

## Additional file 2: Tabular overview of all included systematic reviews and meta-analyses

Authors/Year	Main topic and/or included technologies of interest	Search period	Number of studies	Target setting/ Target groups (Population)	+, o, +/-	Main results with respect to effectiveness as stated by authors	Résumé on methodological quality or study limitations as stated by authors <sup>1</sup>	Level of Evidence <sup>2</sup>
<b>Systematic Reviews on Hospital/Care institution information systems, EHR/EMR and Decision support Systems</b>								
(Meißner and Schnepf 2014)	Computer-based nursing documentation	2000-2013	7 studies (qualitative)	Residential aged care facilities	+/-	Improvement in the quality of residents' records is assumed to lead to an overall improvement in quality of care. Nurses who are more efficient with the electronic documentation demonstrate improved time management. For nurses who are less efficient with electronic documentation the information processing is perceived as time consuming.	<i>Limited evidence</i> based on qualitative analysis of qualitative studies.	4
(Reis, Maia et al. 2017)	Cost benefit of of electronic health records and hospital information systems	2010-2016	6 Systematic Reviews	Hospital	+	Despite the limited number of studies, the heterogeneity of electronic systems reported, and the types of intervention in hospital routines, it was possible to identify some preliminary benefits in quality of care: Hospital information systems, along with information sharing, had the potential to improve clinical practice by reducing staff errors or incidents, improving automated harm detection, monitoring infections more effectively, and enhancing the continuity of care during physician handoffs. The review identified some benefits on the quality of care but did not provide evidence that the eHealth interventions had a measurable impact on cost-effectiveness, mortality, or length of stay in hospital settings. Preliminary evidence indicates that the use of eHealth interventions with information exchange may improve clinical process outcomes.	Only four databases were searched. The quality of included studies was poor.	1a
(Bright, Wong et al. 2012)	Electronic clinical decision support systems	Until 2010	148 studies (only RCTS with n>=50)	Clinical settings	+	Clinical decision support had a favorable effect on prescribing treatments, facilitating preventive care services, and ordering clinical studies across diverse venues and systems. 86% of the studies assessed health care process measures, 20% assessed clinical outcomes, and 15% measured costs. Evidence demonstrating positive effects of clinical decision support systems on clinical and economic outcomes remains surprisingly sparse. Few studies measured potential unintended consequences or adverse effects. Evidence for clinical, economic, workload, and efficiency outcomes remains sparse.	Studies were heterogeneous in interventions, populations, settings, and outcomes. Publication bias and selective reporting cannot be excluded. <i>(Study is part of Lobach et al. 2012.)</i>	1a

<sup>1</sup> Reported are mainly limitations that are addressed explicitly in the studies. *Text in italics is added by Huter et al.*

<sup>2</sup> Level of Evidence is depending on the highest level of evidence of the included studies, Level of Evidence and related study design: 1a=Reviews that include more than one Randomised controlled trial (RCT); 1b=RCT; 2= Controlled studies, without randomisation, i.e. quasi-experiments; 3= Case-control or Cohort studies; 4: Findings obtained from descriptive, other observational and/or qualitative research designs (including case studies), cross sectional studies, user studies.

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(Lobach, Sanders et al. 2012)	Clinical decision support systems (CDSS) and knowledge management systems (KMS)	1976-Dez 2010	311 studies, (only studies with n>=50)	No restrictions	+	Both commercially and locally developed CDSSs effectively improved health care process measures related to performing preventive services, ordering clinical studies, and prescribing therapies. Fourteen CDSS/KMS features were assessed for correlation with success of CDSSs/KMSs across all endpoints. (Integration with charting or order entry system, promotion of action rather than inaction, no need for additional clinician data entry, justification of decision support via research evidence, local user involvement, and provision of decision support results to patients as well as providers, automatic provision of decision support as part of clinician workflow, provision of decision support at time and location of decisionmaking, and provision of a recommendation, not just an assessment). Evidence for the effectiveness of CDSSs on clinical outcomes and costs and KMSs on any outcomes is minimal.	Studies were heterogeneous in interventions, populations, settings, and outcomes. Publication bias and selective reporting cannot be excluded.	1a
(Roshanov, Fernandes et al. 2013)	Identification of factors that differentiate between effective and ineffective computerised clinical decision support systems	1973-2009	Meta-regression of 162 RCTs	No restrictions	+/o	58% of the included trials showed improvements in processes of care or patient outcomes. Systems that presented advice in electronic charting or order entry system interfaces were less likely to be effective. Systems more likely to succeed provided advice for patients in addition to practitioners, required practitioners to supply a reason for over-riding advice were evaluated by their developers.	Although based on randomised controlled trials, the analysis remains observational and the findings should not be interpreted as if they were based on head to head trials of features of computerised clinical decision support systems. Failure to include important covariates in the models could have biased the estimates and given false findings.	1a
<b>Systematic Reviews on Telecare</b>								
(Capurro, Ganzinger et al. 2014)	E-health in palliative care	Until Jun 2012	17 studies (no RCTs)	Outpatient palliative care	+	Some studies reported some improvement on quality of care, documentation effort, cost, and communications. One study reports quantitative results (lower number of hospitalizations, less emergency room visits and bed days (after introduction of text messaging and videophone devices). No study described patient-relevant clinical outcomes.	Studies tended to be observational, noncontrolled studies, and a few quasi-experimental studies. Overall there was great heterogeneity in the types of interventions and outcome assessments.	2

