

Supplementary File 3. Summary of outcomes evaluated in the included studies

| Author, date | Outcomes | Effect size | p-val | Quality score |
|------------------------------------|---|---|--|---------------|
| PATIENT-CENTREDNESS | | | | |
| Jones R, 1999 ^[25] | Primary: <ul style="list-style-type: none"> Higher proportion of patients with a high satisfaction score, <i>n</i>(%) Increased health literacy (i.e. having learnt something new), <i>n</i>(%) | C: 58(40); I: 68 (46) C: 74 (49); I: 96 (62) | p=0.04 p=0.02 | ◆ |
| McCarrier KP, 2009 ^[26] | <ul style="list-style-type: none"> Increased psychosocial self-efficacy (Diabetes Empowerment Tool), <i>mean</i> (SD) | C: -0.16(0.62); I: 0.14 (0.62) | p=0.04 | ◆ |
| Nagykaldi Z, 2012 ^[31] | Primary <ul style="list-style-type: none"> Increased patient activation scores (Patient Activation Measure - PAM), <i>mean</i> Increased participants' perception of patient-centeredness of care scores, <i>mean</i> | C: 45; I: 47 C: -0.43; I: 0.32 | p=0.0014 p=0.037 | ◆ |
| Schnipper JL, 2012 ^[30] | Secondary <ul style="list-style-type: none"> Increased proportion of patients telling their doctor about any medication-related problems or new symptoms, % Increased proportion of patients telling their doctor about all prescribed medications, % | C: 87.1; I: 97.9 C: 69.8; I: 74.8 | p<0.001 p=0.048 | ◆ |
| Tang PC, 2013 ^[20] | <ul style="list-style-type: none"> Increased overall treatment satisfaction scores (Diabetes Treatment Satisfaction Questionnaire - DTSQ), <i>mean</i> (SD) | C: 24.5(7.4); I: 27.7(6.1) | p<0.001 | ◆ |
| Wagner PJ, 2012 ^[24] | <ul style="list-style-type: none"> No significant differences in patient activation (PAM), <i>mean</i> Increased Patient Empowerment Scale (PES) scores, <i>mean</i> | C: 69.1; I: 71.4 C: 40.1; I: 41.2 | p=0.490 p=0.019 | ◆ |
| Earnest MA, 2004 ^[21] | Primary <ul style="list-style-type: none"> No differences developed between the intervention and the control group in PES scores | NA | p>0.05 | ◆ |
| Tuil WS, 2007 ^[27] | Primary <ul style="list-style-type: none"> No significant changes in scores of self-efficacy (General Self-Efficacy Scale) post-test <ul style="list-style-type: none"> Involvement in the decision process (male), <i>mean</i> (SD) Involvement in the decision process (female), <i>mean</i> (SD) General self-efficacy (male), <i>mean</i> (SD) General self-efficacy (female), <i>mean</i> (SD) Specific self-efficacy (male), <i>mean</i> (SD) Specific self-efficacy (female), <i>mean</i> (SD) Subjective knowledge (male), <i>mean</i> (SD) Subjective knowledge (female), <i>mean</i> (SD) Objective knowledge (male), <i>mean</i> (SD) Objective knowledge (female), <i>mean</i> (SD) No significant change in patient satisfaction post-test (male), <i>mean</i> (SD) No significant change in patient satisfaction post-test (female), <i>mean</i> (SD) | C:48.0(5.2); I:48.5(4.4) C: 48.7(5.2); I: 49.0(5.1) C: 3.3(0.4); I: 3.3.(0.4) C:3.3(0.4); I: 3.2(0.3) C:14.5(2.5); I: 14.9(2.7) C: 14.9(2.7); I:14.6(2.9) C:7.1(1.5); I: 7.4(1.3) C: 7.3(1.2); I: 7.3(1.3) C: 6.0(1.4); I: 6.1(1.3) C: 6.0(1.7); I: 6.0(1.5) | p=0.791 p=0.794 p=0.859 p=0.505 p=0.943 p=0.646 p=0.472 p=0.510 p=0.789 p=0.612 | ◆ |
| | | C: 123.2(11.2); I: 121.7(11.3) C: 119.8(10.2); I: 120.7(8.6) | 0.832 0.837 | |

