# Personalised Care Interventions: Rapid Evidence Review (diabetes, MSK & COPD)

## Appendix 4: Summary tables for high-impact interventions

The tables below lists the most impactful personalised care outcomes across the research studied. If the numerical data was unavailable within a systematic review, we searched the primary paper they cited for this information. In such cases, the primary authors have been referenced in the ‘Outcome’ column. More caution should be given to these outcomes/impacts, as their results may not have been validated as part of a wider meta-analysis.

**Diabetes:**

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| Paper ID | Intervention | Study Type | Primary outcome | Numerical impact |
| 209 | Telehealth (nurse-led) | MA | Reduction in number of hospital admissions | -4.1% (telehealth group had 152 out of 640 (23.8%), usual face-to-face group of participants there was 218 out of 780 (27.9%). |
| 217 | Patient empowerment | SR | Reduction in hospital admissions (1 study relating to Pharmacist-led medication therapy, Erku, 2017) | -52.1% in number of admissions |
| 84 | Telehealth | MA | + adherence = + cost-effectiveness | 1% adherence = $5.42 |
|  |  |  | + adherence = + cost-effectiveness | 1Hg decrease = $7.39 |
| 11 | Patient education | SR | One study reported increase in medical adherence compared to usual care (Negarandeh, 2011) | + 20% adherence  (adherence to dietary: 3.63 vs 5.87 and 6.15 out of maximum 9 score) and medication regimens (4.32 vs 6.73 and 7.03 out of maximum 8) |
|  |  |  | Two studies reported significant increase in knowledge scores in diabetes following the intervention (Swavely 2013, Negarandeh, 2011) | Diabetes knowledge test: 84% score in IG vs 40.7 % in CG. (Swavely 2013)  Mean end point knowledge score (29.41 in control vs 35.32 in intervention (Negarandeh, 2011) |
| 17 | Peer support | MA | Reduction of Hba1c | Pooled MD of -0.57%  [95% CI: −0.78 to −0.36] |
| 30 | Patient education (Culturally Tailored Diabetes Educational Intervention) | MA | Improved Glycaemic control | Pooled ES of  glycaemic control in RCTs with CTDEI was -0.29  (95% confidence interval, -0.46 to -0.13) |
| 57 | Telehealth | SR | A meta-analysis of mobile phone interventions found they increased glycaemic control (Liang, 2013) | Reduced HbA1c values by a mean of 0.5% over a median of 6 months follow-up duration  [6mmol/mol; 95% confidence interval, 0.3–0.7% (4–8 mmol/mol)] |
| 66 | Telehealth (web-based interventions) | MA | Five studies with outcome data for depression showed reduced feelings of depression (58, 53, 60, 59, 50) | The pooled mean difference between the  IG and CG’s depression score was -0.31 (95% confidence interval) |
|  |  |  | Six studies that reported on distress found it was reduced | The pooled mean difference between intervention and control on distress scores was -0.11 (-0.38  to 0.16 |
| 84 | Telehealth | MA | MA reported a significant reduction in blood pressure compared to UC. | -3.74 mmHg (sbp), -2.37 mmHg (dbp) |
| 352 | Patient education | MA | Thirty-one studies assessed the impact of the interventions on fasting blood glucose (27,29-33,37-44,46-60,62,63) | 71% of studies observed that the educational programs  produced statistically significant improvements in FBG |
| 352 | Patient education | MA | Thirty-one studies assessed the impact of the interventions  on hba1c (27,29-33,37-44,46-60,62,63) | 59% of studies  observed that the educational programs  produced statistically significant improvements in hba1c |
| 352 | Patient education | MA | Thirty-one studies assessed the impact of the interventions  on fasting blood glucose  (27,29-33,37-44,46-60,62,63) | 57% of studies observed that the educational programs  produced statistically significant improvements in fasting blood sugar |
| 391 | Patient empowerment | MA | Compared to routine care, empowerment-based intervention is associated with reduced glycated haemoglobin levels | SMD -0.20; (95% CI -0.31 to -0.08; Z=3.40,  P<.001, I2=42%) |
| 391 | Patient empowerment | MA | Compared to routine care, empowerment-based intervention was associated with increased diabetes empowerment scores | SMD 0.24;  (95% CI 0.10–0.37; Z=3.42, P<.001, I2=0%) |
| 391 | Patient empowerment | MA | Compared to routine care, empowerment-based intervention was associated with increased diabetes knowledge scores | SMD 0.96;  (95% CI 0.55–1.36; Z=4.61, P<.001, I2=80%) |
| 448 | Telehealth (computer based) | SR | In a meta-analysis of 11 trials, computer-based interventions have shown benefits for  glycaemic control | Pooled effect on HbA1c: -2.3 mmol/mol or -0.2%  (95% confidence interval (CI) -0.4 to -0.1; P = 0.009; 2637 participants; 11 trials). |
|  |  |  | Improved disease knowledge (Lo, 1996) | 10.9 to 14.3 on diabetes knowledge scale |
|  |  |  | Increases patient empowerment (Lorig, 2010) | +0.021(PAM Score) |
|  |  |  | Improved patient knowledge (Quinn, 2008) | Knowledge of food choices compared with the control group (91% versus 50%) |
