The value of tailored communication in promoting medication intake behavior

Linn, A.J.

Citation for published version (APA):
## Appendix 1

<table>
<thead>
<tr>
<th>Database</th>
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<th>Reason for exclusion</th>
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<td>10.</td>
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<td>Cho JH, Lee HC, Lim DJ, Kwon HS, Yoon KH.</td>
<td>Mobile communication using a mobile phone with a glucometer for glucose control in Type 2 patients with diabetes: as effective as an Internet-based glucose monitoring system.</td>
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<td>13.</td>
<td>PubMed</td>
<td>Cocosila M, Archer N, Haynes RB, Yuan Y.</td>
<td>Can wireless text messaging improve adherence to preventive activities? Results of a randomized controlled trial.</td>
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<td>14.</td>
<td>PubMed</td>
<td>Lawrence DB, Allison W, Chen JC, Demand M.</td>
<td>Improving medication adherence with a targeted, technology-driven disease management intervention.</td>
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<td>16.</td>
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<td>Basheti IA, Armour CL, Bosnic-Anticevich SZ, Reddel HK.</td>
<td>Evaluation of a novel educational strategy, including inhaler-based reminder labels, to improve asthma inhaler technique.</td>
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<td>20.</td>
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<td>Hee-Sung K.</td>
<td>Impact of Web-based nurse's education on glycosylated haemoglobin in type 2 Diabetic patients.</td>
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<td>21.</td>
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<td>Kim HS, Jeong HS.</td>
<td>A nurse short message service by cellular phone in type-2 diabetic patients for six months.</td>
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<td>22.</td>
<td>PubMed</td>
<td>Wangberg SC.</td>
<td>An Internet-based diabetes self-care intervention tailored to self-efficacy.</td>
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<td>24.</td>
<td>PubMed</td>
<td>Cho JH, Chang SA, Kwon HS, Choi YH, Ko SH, Moon SD, Yoo SJ, Song KH, Son HS, Kim HS, Lee WC, Cha BY, Son HY, Yoon KH.</td>
<td>Long-term effect of the Internet-based glucose monitoring system on HbA1c reduction and glucose stability: a 30-month follow-up study for diabetes management with a ubiquitous medical care system.</td>
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<td>The chronic disease self-management program: extending reach through the Internet.</td>
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<td>27.</td>
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<td>Chatkin JM, Blanco DC, Scaglione N, Wagner MB, Fritscher CC.</td>
<td>Impact of a low-cost and simple intervention in enhancing treatment adherence in a Brazilian asthma sample.</td>
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<td>31.</td>
<td>PubMed</td>
<td>Fonseca JA, Costa-Pereira A, Delgado L, Fernandes L, Castel-Branco MG.</td>
<td>Asthma patients are willing to use mobile and web technologies to support self-management.</td>
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<td>Pines A.</td>
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<td>36.</td>
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<td>Hagström B, Mattsson B, Rost IM, Gunnarsson RK.</td>
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<td>Kwon HS, Cho JH, Kim HS, Song BR, Ko SH, Lee JM, Kim SR, Chang SA, Kim HS, Cha BY, Lee KW, Son HY, Lee JH, Lee WC, Yoon KH.</td>
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<td>Safren SA, Hendriksen ES, Desousa N, Boswell SL, Mayer KH.</td>
<td>Use of an on-line pager system to increase adherence to antiretroviral medications.</td>
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<td>42.</td>
<td>PubMed</td>
<td>Akron General Medical Center, Akron, Ohio 44333, USA.</td>
<td>The use of non-face-to-face communication to enhance preventive strategies.</td>
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<td>43.</td>
<td>PubMed</td>
<td>McAlindon T, Formica M, Kabbara K, LaValley M, Lehmer M.</td>
<td>Conducting clinical trials over the Internet: feasibility study.</td>
