

Additional file 7. Strategies categorized as having insufficient evidence

These statements correspond to category 3 of the evidence rating scheme of Ryan et al. [1]: “insufficient evidence” (Additional file 2).

1) Providing information or education

Single strategies

- Package leaflets in different formats (qualitative vs quantitative) for improving understanding of adverse effects of medicines [2].
- Patient Information Leaflets use before consultation, screening or surgery or medication information – effect on patient (less) anxiety [3].
- Patient Information Leaflets that are well written and used at an appropriate time – effect on improving knowledge and satisfaction [3].
- Provision of education or communication as a single component – effect on reducing adverse effects from drugs [1].
- Health literacy strategies using alternative numerical presentations, alternative pictorial representations, or alternative media delivered as a single strategy or when compared with other strategies (e.g., video, computer, or slide show presentations) – effect on comprehension and/or intent to seek health care [4].
- Evidence-based written recommendations (clinical practice guidelines) may increase awareness [5].

Combined strategies

- Dissemination and communication strategies using different approaches – effect on understanding and use of information [6].
- Communicating precision using different approaches [6].
- Use of social media for health communication [7].
- Online health information delivered using an "adult education style" discussion, instruction and practice in small groups – effect on health literacy [8].
- One to one risk communication (not necessarily face to face) – effect on treatment choices [9].
- Quality of care information (real or hypothetical performance) – effect on choice of higher quality-rated health plan (Faber 2009).
- Public release of performance data regarding any aspect of healthcare organizations or healthcare individuals – effect on change in service selection [10].
- Better dissemination strategies (active or passive) for guidelines or recommendations [11].

2) Communication and decision-making facilitation

Single strategies

- Use of tailored SMS for dialogue initiation may increase interaction (communication) between researchers and patients [12].

Combined strategies

- Consumer health informatics applications – effect on relationship-centered outcomes [13].
- Use of social media – effect on improving the professional and patient relationship and patient empowerment [14].
- Interventions focused on promoting communication about medicines between patients and professionals [1].
- Mobile phone messages between care provider and participant to deliver preventive health care – effect on satisfaction or anxiety [15].
- Delayed prescribing – effect on antimicrobial resistance [1].

3) Acquiring skills and competencies

Single strategies

None identified

Combined strategies

- Toolkits (self-test, information sheets, book, CDs, Audio CDs) may improve health status, behavior, and self-efficacy (patients with arthritis) [16].
- Other types of health literacy interventions – effect on health outcomes (knowledge, self-efficacy, behavioral intent, medication adherence, disease prevalence and severity, quality of life and costs) [4].
- Self-management and self-monitoring of antithrombotic medicine – effect on major hemorrhages and thromboembolic events or mortality, which may be because these events are rare thus studies are likely to have insufficient power to detect a clinical difference [1].
- Provision of training by pharmacists to improve medication adherence [1].
- Medicine self-administration programs – effect on medicines adherence, knowledge, errors or satisfaction [1].
- Life coaching interventions to improve self-efficacy and self-empowerment – effect on health-related outcomes. Note: the life coaching could be in the form of: individual telephone coaching, individual face-to-face, telephone, or internet coaching or a combination of these methods. The studies including disadvantaged patients showed the most convincing results [17].

4) Behavior change support

Single strategies

- Email vs standard mail or usual care may change behaviour or understanding for preventive health actions [18].

Combined strategies

- Electronic resources such as the internet and telecommunications systems – effect on any of the measured outcomes. However, it may improve the nurse-patient relationship [19].
- Alternative statistical formats – impact on health behaviour [20].

- Adding personal stories to patient decision aids – impact on support for people’s informed decision-making [21].
- When email counselling was compared to telephone counselling for the majority of measures on patients there was no difference between groups [22]. Where there were differences these showed that telephone counselling leads to greater change in lifestyle modification factors than email counselling.

5) (Personal) support

Single strategies

None identified

Combined strategies

- Structured counselling or compliance therapy, or of group or home-based visits – to promote vaccination [1].

6) Consumer system participation

Single strategies

None identified

Combined strategies

- Use of a “patient advisory council” for patient engagement in health care delivery – impact on clinical results, priority setting, patient safety and/or patient satisfaction [23].
- Nursing care through telemedicine – impact on access to healthcare, satisfaction and use of resources [19].
- Use of patient portals allowing patients to access their personal health information – effect on health or proxies for health (mortality, emergency room visits, hospitalizations, heart failure practice visits or risk factors) or empowerment [24].
- Electronic tools for health information exchange (e.g. electronic medical records) – impact on hospital readmission and length of stay [25].
- Information Technology applications implemented to support patient-centered care – impact on intermediate health outcomes (patient or provider satisfaction, health knowledge, behavior and cost) [26].

References

1. Ryan R, Santesso N, Lowe D, Hill S, Grimshaw J, Pictor M, et al. Interventions to improve safe and effective medicines use by consumers: An overview of systematic reviews. *Cochrane Database Syst Rev* 2014;4: CD007768.
2. Pires C, Vigário M, Cavaco A. Readability of medicinal package leaflets: a systematic review. *Rev Saude Publica* 2015;49: 1-13.