|  |  |  | Improves self-efficacy (Quinn, 2008) | Diabetes self-care questionnaire (100% versus 75%). |
|  | Telehealth (mobile phone) | SR | Meta-analysis of three mobile phone-based interventions found a statistically and clinically significant reduction in HbA1c (Liang, 2011) | MD in HbA1c -5.5 mmol/mol or -0.5%  (95% CI -0.7 to -0.3); P < 0.00001; 280 participants; three trials). |
| 189 | Telehealth (mobile phone) | MA | RCTs compared Smartphone Technologies with usual diabetes  care among T2DM patients and reported a significant reduction in HbA1c | Pooled weighted mean difference:  -0.51%; 95% confidence interval: -0.71% to -0.30%; p < 0.001), favouring  ST intervention.  The pooled weighted mean difference was -0.83% in patients  with T2DM <8.5 years and -0.22% in patients with T2DM ≥8.5 years, with significant  subgroup difference (p = 0.007). |
| 84 | Telehealth (interactive digital interventions -IDIs) | MA | Overall, IDIs  significantly reduced SBP | WMD -3.74mmHg [95% confidence  interval (CI) -2.19 to -2.58] with no heterogeneity  observed (I-squared¼0.0%, P¼0.990). |
| 84 | Telehealth (interactive digital interventions -IDIs) | MA | For DBP, four  out of six studies indicated a greater reduction for  intervention compared to controls, with no difference  found for two. | WMD of -2.37mmHg (95% CI -0.40 to -4.35) was found, but considerable heterogeneity was noted (I-squared¼80.1%,  P¼<0.001). |
|  |  |  | Increased self-efficacy | Correlated with Positive Outcome Expectations (r = 0.30, *P* = 0.037) and Diabetes Self-Management and Diabetes Quality of Life for Youths (r = 0.43, *P* = 0.002) |
| 209 | Telehealth (nurse-led) | MA | The intervention groups of community-dwelling older adults significantly improved in overall  QoL. | SMD 0.12;  (95% CI 0.03 to 0.20; P=0.006; I2=21%) |
|  |  |  | The intervention groups of community-dwelling older adults significantly improved in overall self-efficacy | SMD 0.19;  (95% CI 0.08 to 0.30; P<.001; I2=0% ) |
|  |  |  | The intervention groups of community-dwelling older adults significantly improved in overall depression levels. | SMD –0.22;  (95% CI –0.36 to –0.08; P=.003; I2=89% ) |
| 214 | Telehealth (wearable insole) | SR | Reduced diabetic foot ulcer occurrence (Abbot, 2019) | 86% reduction at 18month follow-up |
|  | Telehealth (digital medicine offering) | SR | DMO resulted in a statistically greater SBP reduction than usual care (Frais, 2017) | Mean –21.8, SE 1.5 mm Hg vs mean –12.7, SE 2.8 mmHg; mean difference –9.1, 95% CI –14.0 to –3.3 mm Hg) and maintained a greater reduction at week 12 |
| 217 | Patient Empowerment | SR | Seven studies (24,26,35,38,39,41,42)with meta-analysable data on blood pressure showed statistically significant differences  between control in favour of interventions. | The pooled results for SBP MD was −5.13  [95% CI: −9.42, −0.84] (P = .02) |
|  |  |  | Seven studies (24,26,35,38,39,41,42)with meta-analysable data on blood pressure showed statistically significant differences  between control in favour of interventions. | The pooled results for  DBP indicated that there is a statistically significant difference  in the outcomes of mean difference (MD) −4.28  [95% CI: −7.18,  −1.37] (P = .004) |
|  |  |  | Four studies were included in a meta-analysis (24,26,41,42). The pooled results indicate that there is a small, statistically significant difference in the outcomes between intervention and control groups in terms of hba1c. | Overall effect size of −0.59  (95% CI: −0.72, −0.47] (P < .00001) |
| 227 | Telehealth (nurse-led) | MA | Pooled intervention effects from 2 studies showed a significant  improvement in the systolic blood pressure of patients through  Telerehabilitation. | MD 10.48;  (95% CI, MD 1.52; 95% CI) |
|  |  |  | The pooled SMD indicates significant positive effect on enhancing the self-care behavior  of patients with diabetes when compared with conventional  face-to-face nursing consultations | SMD 1.20;  (95% CI 0.55-0.84; P<.001; heterogeneity: X2 4=46.3; I2=91%; P<.0) |
| 352 | Patient education | MA | Meta-analysis of 20 randomized  controlled trials (3,094 patients) indicated that the programs produced a reduction in hba1c | SMD −0.31%  (95% CI −0.48% to −0.14%). |
| 391 | Patient empowerment |  | The meta-analysis showed that compared to routine care, empowerment based  intervention was associated with reduced glycated hemoglobin levels | SMD -0.20  (95% CI -0.31 to -0.08; Z=3.40,  P<.001, I2=42%) |
|  |  |  | Five studies [8,12,13,16,18] measured the psychosocial self-efficacy by the  scores of Diabetes Empowerment Scales (DES). Patient  empowerment improved significantly in the intervention group as compared with the control | SMD 0.24;  (95% CI 0.10–0.37; Z=  3.42, P<.001) |
|  |  |  | Four studies[7,12,14,18] provided the scores of diabetes knowledge after Intervention.The score of diabetes knowledge was  significantly higher in the intervention group than the control | SMD 0.96  (95% CI 0.55–1.36; Z=4.61, P<.0) |

