 2004[40] USA	Retrospective cohort, Level 2-	To examine trends in the prevalence of potentially inappropriate drug prescribing at ambulatory care visits by elderly persons - Duration: 5 yr	Physician offices (n = NR) National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey Ambulatory care visits by elderly patients (n = 13,003)	Inappropriate prescribing Beers criteria, Zhan criteria
Hickner et al., 2008[44] USA	Cross-sectional study, Level 3	To describe types, predictors and outcomes of testing errors reported by family physicians and office staff - Duration: 32 wk	Family medicine offices (n = 8) Incident monitoring method Event reports (n = 661)	Testing process errors (test ordering, test implementation, administrative, treatments, communication, knowledge and skills) International Taxonomy of Medical Errors in Primary Care
Hoffmann et al., 2008[45] Germany	Prospective cohort, Level 2-	To describe the inicial results of an incident reporting system for general practices - Duration: 17 mo	General practice (n = NR) Web-based reporting system (Jeder Fehler Zaehlt) Incident reports (n = 199)	Process errors (office administration, equipment, investigators, treatment errors, communication, payment, workforce), knowledge and skills errors (clinical, administrative) International Taxonomy of Medical Errors in Primary Care

Author, Year Country	*Design, Level of Evidence*	*Objective, Duration*	*Study Groups, Data capture, Incident*	*Outcomes*
Howard et al., 2004[46] Canada	Cross-sectional study, Level 3	To estimate the prevalence and predictors of medications deemed potentially inappropriate among family physicians' elderly patients - Duration: 12 mo	Family medicine offices (n = 48) Ontario Drug Benefit Programme insurance database Patient records (n = 777)	Potentially inappropriate prescribing Beers criteria
Kennedy et al., 2008[47] USA	Prospective cohort, Level 2-	To analyze the reports of prescribing errors in primary care - Duration: 6 mo	Primary care practices (n = 7) Voluntary outpatient prescribing-error-reporting system Prescription items (n = 219,903)	Prescribing errors, near-misses National Coordinating Council for Medication Error Reporting and Prevention Index for Categorizing Medication Errors
Knudsen et al., 2007[48] Denmark	Retrospective cohort, Level 2-	To measure the frequency and type of errors registered in community pharmacy - Duration: 14 wk	Community pharmacies (n = 40) Pharmacy dispensing system database Prescription items (n = NR)	Prescription corrections, dispensing near-misses, dispensing errors, adverse drug events NR

Author, Year Country	*Design, Level of Evidence*	*Objective, Duration*	*Study Groups, Data capture, Incident*	*Outcomes*
Kostopoulou and Delaney, 2007[51] UK	Prospective cohort, Level 2	To classify events of actual or potential harm to primary care patients - Duration: 16 mo	General practice (n = 5) Incident monitoring method Incident reports (n = 94)	Adverse events, near-misses, administrative errors, prescribing or medication review, , lack of informa- tion, communication failures, dealing with test results , referrals (delayed/ forgotten), daccination/drug administration, judging urgency of patient's care Kostopolou taxonomy
Kuo et al., 2008[53] USA	Prospective cohort, Level 2-	To describe medication errors reported by family physicians and their office staff and to estimate their preventability - Duration: 10-20 wk	Physician offices (n = 52) AAFP Patient Safety Reports secure Website/written report Incident reports (n = 1265)	Type of medication error (prescription, administration, documentation, dispensing, monitoring), severity and prevent- ability of medication errors and associated adverse drug events METRIP
Makeham et al., 2002[60] Australia, Canada, the Netherlands, New Zealand, UK, USA	Prospective cohort, Level 2-	To classify the types of errors recognised by primary medical care provider - Duration: 3 mo	General practice (n = NR) Incident monitoring method Incident reports (n = 435)	Process errors (investigation, treatment, communication, payment, healthcare workforce management), knowledge and skills errors TAPS taxonomy