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<td>Stuart GW, Laraia MT, Ornstein SM, Niertert PJ.</td>
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<td>Burkhart PV, Dunbar-Jacob JM, Fireman P, Rohay J.</td>
<td>Children's adherence to recommended asthma self-management.</td>
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<td>47.</td>
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<td>Finkelstein J, O'Connor G, Friedmann RH.</td>
<td>Development and implementation of the home asthma telemonitoring (HAT) system to facilitate asthma self-care.</td>
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<td>48.</td>
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<td>Andrade A.</td>
<td>HIV adherence strategies take a high-tech route.</td>
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<td>49.</td>
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<td>Frances CD, Alperin P, Adler JS, Grady D.</td>
<td>Does a fixed physician reminder system improve the care of patients with coronary artery disease? A randomized controlled trial.</td>
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<td>Curtin K, Hayes BD, Holland CL, Katz LA.</td>
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<td>Casebeer L, Roesener GH.</td>
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<td>57.</td>
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<td>Schectman G, Hiatt J, Hartz A.</td>
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<td>Shanovich KK, Sorkness CA, wise M, Pulvermacher AD, Bhattacharya A, Gustafson DH.</td>
<td>Internet telehealth for pediatric nurse case management improves asthma control.</td>
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<td>One-year efficacy and safety of Web-based follow-up using cellular phone in type 1 diabetic patients under insulin pump therapy: the PumpNet study</td>
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<td>Jan RCT</td>
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<td>Joseph RCT</td>
<td>Patients with asthma</td>
<td>Web-based asthma management program</td>
<td>- Tailored content - User control</td>
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<td>Ross RCT</td>
<td>Patients with Heart Failure</td>
<td>The SPPARO (System Providing Access to Records Online)</td>
<td>- Tailored content - Nature of expert/therapist contact</td>
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<td>Guendelman RCT</td>
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</table>
| Van der Meer RCT                  | Patients with mild to moderate persistent asthma | Internet-based self-management programme | - Customized Health program - User control | N= 200 | - Self-reported  
Intervention n=111  
Mean age 36  
28 males  
Group 1 (well controlled) n=37  
Group 2 (partly controlled) n=38  
Group 3 (uncontrolled) n=36  
Control group n = 89  
Mean age 36.6  
28 male  
Group 1 (well controlled) n=38  
Group 2 (partly controlled) n=33  
Group 3 (uncontrolled) n=28 | Weekly self-monitoring and subsequent treatment adjustment leads to improved asthma control in patients with partly and uncontrolled asthma at baseline and tailors asthma medication to individual patients' needs |
<table>
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<tr>
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<th>Type of intervention</th>
<th>Delivering of tailored message</th>
<th>Study population</th>
<th>Name of instrument adherence, moment of measuring adherence</th>
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<td>Dilorio</td>
<td>Patients with Epilepsy</td>
<td>WebEase</td>
<td>- Customized Health Program</td>
<td>N = 35</td>
<td>- Self-reported</td>
<td>Participants showed some improvement in adherence following the program</td>
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<td>Dew</td>
<td>Heart recipients and their family caregivers</td>
<td>Website including skills workshops, discussion group, ask an expert, question and answer, health tips, recourses and references</td>
<td>- User control - Customized Health Program - Nature of expert/therapist contact.</td>
<td>Mean age 37.5 40% male N=64</td>
<td>- Baseline and 6 weeks - Self-reported</td>
<td>The intervention appeared to be most weakly associated with medical compliance change</td>
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Prospective design
