Appendix 2. Characteristics of included studies

Author, year, journal	Objectives	Outcomes	Type of review	Participants	Patient characteristics	Setting	No. of databases searched	Date range of database search	Publication date range	No. and types of studies, country of origin	Conclusions
Fish et al 2002 Int J Pharm Pract	Effect and cost of practice-based pharmaceutical services	Changes in prescribing practices Prescribing quality Cholesterol BP Medication compliance QoL	Systematic review	Physicians/GPs Pharmacists/ pharmaceutical prescribing advisors	Adults with chronic disease (hypercholesterolaemia, hypertension, polypharmacy, COPD) Patients at risk of medication-related errors	GP practice Community health centre	Five	Jan 1980–March 2001	1983–2000	16 studies RCTs UK Australia Sweden Canada USA	Educational outreach visits, medication reviews and patient-specific prescribing advice were effective in achieving desired outcomes There is insufficient evidence to generalise about the cost-effectiveness of the interventions
Tan et al 2014 Res Social Adm Pharm	Effectiveness of clinical pharmacist services delivered in primary care general practice clinics	HbA1c BP Cholesterol Framingham Risk Score	Systematic review and meta-analysis	GPs Pharmacists	Adults with chronic disease (CVD, diabetes, depression, metabolic syndrome, pain, COPD, menopause) or polypharmacy Patients at risk of medication-related errors Patients at risk of adverse health problem	GP practice	Four	1966–2013	1996–2013	38 studies RCTs USA UK Canada Brazil Chile Japan Thailand Jordan	Pharmacist co-location in GP clinics delivered a range of interventions with favourable results in chronic disease management and quality use of medications
Riordan et al 2016 SAGE Open Med	Effect of pharmacist-led interventions in optimising prescribing	Change in prescribing appropriateness: Beers criteria STOPP/START MAI Clinical or patient-reported outcomes (eg QoL or patient satisfaction)	Systematic review	Pharmacists Physicians Nurses	Community-dwelling older adults (>65 years) with polypharmacy, drug-related problems	GP practice Family medicine clinic Veterans Affairs medical centre	11	Inception: December 2015	1996–2010	Five studies RCTs Quasi-RCTs Controlled before and after studies Interrupted time series USA UK New Zealand	Pharmacist-led interventions, involving access to medical notes and medication reviews conducted in physician practices with feedback to physicians, may improve prescribing appropriateness
Fazel et al 2017 Ann Pharmacother	Impact of pharmacist interventions as part of the healthcare team on diabetes therapeutic outcomes in ambulatory care settings	HbA1c Systolic BP LDL-C	Systematic review and meta-analysis	Pharmacists	Adults with type 1 or type 2 diabetes	Hospital-based outpatient clinics Community pharmacies Primary care physician offices Community clinics	Nine	1995–Feb 2017	1996–2016	42 studies (Systematic reviews, n = 42 studies Meta-analyses, n = 35 studies) RCTs Non-RCTs Pretest–post-test studies USA Australia Iran Jordan Thailand	Pharmacist interventions as part of the patient's healthcare team improved diabetic therapeutic outcomes by significantly reducing HbA1c, SBP, LDL-C
Hazen et al 2018 Res Social Adm Pharm	Impact of degree of integration of a non-dispensing pharmacist on medication-related health outcomes in primary care	Real clinical health outcomes (eg mortality) Surrogate clinical health outcomes (eg HbA1c, lipids, BP) Patient-reported outcomes (eg QoL) Proxies of health outcomes (eg quality-of-care performance indicators)	Systematic review	Pharmacists GPs	Adults with chronic disease (diabetes, hypertension, dyslipidaemia, metabolic syndrome, heart failure, depression, cardiovascular disease, osteoporosis)	Primary care practice	Two	1966–June 2016	1996–2015	60 studies RCTs Two group cohort studies One group cohort study USA UK Brazil Canada Hong Kong Jordan Australia Sweden	Full integration of a non-dispensing pharmacist into a primary healthcare setting adds value to patient-centred (heterogeneous patients, such as those with multimorbidity and polypharmacy), but not disease-specific (patients with specific chronic conditions), clinical pharmacy services

BP, blood pressure; COPD, chronic obstructive pulmonary disease; CVD, cardiovascular disease; GPs, general practitioners; HbA1c, glycated haemoglobin; LDL-C, low-density lipoprotein cholesterol; MAI, Medication Appropriateness Index; QoL, quality of life; RCT, randomised controlled trial; SBP, systolic blood pressure; STOPP/START, Screening Tool for Older Persons Prescriptions/Screening Tool to Alert doctors to Right Treatment.