3. Sustersic M, Gauchet A, Foote A, Bosson JL. How best to use and evaluate Patient Information Leaflets given during a consultation: a systematic review of literature reviews. *Health Expect* 2017;20: 531-42.
4. Berkman ND, Sheridan SL, Donahue KE, Halpern DJ, Viera A, Crotty K, et al. Health literacy interventions and outcomes: an updated systematic review. *Evid Rep Technol Assess (Full Rep)* 2011: 1-941.
5. Loudon K, Santesso N, Callaghan M, Thornton J, Harbour J, Graham K, et al. Patient and public attitudes to and awareness of clinical practice guidelines: a systematic review with thematic and narrative syntheses. *BMC Health Serv Res* 2014;14: 321.
6. McCormack L, Sheridan S, Lewis M, Boudewyns V, Melvin CL, Kistler C, et al. Communication and dissemination strategies to facilitate the use of health-related evidence. *Evidence report/technology assessment* 2013: 1-520.
7. Moorhead SA, Hazlett DE, Harrison L, Carroll JK, Irwin A, Hoving C. A new dimension of health care: Systematic review of the uses, benefits, and limitations of social media for health communication. *J Med Internet Res* 2013;15: e85.
8. Car J, Lang B, Colledge A, Ung C, Majeed A. Interventions for enhancing consumers' online health literacy. *Cochrane Database Syst Rev* 2011: CD007092.
9. Edwards A, Hood K, Matthews E, Russell D, Russell I, Barker J, et al. The effectiveness of one-to-one risk communication interventions in health care: a systematic review. *Med Decis Making* 2000;20: 290-7.
10. Ketelaar NA, Faber MJ, Flottorp S, Rygh LH, Deane KH, Eccles MP. Public release of performance data in changing the behaviour of healthcare consumers, professionals or organisations. *Cochrane Database Syst Rev* 2011: CD004538.
11. Schipper K, Bakker M, De Wit M, Ket JC, Abma TA. Strategies for disseminating recommendations or guidelines to patients: a systematic review. *Implement Sci* 2016;11: 82.
12. Fjeldsoe BS, Marshall AL, Miller YD. Behavior change interventions delivered by mobile telephone short-message service. *Am J Prev Med* 2009;36: 165-73.
13. Gibbons MC, Wilson RF, Samal L, Lehman CU, Dickersin K, Lehmann HP, et al. Impact of consumer health informatics applications. *Evidence Report/Technology Assessment* 2009: 1-546.
14. Smailhodzic E, Hooijsma W, Boonstra A, Langley DJ. Social media use in healthcare: A systematic review of effects on patients and on their relationship with healthcare professionals. *BMC Health Serv Res* 2016;16: 442.
15. Vodopivec-Jamsek V, de Jongh T, Gurol-Urganci I, Atun R, Car J. Mobile phone messaging for preventive health care. *Cochrane Database Syst Rev* 2012;12: CD007457.
16. Yamada J, Shorkey A, Barwick M, Widger K, Stevens BJ. The effectiveness of toolkits as knowledge translation strategies for integrating evidence into clinical care: a systematic review. *BMJ Open* 2015;5.
17. Ammentorp J, Uhrenfeldt L, Angel F, Ehrensvar M, Carlsen EB, Kofoed PE. Can life coaching improve health outcomes?--A systematic review of intervention studies. *BMC Health Serv Res* 2013;13: 428.

18. Sawmynaden P, Atherton H, Majeed A, Car J. Email for the provision of information on disease prevention and health promotion. *Cochrane Database Syst Rev* 2012;11: CD007982.
19. Akesson KM, Saveman BI, Nilsson G. Health care consumers' experiences of information communication technology--a summary of literature. *Int J Med Inform* 2007;76: 633-45.
20. Akl EA, Oxman AD, Herrin J, Vist GE, Terrenato I, Sperati F, et al. Using alternative statistical formats for presenting risks and risk reductions. *Cochrane Database Syst Rev* 2011: 1-90.
21. Bekker HL, Winterbottom AE, Butow P, Dillard AJ, Feldman-Stewart D, Fowler FJ, et al. Do personal stories make patient decision aids more effective? A critical review of theory and evidence. *BMC Med Inform Decis Mak* 2013;13 Suppl 2: S9.
22. Atherton H, Sawmynaden P, Sheikh A, Majeed A, Car J. Email for clinical communication between patients/caregivers and healthcare professionals. *Cochrane Database Syst Rev* 2012;11: CD007978.
23. Sharma AE, Knox M, Mleczko VL, Olayiwola JN. The impact of patient advisors on healthcare outcomes: a systematic review. *BMC Health Serv Res* 2017;17: 693.
24. Ammenwerth E, Schnell-Inderst P, Hoerbst A. The impact of electronic patient portals on patient care: A systematic review of controlled trials. *J Med Internet Res* 2012;14: e162.
25. Health Quality Ontario. Electronic tools for health information exchange: an evidence-based analysis. Ontario Health Technology Assessment Series [Internet]. 2013; 13(11):[1–76 pp.]. Available from: <http://www.hqontario.ca/en/documents/eds/2013/full-report-OCDM-etools.pdf>.
26. Finkelstein J, Knight A, Marinopoulos S, Gibbons MC, Berger Z, Aboumatar H, et al. Enabling patient-centered care through health information technology. *Evid Rep Technol Assess (Full Rep)* 2012: 1-1531.