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(Davies, Rixon et al. 2013)	Telecare	Until Nov 2009	7 studies	Outcomes on informal carers	+	The evidence tentatively indicated that telecare exerts a positive effect on carer stress and strain, but there is no evidence to indicate benefits on burden or quality of life. The evidence is conflicting about the effect of telecare on the amount of time carers spend on their caring duties, and on relationships between the carer, cared-for person and other family members.	All included evaluations were rated as being of weak methodological quality, indicating risk of bias within the evidence base.	2
(Karlsen, Ludvigsen et al. 2017)	Telecare	2005-2017	11 qualitative studies	Outpatient long-term care	+	The experiences with the use of telecare are diverse. Findings indicate telecare systems can promote safety and security to age in place. However, "one size does not fit all"- Telecare systems must fit individual needs, and be supported by service providers to accommodate sustainable use over time.	The duration of use of telecare devices was not well described in many of the included studies, which likely affected participants' experiences.	4
(Oliver, Demiris et al. 2012)	Telehospice	2000-Mar 2010	26 studies (3 studies on clinical outcomes)	Outpatient palliative care	o	None of the 3 studies with clinical outcomes (patient anxiety, caregiver quality of live, communication anxiety, caregiver perceptions of pain medication) was large enough to find significance in clinical measures.	See entry on the left.	2
<b>Systematic Reviews on other Communication Technologies</b>								
(Arditi, Rège-Walther et al. 2012)	Computer generated reminders (delivered on paper)	Until 2011	32 studies	Mainly outpatient care in North America	+	Interventions achieved moderate improvement in professional practices, with a median improvement of processes of care of 7.0%. Two reminder features were associated with larger effect sizes: providing space on the reminder for provider to enter a response and providing an explanation of the content or advice on the reminder. In the only study that had sufficient power to detect a clinically significant effect on outcomes of care, reminders were not associated with significant improvements.	The quality of evidence for these comparisons was rated as moderate according to the GRADE approach.	1a
(Bhattarai and Phillips 2017)	Digital technologies for pain management (Coaching & Assessment)	2000-Aug 2015	9 studies	Older people's pain management across care-settings	o	There is insufficient evidence demonstrating the effectiveness of digital health technologies in reducing older people's pain intensity and pain interference. However, there was limited evidence to support their use for reduction of pain intensity and interference. There is some lower level evidence that video based interactive/instructive interventions may increase patient's ability to describe their pain and higher likelihood of using pharmacological pain treatment. The causality between improved pain communication and increased likelihood of pain treatment has not been established.	There is lack of high-quality studies investigating the effectiveness of digital health technologies in management of older people's pain, with most limited to pilot or feasibility studies that do not appear to have led to larger adequately powered phase III RCTs.	1a
(Fagerström, Tuveesson et al. 2017)	Information and communication	2009-2015	20 studies	Nursing practice in Sweden	+/-	The review indicates that ICT integration into nursing practice is a complex process that impacts nurses' communication and relationships in patient care, working conditions, and professional	Due to the variety of aims and research questions in the qualitative and quantitative	4