**MSK:**

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| Paper ID | Intervention | Study Type | Outcome | Numerical impact |
| 54 | Decision support | MA | Participants receiving care with the DAs had greater gains  in general knowledge compared with UC, with no evidence of a treatment interaction  with any of the sociodemographic characteristics analysed. | 62% vs 45%;  P<0.0001 |
|  |  |  | Patients who used the DAs were found to know their personalized  risk (knowledge of risk) more often than those receiving  UC | 50% vs 20%;  P<0.0001 |
|  |  |  | Decisional conflict was lower for patients in the DA arm as compared with UC across all sociodemographic groups. There were no significant treatment interactions between sociodemographics. | 13 (intervention) vs 18 (control) points |
|  |  |  | Clinicians encouraged patient empowerment significantly more often when using decision support. | 39 (Intervention) vs 21 (Control) |
| 158 | Telehealth | SR | Reduction in school absenteeism (Armbrust et al., 2017) | 43% to 14% |
|  | Telehealth (iCanCope) |  | Reduction in pain intensity (Lalloo et al., 2020) | 1.73-point reduction on 1-10 scale |
| 160 | Telehealth (FitBit) | SR | Walking time (Amorim et al., 2019) | Increase of 183.1 min/week |
| 164 | Self-management education (booster sessions) | MA | significant reduction in  pain catastrophizing in patients with CMP after a self-management  intervention | SMD 20.42 (95% CI) |
| 212 | Telehealth | MA | Reduction in pain | 5.7% reduction |
|  |  |  | Digital-based structured SMPs vs health education condition | Favours digital SMPs (SMD 0.26; 95% CI) |
|  |  |  | Reduction in pain | 5.7% reduction |
|  |  |  | Increase in physical function | 5.07% improvement |
|  |  |  | Improved quality of life | 0.17 SDs higher |
| 349 | Self-management education | SR | Reduction in pain | SMD between groups was ‐0.26 (95% CI ‐0.44 to ‐0.09); mean reduction of 0.8 points on VAS Scale |

**COPD:**

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|  | Intervention | Study Type | Outcome | Numerical impact |
|  | Health coaching | MA | Significant beneficial impact on quality of life | SMD = −0.69,  95% CI: −1.28, −0.09, *p* =.02, from *k* = 4 |
|  |  |  | significant reduction in COPD-related hospital admissions | (OR = 0.46, 95% CI: 0.31, 0.69, *p* =.0001, from *k* = 5) |
|  | Blended self-management | MA | Reduction in exacerbation frequency | Relative Risk =0.38; 95% CI 0.26-0.56 |
|  |  |  | Significant reduction in BMI | d=0.81; 95% CI 0.25-1.34 |
|  |  |  | Large effect was found on QoL | SMD=0.81; 95% CI |
|  | Nutritional support | MA | Significantly greater increases in mean total protein and energy intakes | (1.94 ± 0.26 kg, P < 0.001 |
|  | Self-management interventions | MA | HRQoL Assessed with: St. George’s Respiratory Questionnaire adjusted total score. Scale from: 0 to 100  Note: lower scores indicate better HRQoL | 2.86 points lower  (4.87 lower vs  0.85 lower) |
|  |  |  | Lower risk of emergency department visits | -0.52 (95% CI) |
|  |  |  | Reduced SGRQ score, indicating better quality of life | -2.86 (95% CI) |
|  |  |  | Improvement in exercise capability | MD of 45.14 meters in walking (95% CI 9.16 to 81.13; Analysis 2.13). |
|  | Self-management interventions (action plans) |  | Statistically significantly lower risk for at least one respiratory-related hospital admission | OR 0.69, 95% CI 0.51 to 0.94 |
|  | Self-management education | SR | Activity levels signficantly improved: Six studies, with 772 participants, measured exercise capacity using  the six-minute walking test (6MWT) and could be included in  the meta-analysis | Pooled MD of 45.14 meters  reached the MCID of 25 meters and therefore is considered clinically  relevant (Holland 2010). |
|  | self-management interventions including  exacerbation action plans with a smoking cessation programme |  | contributed to significant improvements in HRQoL (Lenferink 2017). | MD from usual care of ‐2.69 points (95% CI ‐4.49 to ‐0.90; 1,582 participants; 10 studies; high‐quality evidence). |