| | | | | |
|--------------------------------|---|---|---|---|
| Shaw E, 2008 ^[28] | <p>Primary:</p> <ul style="list-style-type: none"> No significant changes in factors of health literacy (response scores) <ul style="list-style-type: none"> Learning something new, <i>mean (SD)</i> Learning about risks Learning to understand tests No significant changes on patient empowerment (<i>i.e.</i> ability to make decisions) | <p>C: 1.9(0.8); I: 1.8(0.9) C: 1.8(0.8); I: 1.9 (0.8) C: 1.6(0.8); I: 1.7(0.7) C: 2.4(1.2); I:2.1(0.9)</p> | <p>p=0.67 p=0.46 p=0.57 p=0.26</p> | ◆ |
| Ross SE, 2004 ^[22] | <p>Primary</p> <ul style="list-style-type: none"> No significant change in self-efficacy (Kansas City Cardiomyopathy Questionnaire - KCCQ), <i>mean difference between groups (95CI)</i> <p>Secondary</p> <ul style="list-style-type: none"> No significant change in patient satisfaction | <p>+6 [-1 to 11]</p> | <p>p=0.08</p> | ◆ |
| Quinn CC, 2008 ^[19] | <p>Secondary:</p> <ul style="list-style-type: none"> No significant differences in self-reported health literacy (<i>i.e.</i> knowledge of food choices), % | <p>C: 50.0; I: 90.0</p> | <p>p=0.062</p> | ◆ |

EFFECTIVENESS

| | | | | |
|----------------------------------|---|--|--|---|
| Green BB, 2008 ^[23] | <p>Primary:</p> <ul style="list-style-type: none"> Decreased systolic blood pressure values, <i>adjusted mean change (95CI)</i> No difference on diastolic blood pressure values, <i>adjusted mean change (95CI)</i> No difference on the proportion of patients with controlled BP, <i>adjusted RR (95CI)</i> <p>Secondary:</p> <ul style="list-style-type: none"> Lower number of antihypertensive medication classes, <i>mean (SD)</i> No difference in body mass index values, <i>mean (SD)</i> | <p>C: -5.3[-7.1 to -3.5]; I: -8.2 [-10.0 to -6.4] C: -3.5[-4.5 to -2.5]; I: -4.4[5.4 to -3.4] C: 1 [Reference]; I: 1.22 [0.95 to 1.56]</p> | <p>p=0.02 p=0.21 p=0.20</p> | ◆ |
| Holbrook A, 2009 ^[15] | <p>Primary:</p> <ul style="list-style-type: none"> Improved number of patients with improvement for total composite score in diabetes care processes, <i>n (%)</i> Patient with improvement of ≥ 3 points on total composite score, <i>n (%)</i> <p>Secondary:</p> <ul style="list-style-type: none"> Decreased systolic blood pressure values, <i>mean difference between groups (95CI)</i> Decreased diastolic blood pressure values, <i>mean difference between groups (95CI)</i> Decreased HbA1c values, <i>mean difference between groups (95CI)</i> No significant differences in LDL-cholesterol levels, <i>mean difference between groups (95CI)</i> No differences in albuminuria, <i>mean difference between groups (95CI)</i> No differences in body mass index values, <i>mean difference between groups (95CI)</i> No differences in physical activity (min/week), <i>mean difference between groups (95CI)</i> No differences in the prevalence of neuropathy, <i>mean difference between groups (95CI)</i> No differences in smoking status, <i>mean difference between groups (95CI)</i> | <p>C: 110(42.6); I: 156 (61.7) C: 46 (17.8); I: 88 (34.8)</p> | <p>p<0.001 p<0.001</p> | ◆ |
| McMahon GT, 2005 ^[17] | <p>Primary:</p> <ul style="list-style-type: none"> Greater reduction in HbA1c values, <i>mean (SD)</i> Greater reduction in systolic blood pressure values, <i>mean (SD)</i> No significant changes in diastolic blood pressure, <i>mean (SD)</i> | <p>C: -1.2(1.4); I: -1.6(1.4) C: -7(21); I: -10(17) C: -6(11); I: -5(13)</p> | <p>p<0.05 p<0.01 p=0.058</p> | ◆ |