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	technologies in general					identities and development. Nurses are found to express ambiguous views on ICT as a usable service in their everyday practice since it impacts both positively and negatively.	studies we examined, it was difficult to provide an all-encompassing understanding of the role of ICT in nursing settings.	
(Hu, Kung et al. 2015)	Internet based interventions to decrease caregiver stress	Until 2013	24 studies (16 RCTs, 8 open label trials)	Informal caregivers	+/o	Of the 8 open-label studies, 3 reported positive benefit in reducing caregiver stress as measured by their selected rating scales, 4 reported mixed results, and 1 reported a negative (neutral) result. Of the 16 RCTs, 6 reported positive or mostly positive results, 5 reported mixed results with some of the outcome measures showing improvement or when taking into account factors such as socioeconomic status, and 5 reported negative (neutral) results in the primary outcomes.	<i>No limitations discussed in the study.</i>	1a
(Mickan, Atherton et al. 2014)	Personal digital assistants used to access information or support clinical decision making	2001-Aug 2013	7 studies (small RCTs)	Healthcare professionals in clinical settings	+	<b>Accessing Information:</b> When healthcare professionals used handheld computers to access clinical information, their knowledge improved significantly more than peers who used paper resources (2 pilot RCTs). <b>Adherence to guidelines:</b> When clinical guideline recommendations were presented on handheld computers, clinicians made significantly safer prescribing decisions and adhered more closely to recommendations than peers using paper resources (2 feasibility RCTs). <b>Diagnostic Decision making:</b> healthcare professionals made significantly more appropriate diagnostic decisions using clinical decision-making tools on handheld computers compared to colleagues who did not have access to these tool (2 pilot RCTs).	Only RCTs included. Only 4 of the 7 studies reported convincing, statistically significant evidence. The heterogeneity of study designs and purposes makes the synthesis of this literature difficult.	1b
<b>Systematic Reviews on Robotic Technologies</b>								
(Bemelmans, Gelderblom et al. 2012)	Socially assistive robots (mostly animaloid)	Until sept 2009	41 publications on 17 studies	Elderly Care	+	Most studies reported positive effects of companion-type robots on socio- psychological (e.g. mood, loneliness, social connections, communication) and physiological (e.g. stress reduction) parameters.	The methodological quality of the included studies was mostly low (very small sample sizes, 1 RCT included with n=12 in intervention group).	2
(Kachouie, Sedighadeli et al. 2014)	Socially assistive robots (13 different robots included, mostly animaloid)	Until 2012	68 studies (37 study groups)	Elderly Care	+	Most studies report positive effects on well-being, only few studies report negative or no effects	Generalizability of outcomes is problematic, methodological quality is mostly low, most studies without control groups, mostly situated in Japan.	2

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(Pearce, Adair et al. 2012)	Robotic devices enabling older people to live at home	1990-2012	42 studies (4 studies on effectiveness)	Older people living at home	+	Exoskeleton: improved walking speed and reduced energy expenditure Robotic Wheelchair: maneuvering less demanding than hand control	Only very limited evidence on effectiveness available, all studies very small and situated in laboratory setting	4
<b>Systematic Reviews on Monitoring/Sensors</b>								
(Choi, Lawler et al. 2011)	Fall prevention strategies in general (including bed-alarm systems)	1990-2009	34 studies	Fall prevention in hospital settings	o	Only 2 of the studies refer to digital technologies: Despite observing a clinical tendency towards fall reduction, studies investigating the efficacy of a bed alarm system did not observe a statistically significant reduction in the number of falls	The methodological quality of the included studies is moderate. <i>The specific technology included remains unclear.</i>	2
(Kosse, Brands et al. 2013)	Sensor technologies for fall prevention	Until 2011	12 studies	Elderly persons in hospital or nursing care	+/o	3 RCTs report no reduction in falls, 3 quasi-experiments reported significant reductions in fall rates. The current data is inconsistent whether current sensor technologies are effective in reducing fall rates in institutionalized geriatric patients. False alarm rates are often high.	The relatively low methodological quality of the included studies and the low number of the studies limit the conclusion of the review.	1a
(Walia, Wong et al. 2016)	Monitoring Devices to prevent Pressure injuries	2005-Jan 2016	9 studies (2 studies in meta-analysis)	Any setting and target group	+	All studies included reported a significant reduction in the risk factors for and/or the incidence of pressure Injuries. Meta-analysis shows that risk of developing pressure injuries may be reduced by 88% with monitoring devices	No RCTs included, but methodological quality of non-randomized and observational studies was rated good.	2
<b>Systematic Reviews on Assistive Devices</b>								
(Brandt, Alwin et al. 2012)	Assistive Technologies (AT) for people with disabilities	2000-Apr 2010	44 Systematic Reviews	People with disabilities	+	Most of the included reviews assess non-digital AT. Two Reviews on digital AT for people with dementia are included, that identify some positive effects. One of the review has moderate limitations, the other one major limitations in study quality. Two reviews on powered mobility devices identify beneficial effects based on low to moderate levels of evidence.	Low-quality or unclear evidence was found for the effectiveness of most evaluated AT interventions.	unclear
(Nicolson, Moir et al. 2012)	Assistive Technologies for children with disability	Until 2011	4 studies, 1 systematic review	Informal caregivers of children with disability	+	Three articles reported that AT lightened caregiver assistance in the areas of mobility, self-care and social function, <i>but besides adaptive seating devices and switches it remains unclear what type of technology has been studied.</i>	Two studies are of moderate, two studies of low methodological quality.	2
(Van der Roest, Wenborn et al. 2017)	Assistive Technology for memory support	Until Feb 2017	No study met inclusion criteria (RCT)	People with dementia		No studies included		
<b>Systematic Reviews on Multiple Technologies</b>								
(Ofek Shlomai, Rao et al. 2015)	Handhygiene interventions (reminders on PC screen savers, e-	Until 2013	16 studies	Neonatal intensive care units (NICU)	+	A range of strategies, such as educational campaigns, musical parodies, reminders, easy access to hand hygiene sanitizers and UV sensors, can improve hand hygiene compliance in NICUs.	No RCT included, significant statistical heterogeneity in the studies, duration of follow up	