### Appendix 3: List of excluded studies with reason for exclusion

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<tr>
<td>PubMed</td>
<td>2010</td>
<td>Simoni JM, Chen WT, Huh D, Fredriksen-Goldsen KI, Pearson C, Zhao H, Shiu CS, Wang X, Zhang F.</td>
<td>A Preliminary Randomized Controlled Trial of a Nurse-Delivered Medication Adherence Intervention Among HIV-Positive Outpatients Initiating Antiretroviral Therapy in Beijing, China</td>
<td>Only total effect of intervention on adherence reported (reminder was one aspect)</td>
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<td>PubMed</td>
<td>2010</td>
<td>Bender BG, Apter A, Bogen DK, Dickinson P, Fisher L, Wamboldt FS, Westfall JM.</td>
<td>Test of an Interactive Voice Response Intervention to Improve Adherence to Controller Medications in Adults with Asthma</td>
<td>Reminder not specifically for medication intake</td>
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<td>PubMed</td>
<td>2010</td>
<td>Marciel KK, Saiman L, Quittell LM, Dawkins K, Quittner AL.</td>
<td>Cell phone intervention to improve adherence: cystic fibrosis care team, patient, and parent perspectives</td>
<td>Medication adherence not as outcome measure</td>
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<td>PubMed</td>
<td>2009</td>
<td>Decker V, Spoelstra S, Miezo E, Bremer R, You M, Given C, Given B.</td>
<td>A pilot study of an automated voice response system and nursing intervention to monitor adherence to oral chemotherapy agents</td>
<td>No reminder (only information exchange)</td>
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<td>PubMed</td>
<td>2009</td>
<td>Düsingu R, Handrock R, Klebs S, Tousset E, Vrijens B.</td>
<td>Impact of supportive measures on drug adherence in patients with essential hypertension treated with valsartan: the randomized, open-label, parallel group study</td>
<td>Only total effect of intervention on adherence reported (reminder was one aspect)</td>
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<td>PubMed</td>
<td>2008</td>
<td>Lawrence DB, Allison W, Chen JC, Demand M.</td>
<td>Improving Medication Adherence with a Targeted, Technology-Driven Disease Management Intervention</td>
<td>Reminder is not directed to patient (not patient-centered)</td>
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<td>PubMed</td>
<td>2008</td>
<td>Tsur L, Kozer E, Berkovitch M.</td>
<td>The Effect of Drug Consultation Center Guidance on Contraceptive Use Among Women Using Isotretinoin: A Randomized, Controlled Study</td>
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<td>Medication adherence not as outcome measure</td>
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<td>PubMed</td>
<td>2003</td>
<td>Fairley CK, Levy R, Rayner CR, Allardice K, Costello K, Thomas C, McArthur C, Kong D, Mijch A, Melbourne Adherence Group.</td>
<td>Randomized trial of an adherence program for clients with HIV</td>
<td>Only total effect of intervention on adherence reported (reminder was one aspect)</td>
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<td>2003</td>
<td>Larsen DL, Cannon W, Towner S.</td>
<td>Longitudinal Assessment of a Diabetes Care Management System in an Integrated Health Network</td>
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<td>PubMed</td>
<td>2003</td>
<td>Stuart GW, Laraia MT, Ornstein SM, Nietert PJ.</td>
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<td>Cramer JA, Rosenheck R.</td>
<td>Enhancing Medication Compliance for People with Serious Mental Illness</td>
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<td>Raynor DK, Booth TG, Blenkinsopp A.</td>
<td>Effects of computer generated reminder charts on patients’ compliance with drug regimens</td>
<td>No electronic reminder</td>
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<tr>
<td>Ref from review</td>
<td>2006</td>
<td>Mannheimer SB, Morse E, Matts JP, Andrews L, Child C, Schmetter B, Friedland GH; Terry Beirn Community Programs for Clinical Research on AIDS</td>
<td>Sustained Benefit From a Long-Term Antiretroviral Adherence Intervention Results of a Large Randomized Clinical Trial</td>
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<td>Ref from review</td>
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<td>2003</td>