| | | | | |
|------------------------------------|---|--|--|---|
| | Secondary: <ul style="list-style-type: none"> • Greater reduction in triglycerides values, <i>mean (SD)</i> • Significant increase in HDL-cholesterol values, <i>mean (SD)</i> • No changes in LDL-cholesterol levels, <i>mean (SD)</i> | C: -2(60); I: -38(99) C: 1(6); I: 3(6) C: -5(11); I: -6(12) | p<0.01 p<0.05 p>0.05 | |
| Quinn CC, 2008 ^[19] | Primary <ul style="list-style-type: none"> • Greater reduction in A1c values, <i>mean</i> | C: -0.68; I: -2.03 | p < 0.04 | ◆ |
| Ralston JD, 2009 ^[18] | Primary <ul style="list-style-type: none"> • Reduction in mean HbA1c levels, <i>mean difference between groups</i> • Higher change on % of patients with HbA1c levels <7%, <i>mean difference between groups</i> Secondary <ul style="list-style-type: none"> • No significant changes in systolic blood pressure, <i>mean difference between groups</i> • No significant changes in diastolic blood pressure, <i>mean difference between groups</i> • No significant changes in total cholesterol levels, <i>mean difference between group</i> | -1.1 -22 -0.9 +0.1 +7.6 | p<0.01 p<0.03 p=0.84 p=0.96 p=0.38 | ◆ |
| Tang PC, 2013 ^[20] | Primary <ul style="list-style-type: none"> • Decreased HbA1c levels at 6 M, <i>mean (SD)</i> • No significant changes on HbA1c levels at 12 M, <i>mean (SD)</i> Secondary <ul style="list-style-type: none"> • Decreased LDL cholesterol levels at 12 M, <i>mean (SD)</i> • No significant differences in weight (in pounds), at 12 M, <i>mean (SD)</i> • No significant differences in systolic blood pressure (mmHg) at 12 M, <i>mean (SD)</i> • No significant differences in diastolic blood pressure (at 12 mo, p=0.374), <i>mean (SD)</i> • No significant differences in cardiovascular risk (Framingham score) at 12 M, <i>mean (SD)</i> | C: 8.62(1.94); I: 7.92 (1.39) C: 8.33(1.81); I: 8.10(1.68) | p<0.001 p=0.133 | ◆ |
| Jones R, 1999 ^[25] | Primary: <ul style="list-style-type: none"> • Decreased % of patients with anxiety, <i>mean difference between groups (95CI)</i> | 18 [3.7; 26.5] | p=0.001 | ◆ |
| Ross SE, 2004 ^[22] | Primary: <ul style="list-style-type: none"> • Increased symptom stability (p<0.01), <i>mean difference between groups (95CI)</i> • No changes in quality of life, <i>mean difference between groups (95CI)</i> • No changes in functional status (p=0.31), <i>mean difference between groups (95CI)</i> • No changes in physical limitations physical limitations, <i>mean difference between groups (95CI)</i> • No changes in mortality, <i>n(%)</i> | +17 [4 to 29] +2 [-7 to 11] -3 [-11 to 3] -4 [-12 to 3] C: 6(11); I: 6(11) | p<0.01 p=0.63 p=0.31 p=0.26 p=1.00 | ◆ |
| McCarrier KP, 2009 ^[26] | Primary: <ul style="list-style-type: none"> • No significant differences in HbA1c change in scores, <i>mean (SD)</i> | C: +0.11(1.4); I: -0.37(1.3) | p=0.160 | ◆ |
| Grant RW, 2008 ^[33] | Primary <ul style="list-style-type: none"> • No significant differences in mean HbA1c levels between arms, <i>mean</i> • No significant differences in blood pressure between arms • No significant changes in LDL-cholesterol between arms | C: 7.1; I: 7.2 NA NA | p=0.450 p>0.05 p>0.05 | ◆ |
| Fonda SJ, 2009 ^[14] | Primary <ul style="list-style-type: none"> • No significant difference in Problem Areas in Diabetes (PAID) scores, <i>difference in means</i> | -3.1 | p=0.300 | ◆ |