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ICT and Sensors	mails, educational performance feedback by UV-sensor)					Strategies to improve hand hygiene compliance in NICUs seem to be more effective when they include performance feedback at the personal or group levels.	was inadequate in the majority of the studies.	
(Fleming and Sum 2014)	Assistive Technologies (AAL, Tracking, Assistive Devices, Telecare)	1995-2011	41 studies	People with dementia	+/-	Diverse findings for a broad range of technologies are presented. Results are reported qualitatively focussed on the following topics: independence, prompts and reminders, safety and security, leisure and lifestyle, communication and telehealth, therapeutic interventions.	The literature exploring the use of assistive technologies for increasing independence and compensating for memory problems illustrates the problems of moving from the laboratory to real life. The studies are usually limited by very small samples, high drop-out rates, very basic statistical analyses and lack of adjustment for multiple comparisons and poor performance of the technology itself.	1a
(Khosravi and Ghapanchi 2016)	Technologies applied to assist seniors (ICT, Robotics, Telemedicine, Sensor technology, medication management, Smart Games)	2000-2014	41 studies	Seniors aged 60 years or older	+	The effectiveness of the technologies in the studies include health outcomes (e.g., bodily functions, health condition), social influence (e.g., caregiving benefits, independent living and hospital readmission), and wellbeing (e.g., psychosocial effect, quality of life). The major findings on the effectiveness of the assistive technologies showed that a number of the technologies have a positive impact on enhancing seniors' lives.	Most of the studies in the final pool were experimental, making it difficult to provide robust conclusion. Most of the studies suffer from small sample size; therefore, the findings of these studies did not validate strong evidence to support the effectiveness of the assistive technology.	1a
(Liu, Stroulia et al. 2016)	Smart homes and home based health-monitoring	Until Oct 2014	48 studies (18 studies on effectiveness)	Home or supportive care environments for older adults (60 years and older) /outpatient care	+/-	The highest level of evidence was 1b when considering whether home health technologies can help to address monitoring of ADL, cognitive decline and mental health, and heart conditions in older adults with complex needs. There is no evidence that smart homes and home health monitoring technologies help address disability prediction and health-related quality of life, or fall prevention; and there is conflicting evidence that smart homes and home health monitoring technologies help address chronic obstructive pulmonary disease.	Great heterogeneity of the technologies used, the medical conditions and disability addressed with those technologies and the outcomes reported in the studies. ( <i>Study claims that studies published before 2010 were excluded, but actually included study range is from 2004-2014.</i> )	1a