<td>Dunbar PJ, Madigan D, Grohskopf LA, Revere D, Woodward J, Minstrell J, Frick PA, Simoni JM, Hooton TM.</td>
<td>A two-way messaging system to enhance antiretroviral adherence</td>
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<td>Ref from review</td>
<td>1991</td>
<td>Leirer VO, Morrow DG, Tanke ED, Pariante GM.</td>
<td>Elders' nonadherence: its assessment and medication reminding by voice mail.</td>
<td>No chronic medication</td>
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<td>Embase</td>
<td>2006</td>
<td>Franklin VL, Waller A, Pagliari C, Greene SA.</td>
<td>A randomized controlled trial of Sweet Talk, a text-messaging system to support young people with diabetes</td>
<td>Only total effect of intervention on adherence reported (reminder was one aspect)</td>
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<td>PsycINFO</td>
<td>2009</td>
<td>Basheti IA, Armour CL, Bosnic-Anticevich SZ, Reddel HK.</td>
<td>Evaluation of a novel educational strategy, including inhaler-based reminder labels, to improve asthma inhaler technique</td>
<td>Medication adherence not as outcome measure</td>
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<td>PsycINFO</td>
<td>2000</td>
<td>Ostrop NJ, Gill MJ.</td>
<td>Antiretroviral Medication Adherence and Persistence with Respect to Adherence Tool Usage</td>
<td>Only total effect of intervention on adherence reported (reminder was one aspect)</td>
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<td>PsycINFO</td>
<td>2006</td>
<td>Robertson L, Smith M, Castle D, Tannenbaum D.</td>
<td>Using the Internet to enhance the treatment of depression</td>
<td>Reminder not specifically for medication intake</td>
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<td>Year</td>
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<td>1998</td>
<td>Keder LM, Rulin MC, Gruss J.</td>
<td>Compliance with depot medroxyprogesterone acetate: A randomized, controlled trial of intensive reminders</td>
<td>No electronic reminder</td>
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<tr>
<td>Author, publication year &amp; design</td>
<td>Study population (size, baseline characteristics)</td>
<td>Intervention &amp; type of reminder</td>
<td>Type of adherence measure &amp; timing measurement</td>
<td>Results</td>
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<td>Hardy 2011</td>
<td>Patients with HIV</td>
<td>Intervention: daily personalized text messages sent for each scheduled ART dose. Patients had to respond with a text message when taking ART.</td>
<td>Self-report (SR), pill count (PC), electronic monitoring (MEMS) and composite adherence score (CAS). Baseline, week 3, week 6.</td>
<td>Baseline: no significant differences in PC and SR between two groups. Week 3: significant difference in MEMS adherence between intervention and control group: 85.3% vs. 57.2% (p=0.0129), and with CAS: 81.5% vs. 56.7% (p=0.0176). Week 6: significant difference in MEMS adherence: 89.7% vs. 56.3% (p=0.002) and with CAS: 83.4% vs. 53.6% (p=0.0094).</td>
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<td>Pop-Eleches 2011</td>
<td>Patients with HIV</td>
<td><strong>Intervention:</strong></td>
<td>Electronic monitoring (MEMS).</td>
<td>Over 48 weeks, participants with adherence &gt;= 90% in 2 groups receiving weekly reminders was 53% vs. 40% in control group (P=0.03). Participants with adherence &gt;= 90% receiving daily reminders was 41% vs. 40% in control group (P=0.92). Participants with adherence &gt;= 90% was 47% in 2 groups receiving long reminders, 40% in the control group (P=0.24). Participants with adherence &gt;= 90% in two groups receiving short reminders was 47% vs. 40% in control group (P=0.24).</td>
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<td>Group 1: n=70, mean age 35.6, 67% female.</td>
<td>1) daily, short reminder; or</td>
<td>Every 12-week period in 48 weeks.</td>
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<td>Group 2: n=72, mean age 35.7, 69% female.</td>
<td>2) daily, long reminder; or</td>
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<td>Group 3: n=73, mean age 37.7, 59% female.</td>
<td>3) weekly, short reminder; or</td>
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<td>Group 4: n=74, mean age 36.8, 69% female.</td>
<td>4) weekly, long reminder; or</td>