Author, Year Country	*Design, Level of Evidence*	*Objective, Duration*	*Study Groups, Data capture, Incident*	*Outcomes*
Makeham et al., 2006[61] Australia	Prospective cohort, Level 2-	To determine the incidence of errors anonymously reported by general practitioners - Duration: 12 mo	General practice (n = NR) Web-based incident monitoring method Incident reports (n = 418)	Errors TAPS taxonomy
Makeham et al., 2008[62] Australia	Prospective cohort, Level 2-	To determine proportions of reported event types among general practitioners - Duration: 12 mo	General practice (n = NR) Web-based incident monitoring method Incident reports (n = 433)	Process errors (healthcare system, investigation,medication, other treatments, communication), knowledge and skills errors TAPS taxonomy
McKay et al., 2009[63] Scotland	Prospective cohort, Level 2-	To identify the range of safety issues analysed in general practice - Duration: 18 mo	General practice (n = NR) SEA reports Incident reports (n = 286)	Significant events (disease diagnosis and management), prescription and drug dispensing, patient behaviour, investigations and results, communi- cation, administration, medical records and confidentiality, appointments and surgeries, home and external visits TAPS taxonomy
Nicholson et al., 2006[68] USA	Prospective cohort, Level 2-	To describe the distribution of medication errors among physicians - Duration: 7 mo	Primary care practices (n = 4) Patient medical records and survey Patient records (n = 661)	Medication errors, adverse drug events NR

Author, Year Country	*Design, Level of Evidence*	*Objective, Duration*	*Study Groups, Data capture, Incident*	*Outcomes*
Phillips et al., 2004[74] USA	Retrospective cohort, Level 2-	To describe the epidemiology of negligent adverse events from primary care - Duration: 5 yr	Malpractice insurance companies (n = 14) PIAA malpractice databases Primary care claims (n = 26,126)	Negligent adverse events NR
Phillips et al., 2006[73] USA	Prospective cohort, Level 2-	To test whether family doctors, office staff, and patients will report medical errors and to investigate differences in how and what they report - Duration: 10 wk	Family physician offices (n = 10) AAFP Patient Safety Reports secure Website/written report Event reports (n = 726)	Process errors (office administration, treatment, investigations, communication, payment, workforce), knowledge and skills errors (clinical, administrative) AAFP/Linnaeus taxonomy
Rigler et al., 2004[78] USA	Retrospective cohort, Level 2-	To examine the relationship between disease burden and inappropriate medication use - Duration: 1 yr	Ambulatory (n = NR) Medicaid claims data Patient records (n = 1163)	Inappropriate prescribing Beers criteria
Rosser et al., 2005[79] Australia, Canada, England, the Netherlands, USA	Prospective cohort, Level 2-	To describe errors Canadian family physicians found in their practices - Duration: 7 mo	Family medicine offices (n = NR) Incident monitoring method Incident reports (n = 95)	Errors (practice management, investigation, treatment, payment, workforce organization) Linnaeus taxonomy
Rubin et al., 2003[82] UK	Prospective cohort, Level 2-	To describe a classification of errors in general practice - Duration: 2 wk	General practice (n = 10) Incident monitoring method Event reports (n = 101)	Errors (prescription, communication, appointments, equipment, clinical care, other) NR

Author, Year Country	*Design, Level of Evidence*	*Objective, Duration*	*Study Groups, Data capture, Incident*	*Outcomes*
Ryan et al., 2009[84] Ireland	Prospective cohort, Level 2-	To identify inappropriate use of medicines in the elderly in primary care - Duration: 6 mo	General practice (n = NR) Patient medical records Patient records (n = 500)	Inappropriate prescribing Beers criteria and IPET
Ryan et al., 2009[85] Ireland	Retrospective cohort, Level 2-	To measure the prevalence rates of potential inappropriate prescribing and potential prescribing omissions using three screening tools - Duration: 18 mo	General practice (n = 3) Patient medical records Patient records (n = 1329)	Inappropriate prescribing, potential prescribing omissions Beers criteria, STOPP and START
Sayers et al., 2009[88] Ireland	Prospective cohort, Level 2-	To estimate the seriousness and level of prescribing errors that occurred in general practice - Duration: 3 d	Community pharmacies (n = 12) Patient medical records Prescription items (n = 3948)	Prescription errors Neville classification
Shah, 2001[91] UK	Prospective cohort, Level 2-	To classify errors on prescriptions from general practices and to measure the frequency of these errors - Duration: 2 mo	Community pharmacies (n = 3) Prescription return book Prescription items (n = 37,821)	Prescription errors NR
Singh et al., 2009[90] USA	Retrospective cohort, Level 2-	To evaluate the performance of a trigger tool for identifying adverse drug events among older adults in ambulatory primary care practices - Duration: 12 mo	General practice (n = 6) Patient medical records Patient records (n = 1289)	Adverse drug events NR