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(Manias, Williams et al. 2012)	Interventions to reduce medication errors (Decision support, CPOE, smart pumps)	Until Oct 2011	24 studies	ICU	+/-	16 out of the 24 studies demonstrated statistically significant reductions in medication error rates. 4 studies showed increased medication error rates and 4 studies demonstrated no change or an unclear effect. 4 intervention types demonstrated reduced medication errors postintervention: Changes in work schedules, modes of education, medication reconciliation, protocols and guidelines. Mixed results were found on CPOE and Decision Support Systems.	It is not possible to promote any interventions as positive models for reducing medication errors. Insufficient research was undertaken with any particular type of intervention, and there were concerns regarding the level of evidence and quality of research. Most studies involved single arm, before and after designs without a comparative control group.	1a
(McKibbin, Lokker et al. 2011)	Impact of health information technology on medication management process (MMIT)	Until summer 2010	428 studies (377 studies on effectiveness)	No restrictions	+	Process and other outcomes related to use and satisfaction with MMIT were often improved, especially for prescribing and ordering and the monitoring phases. Improvements in the appropriateness of prescribing and decreased errors (e.g., correct doses and timing, better choices of antibiotics, fewer drug-drug interaction potentials, and corrected doses related to body weight or liver function) seem to be consistently shown. Changes in workflow, improvements in communication, and improved efficiencies such as time reductions are also positive, although fewer studies addressed these types of outcomes. Clinical endpoints were sometimes found to be improved with the use of MMIT, more often in the observational studies than in controlled clinical trials. CDSS applications and, to a lesser extent, CPOE systems have been shown to be useful, especially when studying prescribing and monitoring in hospitals and clinics. Notable was the identification of strong emotions expressed by users of CPOE (clinicians), both positive and negative, which were reported in the qualitative studies. A number of unintended consequences of the technologies were found, some of which were unfortunate and some of which were beneficial. Few cost studies and full economic evaluations were identified. Those articles that were included found that health IT interventions may offer cost advantages despite their increased acquisition costs. Proof of clinical improvements and economic effectiveness through the use of MMIT is lacking.	Study quality varied according to phase of medication management. <i>Study outcomes and discussed limitations are too broad to be represented adequately in this table.</i>	1a

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(McKibbon, Lokker et al. 2012)	Impact of health information technology on medication management process (MMIT)	Until summer 2010	87 studies (RCTs only)	No restrictions	+/o	Most of the 87 RCTs focused on clinical decision support and computerized provider order entry systems, were performed in hospitals and clinics, included primarily physicians and sometimes nurses but not other health professionals, and studied process changes related to prescribing and monitoring medication. Processes of care improved for prescribing and monitoring mostly in hospital settings, but the few studies measuring clinical outcomes showed small or no improvements.	<i>This study is an analysis of the RCTs included in McKibbon et al. 2011.</i> Few studies measure clinical outcomes. The large body of literature, although instructive, is not uniformly distributed across settings, people, medication phases, or outcomes.	1a
(Vedel, Akhlaghpour et al. 2013)	Application of health information technologies in geriatrics & gerontology (telecare, EHR, Decision support, web-based support for patients/ family care-givers, assistive IT)	2000-Apr 2010	112 studies	Older adults	+	Impact on clinical processes was the outcome most frequently studied and almost all of the 65 studies that looked at it had positive results (94%). Only 25 studies examined impacts on patients' health outcomes, of those 96% reported a positive outcome. Similarly, 27 out of 33 studies (82%) that looked at patients' satisfaction had positive results. Although examined even less frequently, impacts were mainly positive in terms of productivity, efficiency and costs (14/16 studies; 88%), clinicians' satisfaction (11/13; 85%), and patients' empowerment (12/15; 80%).	The quality of the studies included varies considerably. Nevertheless, a sensitivity analysis did not reveal that inclusion of poor quality studies was skewing the results. The review may also suffer from publication bias as studies reporting positive outcomes are more frequently published than studies with negative outcomes.	Type of included studies not reported

**Abbreviations: +=positive effect, -=negative effect, o=neutral effect, +/- =ambivalent effects**

## References

- Arditi, C., M. Rège-Walther, J. C. Wyatt, P. Durieux and B. Burnand (2012). "Computer-generated reminders delivered on paper to healthcare professionals; effects on professional practice and health care outcomes." *Cochrane Database of Systematic Reviews*(12): N.PAG-N.PAG.
- Bemelmans, R., G. J. Gelderblom, P. Jonker and L. de Witte (2012). "Socially Assistive Robots in Elderly Care: A Systematic Review into Effects and Effectiveness." *Journal of the American Medical Directors Association* **13**(2): 114-120.e111.
- Bhatarai, P. and J. Phillips (2017) "The role of digital health technologies in management of pain in older people: an integrative review." *Archives of gerontology and geriatrics* **68**, 14-24 DOI: 10.1016/j.archger.2016.08.008.
- Brandt, Å., J. Alwin, H. Anttila, K. Samuelsson and A.-L. Salminen (2012). "Quality of evidence of assistive technology interventions for people with disability: An overview of systematic reviews." *Technology & Disability* **24**(1): 9-48.
- Bright, T. J., A. Wong, R. Dhurjati, E. Bristow, L. Bastian, R. R. Coeytaux, G. Samsa, V. Hasselblad, J. W. Williams, M. D. Musty, L. Wing, A. S. Kendrick, G. D. Sanders and D. Lobach (2012). "Effect of clinical decision-support systems: A systematic review." *Annals of Internal Medicine* **157**(1): 29-43.