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<td>Control: n=139, mean age 35.7, 66% female.</td>
<td><strong>Control:</strong> no reminder</td>
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<td><strong>Type:</strong> SMS</td>
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<td>Hou 2010 RCT parallel</td>
<td>Women on oral contraceptives</td>
<td>Intervention: daily text message “Please remember to take your birth control pill” sent at a designated time chosen by the participant. Control: no reminder</td>
<td>Electronic monitoring (SIMPill) and self-report (diary).</td>
<td>SIMPill: rate of missed pills per cycle for intervention and control group did not differ: 4.9±3.0 vs. 4.6±3.5 (P=.60). Number of missed pills increased with each cycle for entire cohort (P=.02) but did not increase according to arm (P=.58). Diary: mean of 1.4±1.9 missed pills per cycle in intervention group, and 1.1±1.2 in control group.</td>
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<td>Strandbygaard 2010</td>
<td>Patients with asthma</td>
<td><strong>Intervention</strong>: daily SMS reminder (&quot;Remember to take your asthma medication morning and evening. From the Respiratory Unit&quot;). <strong>Control</strong>: no reminder. All patients received education concerning necessity of ICS treatment, and were provided with knowledge of the disease mechanisms and correct inhaler technique. <em>Type: SMS</em></td>
<td><strong>Electronic monitoring (medicine dose-count on inhaler device).</strong> Week 4 and week 12.</td>
<td>Mean adherence rate in SMS group increased from 77.9% (week 4) to 81.5% (week 12); mean change: 3.6% (p=0.52). Mean adherence in control group decreased from 84.2% to 70.1%; mean change: -14.2% (p=0.01). Absolute difference in mean adherence rate between two groups after 12 weeks was 17.8% (p=0.019).</td>
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<td>Christensen 2010 RCT cross-over</td>
<td>Patients with hypertension</td>
<td>Intervention: use of electronic monitoring device (Helping Hand Data Capture (HHDC)) which is operated with tablet blister cards. The device gives an audiovisual reminder when it is time to take medication. <strong>Control</strong>: standard therapy. After 6 months patients were crossed over. <strong>Type</strong>: ERD with audiovisual reminder</td>
<td>Self-report and electronic monitoring (HHDC). At 6 months and 12 months.</td>
<td>First 6 months: patients using HHDC reported 90.6% compliance vs. 85.1% in control group (NS). After crossover, patients using HHDC reported 86.3% compliance vs. 88.4% in control group (NS). Taking, dosing and timing compliance (electronic monitoring data) was 45-52% in group 1, and 32-38% in group 2. Group differences are close to significance. After 6 months, 50% of patients was persistent, 30% took their tablets on a daily basis.</td>
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<td>Ho 2008</td>
<td>Patients with glaucoma</td>
<td>Intervention: use of Travatan Dosing Aid (TDA) with audiovisual reminder. TDA has a LCD screen that displays a flashing eye drop symbol on the front as a visible reminder when patients are supposed to give themselves a dose of medication and it emits an audible beep as an audible reminder. Prescribed dosing time were programmed into the TDA.</td>
<td>Electronic monitoring (TDA).</td>
<td>Adherence rates were 87.9% and 79.7% (p=0.02), rates of missed dosing were 7.6% and 14.4% (p=0.03), rates of dosing at incorrect times were 7.1% and 9.8% (p=0.19), respectively for alarm on versus alarm off groups. Mean range of time between scheduled dose time and drop administration.</td>
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<td>Total group: n=42, mean age 69.1, 23 female</td>
<td>Control: n=20</td>
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<td>At 3-5 weeks.</td>
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<td>Control: use of TDA without audiovisual reminder.</td>
<td>Observation duration intervention group: 9-84 days (M=37.6), control group: 6-63 days (M=35.4).</td>
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<td>Charles 2007 RCT parallel</td>
<td>Patients with asthma</td>