| | | | | |
|--------------------------------------|---|--|--|---|
| Wagner PJ, 2012 ^[24] | Primary | C: 129.9; I: 129.7 C= 75.6; I: 77.3 | 0.617 0.287 | |
| | Secondary | C: 49.2; I: 19.8 C: 101.0; I: 108.4 C: 138.3; I: 139.2 C: 116.4; I: 126.3 | 0.826 0.116 0.336 0.554 | ◆ |
| Nagykaldi Z, 2012 ^[31] | <ul style="list-style-type: none"> Increased proportion of patients receiving all recommended preventive services, % <ul style="list-style-type: none"> Increased proportion of patients taking low-dose aspirin, if indicated, % Increased proportion receiving Pneumococcal vaccine due to health conditions, % Increased proportion receiving Pneumococcal vaccine indicated due to age, % Increased proportion of children receiving all recommended immunisations, % | C: 67.6; I: 84.4 C: 52.3; I: 78.6 C: 53.9; I: 82.5 C: 44.6; I: 86.3 C: 87.2; I: 95.5 | p<0.0001 p<0.0001 p<0.0001 p<0.0001 p=0.044 | ◆ |
| Krist AH, 2012 ^[32] | Primary | | | |
| | <ul style="list-style-type: none"> Higher increase in the proportion of patients up-to-date with all preventive services (16 M), mean difference between groups | +2.3 | p<0.05 | |
| | Secondary: | | | |
| | <ul style="list-style-type: none"> Subgroup analyses of users vs nonusers demonstrated significant differences in the increase of preventive services (%), mean difference between groups <ul style="list-style-type: none"> colorectal cancer screening (16M) breast cancer screening (4M) cervical cancer screening (16M) tetanus immunization (16M) | +14.3 +12.3 +13.4 +10.3 | p<0.02 p<0.05 p<0.02 p<0.02 | ◆ |
| | <ul style="list-style-type: none"> No significant results for pneumococcal immunization, mean difference between groups | +8.9 | p>0.05 | |

SAFETY

| | | | | |
|--|--|--|--|---|
| Ross SE, 2004 ^[22] | Secondary: | | | |
| | <ul style="list-style-type: none"> Increased general adherence, mean difference between groups (95% CI) No change in medication adherence, mean difference between groups (95% CI) | +6.4 [1.8; 10.9] +0.2 [-0.1; 0.6] | p=0.01 p=0.15 | ◆ |
| Chrischilles EA, 2013 ^[29] | Primary | | | |
| | <ul style="list-style-type: none"> Higher likelihood of reporting differences between doctor and patient medication records, n(%) Higher likelihood of reporting a side effect, n(%) Higher likelihood of recognising a side effect, n(%) Higher likelihood to change list of current medications, n(%) Higher likelihood of asking the reason for medications on the list, n(%) Lower number of over the counter (OTC) drugs, mean (SD) Higher likelihood of starting a new prescription drug, mean n(%) Higher likelihood of stopping a prescription drug, n(%) Higher likelihood of changing the strength or dose of an OTC drug, n(%) No differences on self-reported adherence to medication, n(%) No differences on the number of prescription drugs, mean (SD) | C: 53(8.4); I: 24(19.0) C: 71(10.9); I: 29(22.8) C: 462(72.1); I: 104(81.9) C: 446(67.2); I: 113(88.3) C: 135(34.6); I: 57(50.4) C: 3.4(2.4); I: 4.3(2.9) C: 145(21.5); I: 45(34.9) C: 88(13.1); I: 35(27.1) C: 12(1.8); I: 7(5.4) C: 13.8(2.0); I: 14.0(1.6) C: 3.9(3.1); I: 4.6(3.1) | p<0.01 p<0.01 p<0.05 p<0.01 p<0.001 p<0.01 p<0.01 p<0.001 p<0.01 p<0.05 p<0.05 p>0.05 | ◆ |