Author, Year Country	*Design, Level of Evidence*	*Objective, Duration*	*Study Groups, Data capture, Incident*	*Outcomes*
Soendergaard et al., 2006[94] Denmark	Retrospective cohort, Level 2-	To identify and document drug-related problems and other possible quality problems in primary care through a pharmacist-run medication review and screening - Duration: 18 mo	General practice (n = 1) Patient medical records Patient records (n = 6094)	Drug-related problems (untreated indications, improper drug selection, subtherapeutic dosage, inappropriate drug use, overdosage) NR
Steven et al., 1999[97] Australia	Prospective cohort, Level 2-	To identify and characterize events or circumstances which could have or did harm a patient in general practice - Duration: 2 yr	General practice (n = NR) Incident monitoring method Event reports (n = 2582)	Adverse drug events (problem with therapeutic use, non administration, overdose, contra-indicated, wrong drug, requisition, sorage, wastage) NR
Straand et al., 1999[98] Norway	Cross-sectional study, Level 3	To describe drug prescriping in general practice for elderly patients and the occurrence of some predefined inappropriate drug prescriptions - Duration: 2 mo	General practice (n = NR) Patient medical records Patient contacts (n = 16, 876) and prescriptions items (n = 16,774)	Inappropriate prescribing NR
Taylor et al., 2005[101] Canada	Prospective cohort, Level 2-	To describe the type of drug-related alerts in primary care - Duration: 9 mo	Primary care physician practices (n = NR) Incident monitoring method Prescription items (n = 22,419)	Prescription errors (drug disease contraindication, drug-drug interactions, potential toxicity, drug duplication, contraindicated for patient age, potential dosing error, dose NR

Author, Year Country	*Design, Level of Evidence*	*Objective, Duration*	*Study Groups, Data capture, Incident*	*Outcomes*
van der Hooft et al., 2005[105] The Netherlands	Retrospective cohort, Level 2-	To examine the extent and trend of inappropriate drug prescribing to ambulatory older adults - Duration: 4 yr	General practice (n = NR) IPCI database Patients receiving at least one prescription per year (n = 120,218)	Inappropriate prescribing Beers criteria
Warner and Gerrett, 2005[108] UK	Prospective cohort, Level 2-	To record medication error against specific categories identified through community pharmacies - Duration: 104 mo	Community pharmacies (n = 17) Incident monitoring method Prescription items (n = 485,940)	Drug dispensing incidents NR
Wetzels et al., 2009[111] The Netherlands	Prospective cohort, Level 2-	To determine the actual and potential harm caused by adverse events in primary care - Duration: 5 mo	General practice (n = 2) Incident monitoring method and patient medical record Patient records (n = 150)	Adverse events (practice administration, diagnostic, therapeutic, communication) TAPS taxonomy
Wetzels et al., 2008[112] The Netherlands	Prospective cohort, Level 2-	To compare five methods to identify adverse events in general practice - Duration: 5 mo	General practice (n = 2) Incident monitoring method (physician and pharmacist), patient medical record, patient survey Patient records (n = 150); prescription items (n = 16,320)	Adverse events (office administration, diagnostic, treatment, communication) TAPS taxonomy

AHRQ = Agency for Healthcare Research and Quality; ASIPS = Applied Strategies for Improving Patient Safety; d = day(s); IPCI = Integrated Primary Care Information; IPET = improved prescribing in the elderly tool; METRIP = Medication Error Types, Reasons, and Informatics Preventability; mo = month(s); NR = not reported; PIAA = Physician Insurers Association of America; RPSGB = Royal Pharmaceutical Society of Great Britain; SEA = significant events analysis; START = Screening Tool to Alert doctors to Right Treatment; STOPP = Screening Tool of Older Person's Prescriptions; TAPS = Threats to Australian Patient Safety; UK = United Kingdom; USA = United States of America; WHO = World Health Organization; yr = year(s)