<td>Intervention: use of SmartInhaler with audiovisual reminder function (AVRF). The alarm was a single beep, which sounded at predetermined times (twice a day) once every 30 sec for 60 min after predetermined time and stopped if the device was actuated or after 60 min if not taken. The AVRF had a light, which was green before device was actuated, changing to red once the dose was taken.</td>
<td>Self-report and electronic monitoring (SmartInhaler). Baseline and at 6, 12, 18 and 24 weeks.</td>
<td>Mean and median % medication taken in last 12 weeks: AVRF: 88% and 93%, control: 66% and 74%. Absolute difference in median: 18% (£.0001). Taking &gt;50% of their medication: AVRF: 95.5%, control: 71.7%. Taking &gt;80% of their medication: AVRF: 88.6%, control: 39.1%. Taking &gt;90% of their medication: AVRF: 63.6%, control: 19.6%. At all-time points, adherence was higher in AVRF group (difference in median adherence 7-21%; £.0001). Last 4 weeks, underestimated mean missed doses: AVRF: 3, control: 12.2 doses. Median difference: 8 (£.001).</td>
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<td>Santschi 2007 RCT cross-over</td>
<td>Patients with hypertension</td>
<td>Intervention: use of Intelligent Drug Administration System (IDAS II), an electronic device that accommodates blister packs. Electric foil is fixed upon the tablet slots, which activates recording of date and hour at which the drug was removed from the blister. Visual reminder (indicating time elapsed since last dose) and audible reminder, which sounds at chosen and fixed time for 1 min or until the device is opened, and can be deactivated upon request. Control: use of MEMS 6 SmartCap with LCD display on top indicating number of daily openings and number of hours elapsed since last opening. After 2 months patients were crossed over.</td>
<td>Electronic monitoring (MEMS or IDAS II). Baseline and at the end of each two-month period (3 measurements).</td>
<td>Over the 4-month study, adherence was very high whatever the device, with a median taking adherence of 99.2% (range 62.7–100%). During the first 2-month period, median taking adherence was 100% (range 40.3–100%), with only two patients having a taking adherence &lt;80%. During the last 2-month period, median taking adherence was 98.4% (range 84.1–100%). Median distribution index was lower with IDAS II, indicating that patients showed a stricter adherence to taking their drug at the same time, day after day with the IDAS II than with the MEMS device.</td>
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<td>Andrade 2005 RCT parallel</td>
<td>Patients with HIV</td>
<td>Intervention: use of Disease Management Assistance System (DMAS) device, programmed with reminder messages and dosing times for each medication in the HAART regimen. Control: no use of DMAS. All patients participated in an individualized, 30 min adherence counseling session each month and received adherence feedback from a clinical pharmacist. Type: audiovisual reminder</td>
<td>Self-report and electronic monitoring (eDEM caps). At 4, 8, 12, 16, 20, 24 weeks.</td>
<td>Overall mean adherence from EM data was not significantly different between DMAS (80%) and control (65%). Effect size: 0.51 (95% CI for Cohen’s d, 0.26–0.76). Among memory-impaired subjects (DMAS n=14, control n=17), overall mean adherence was higher for DMAS (77%) than control (57%) (P=.001). Among memory-intact subjects, adherence did not differ significantly between DMAS (83%) and control (77%).</td>
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<td>Da Costa 2005 RCT parallel</td>
<td>Patients with hypertension n=35, mean age 57, 45.7% male.</td>
<td>Intervention: use of reminder alarm card set up to beep every day at the same time, preselected by pharmacist and/or patient in accordance with prescription’s specifications. The reminder card was similar in size to a credit card with a single button. If the patient failed to acknowledge the alarm, it would beep every 20s for 3h, then it would stop and re-initiate 8h later, beeping every 20s for 1h. <strong>Control</strong>: no alarm card.</td>
<td><strong>Type</strong>: ERD with audible reminder</td>
<td><strong>Self-report and pill count.</strong> Baseline and at 1, 2 and 3 months.</td>
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<td>Laster 1996 RCT cross-over</td>
<td>Patients with glaucoma</td>