| | | | | |
|------------------------------------|--|---|---|----------|
| | <ul style="list-style-type: none"> No differences on the strength/dose of prescription drug, <i>n</i>(%) No differences on the likelihood of starting and OTC drug, <i>n</i>(%) No differences on the likelihood of stopping an OTC drug, <i>n</i>(%) No differences on the use of potentially inappropriate medications, <i>n</i>(%) No differences on taking 2 or more NSAID, <i>n</i>(%) No differences on the number of medication management problems, mean (SD) | <p>C:89(13.2); I:21(16.3) C: 54(8.0); I: 17(13.2) C: 27(4.0); I: 10(7.8) C: 129(19.2); I: 35(27.1) C: 88(13.1); I: 25(19.4) C: 1.4(1.4); I: 1.8(1.5)</p> | <p>p>0.05 p>0.05 p>0.05 p>0.05 p>0.05 p>0.05</p> | |
| Schnipper JL, 2012 ^[30] | <p>Primary</p> <ul style="list-style-type: none"> Decreased proportion of patients with discordant medications, <i>mean</i> (SD) Decreased number of discrepancies per patient with potential for severe harm, <i>mean</i> (SD) No changes on the number of discrepancies per patient with potential for harm, <i>mean</i> (SD) No changes in the number of preventable or ameliorable adverse drug events (ADEs) per patient, <i>mean</i> (SD) No changes on duration of ameliorable ADEs in days, <i>median</i> (IQR) | <p>C: 451(30); I: 2(29) C: 0.08(0.35); I: 0.03(0.22) C: 0.34(0.85); I: 0.24 (0.62) C: 0.14(0.47); I: 0.16(0.44) C: 6(1-8); I: 5 (1-7)</p> | <p>p=0.01 p=0.04 p=0.059 p=0.45 p=0.35</p> | <p>◆</p> |
| Quinn CC, 2008 ^[19] | <p>Secondary</p> <ul style="list-style-type: none"> Increased proportion of patients having medication changed or titrated by their health care provider | <p>C: 23; I: 84</p> | <p>p=0.002</p> | <p>◆</p> |

EFFICIENCY

| | | | | |
|-----------------------------------|---|--|--|----------|
| Khan S, 2010 ^[16] | <p>Primary</p> <ul style="list-style-type: none"> Fewer hospital inpatient admissions per subject, <i>mean</i> Shorted length of stay (days), <i>mean</i> Lower inpatient charges (\$), <i>mean</i> Fewer emergency department visits, <i>mean</i> Lower emergency room charges, <i>mean</i> | <p>C: 0.20; I: 0.17 C: 1.1; I:0.99 C: 3,480; I: 3,113 C: 0.36; I: 0.27 C: 414,30; I: 303.51</p> | <p>p=0.01 p=0.01 p=0.02 p<0.0001 p<0.0001</p> | <p>◆</p> |
| Ross SE, 2004 ^[22] | <p>Secondary</p> <ul style="list-style-type: none"> Higher number of emergency department visits, <i>n</i> No significant changes on the number of heart failure practice visits, <i>n</i> No significant changes on the number of hospitalisations, <i>n</i> | <p>C: 8; I: 20 C: 325; I: 324 C: 21; I: 22</p> | <p>p=0.03 p=0.66 p=1.00</p> | <p>◆</p> |
| Nagykaldi Z, 2012 ^[31] | <p>Secondary</p> <ul style="list-style-type: none"> Fewer primary care visits, <i>mean</i> | <p>C: 4.3; I: 2.9</p> | <p>p<0.0001</p> | <p>◆</p> |
| Wagner PJ, 2012 ^[24] | <p>Secondary</p> <ul style="list-style-type: none"> No differences on the number of outpatient visits, <i>mean</i> (SD) No differences in the number of hospital days, <i>mean</i> (SD) No differences in the number of emergency room visits, <i>mean</i> (SD) | <p>C: 4.13(5.569); I: 4.16(3.629) C: 0.39(1.686); I: 0.56(1.593) C: 0.34(0.831); I: 0.42(0.934)</p> | <p>p=0.958 p=0.280 p=0.312</p> | <p>◆</p> |
| Ralston JD, 2009 ^[18] | <p>Secondary</p> <ul style="list-style-type: none"> No differences in the number of outpatient visits No differences in the number of primary care visits No difference in the number of specialist physician visits No differences on the number of inpatient days | <p>C: -2.1 (7.0); I: 0.6(10.7) C: -0.2(2.8); I: 0.0(2.9) C: -1.9 (5.9); I: 0.6(9.0) C: -0.3(1.8); I: 0.2(2.6)</p> | <p>p=0.18 p=0.76 p=0.14 p=0.32</p> | <p>◆</p> |