<td>Intervention: use of TimeCap, a medication alarm device serving as cap on conventional medication bottle. It has a digital display that shows time and day of week when the vial was last opened and an alarm that beeps when a dose is due. If the beep is ignored, the digital face flashes to provide a visual reminder that a dose has been missed. Control: no use of TimeCap</td>
<td>Self-report and amount of solution used estimated by weighing of bottle. At 30 and 60 days.</td>
<td>Mean difference (±SD) between amount of medication used with TimeCap and amount used without TimeCap was +2.867g ± 2.138g (p&lt;0.0001). Patients reported using their medication an average of 95.8% of the time with TimeCap and an average of 83.1% of the time without TimeCap.</td>
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<td><strong>Total group:</strong> n=13, age not reported, 11 female.</td>
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<td>RCT parallel</td>
<td>Group 1: n=57; Group 2: n=56; Group 3: n=54; Control: n=57.</td>
<td>1) peer support: 6 twice monthly 1-hour peer meetings held at the clinic with peers and participants, and weekly phone calls from peers to participants. 2) use of a 2-way pager system. The message schedule is customized to participants’ daily regimen. In addition to dose reminders, including medication names and number of pills to be taken, 3 other types of messages were sent: 1) educational; 2) entertainment; 3) adherence assessments. Minimum of 3 pager messages sent daily for 2 months. Pages gradually tapered in third month. Confirmation page was requested. 3) combination of peer support and pager.</td>
<td>At 3 (directly post-intervention), 6 and 9 months.</td>
<td>Self-report 100% adherence last 7 days at 2 weeks, 3, 6, 9 months: Group 1: 63.2%, 56.1%, 42.1%, 43.9% Group 2: 80.4%, 57.1%, 42.9%, 58.9% Group 3: 70.4%, 70.4%, 55.6%, 50.0% Control: 64.9%, 47.4%, 63.2%, 43.9%. EM adherence last 7 days at 2 weeks, 3, 6, 9 months: Group 1: 61.7%, 47.0%, 37.2%, 32.3% Group 2: 63.0%, 41.8%, 36.9%, 36.5% Group 3: 63.2%, 50.1%, 35.4%, 32.1% Control: 63.0%, 38.7%, 41.0%, 29.1%. Peer support: a 2-fold increase in the odds of self-report 100% adherence for those receiving vs. not receiving peer support at post-intervention (OR=2.10, 95% CI 1.10-4.01, P=0.02). Peer support vs. no peer support was associated with 9% higher adherence</td>
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<td><strong>Control</strong>: no peer support or pager.</td>
<td>All patients participated in the HAART protocol (clinic-based program designed to provide education regarding HAART and adherence and to identify and correct adherence barriers before HAART initiation).</td>
<td><strong>Type</strong>: pager</td>
<td>at post-intervention with EM data (estimate=8.88, 95% CI 22.09-19.85, P=0.11). This did not persist at 6 and 9-month follow-up for self-report (P&gt;0.77) nor EM adherence (P&gt;0.74). Pager support did not predict improved odds of 100% adherence at 3 or 9 months (P&gt; 0.74), but was associated with a decrease in 100% adherence at 6 months (OR=0.50, 95% CI 0.24-1.03, P=0.06). EM adherence also indicated no effect for pager support at 3, 6, or 9 months (P&gt; 0.54)</td>
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| Safren 2003 RCT parallel          | Patients with HIV                                | Intervention: website used to input patients’ schedule of daily pages. A paging service delivered text messages (e.g. “Take 2 Combivir with water”’ every day at 9 AM, or “Take the 2 blue pills now”) to patients’ pagers at designated times. The system allowed staff members to incorporate other reminders (e.g. timing of meals or appointment reminders).  
Control: no reminders  
Type: pager | Electronic monitoring (MEMS).  
At baseline, 2 and 12 weeks. | For week 2 (F(1,58)=8.24, p<0.01) and week 12 (F(1,43)=5.79, p<0.03), there were significant interactions revealing greater improvement in the pager arm.  
On average, the intervention group started with 55% adherence, went up to 70% at 2 weeks and 64% at 12 weeks. The control group started with 57% adherence, and remained at 56% (week 2) and 52% (week 12). | A reminder device (pager) revealed improvements relative to monitoring alone at 2 and 12 weeks. However, at both assessment points, in both groups, adherence was less than optimal, revealing the need for more intensive intervention efforts among patients with pre-existing adherence problems. |