Capurro, D., M. Ganzinger, J. Perez-Lu and P. Knaup (2014). "Effectiveness of eHealth interventions and information needs in palliative care: a systematic literature review." J Med Internet Res **16**(3): e72.

Choi, Y.-S., E. Lawler, C. A. Boenecke, E. R. Ponatoski and C. M. Zimring (2011). "Developing a multi-systemic fall prevention model, incorporating the physical environment, the care process and technology: a systematic review." Journal of Advanced Nursing **67**(12): 2501-2524.

Davies, A., L. Rixon and S. Newman (2013). "Systematic review of the effects of telecare provided for a person with social care needs on outcomes for their informal carers." Health & Social Care in the Community **21**(6): 582-597.

Fagerström, C., H. Tuveesson, L. Axelsson and L. Nilsson (2017). "The role of ICT in nursing practice: an integrative literature review of the Swedish context." Scandinavian Journal of Caring Sciences **31**(3): 434-448.

Fleming, R. and S. Sum (2014). "Empirical studies on the effectiveness of assistive technology in the care of people with dementia: A systematic review." Journal of Assistive Technologies **8**(1): 14-34.

Hu, C., S. Kung, T. A. Rummans, M. M. Clark and M. I. Lapid (2015). "Reducing caregiver stress with internet-based interventions: a systematic review of open-label and randomized controlled trials." J Am Med Inform Assoc **22**(e1): e194-209.

Kachouie, R., S. Sedighadeli, R. Khosla and M. T. Chu (2014). "Socially Assistive Robots in Elderly Care: A Mixed-Method Systematic Literature Review." International Journal of Human-Computer Interaction **30**(5): 369-393.

Karlsen, C., M. S. Ludvigsen, C. E. Moe, K. Haraldstad and E. Thygesen (2017). "Experiences of community-dwelling older adults with the use of telecare in home care services: a qualitative systematic review." JBI Database of Systematic Reviews & Implementation Reports **15**(12): 2913-2980.

Khosravi, P. and A. H. Ghapanchi (2016). "Investigating the effectiveness of technologies applied to assist seniors: A systematic literature review." Int J Med Inform **85**(1): 17-26.

Kosse, N. M., K. Brands, J. M. Bauer, T. Hortobagyi and C. J. C. Lamoth (2013). "Sensor technologies aiming at fall prevention in institutionalized old adults: A synthesis of current knowledge." International Journal of Medical Informatics **82**(9): 743-752.

Liu, L., E. Stroulia, I. Nikolaidis, A. Miguel-Cruz and A. Rios Rincon (2016). "Smart homes and home health monitoring technologies for older adults: A systematic review." International Journal of Medical Informatics **91**: 44-59.

Lobach, D., G. D. Sanders, T. J. Bright, A. Wong, R. Dhurjati, E. Bristow, L. Bastian, R. Coeytaux, G. Samsa, V. Hasselblad, J. W. Williams, L. Wing, M. Musty and A. S. Kendrick (2012). "Enabling health care decisionmaking through clinical decision support and knowledge management." Evidence report/technology assessment(203): 1-784.

Manias, E., A. Williams and D. Liew (2012). "Interventions to reduce medication errors in adult intensive care: A systematic review." British Journal of Clinical Pharmacology **74**(3): 411-423.

McKibbin, K. A., C. Lokker, S. M. Handler, L. R. Dolovich, A. M. Holbrook, D. O'Reilly, R. Tamblyn, J. H. B, R. Basu, S. Troyan, P. S. Roshanov, N. P. Archer and P. Raina (2011). "Enabling medication management through health information technology (Health IT)." Evid Rep Technol Assess (Full Rep)(201): 1-951.

McKibbin, K. A., C. Lokker, S. M. Handler, L. R. Dolovich, A. M. Holbrook, D. O'Reilly, R. Tamblyn, B. J. Hemens, R. Basu, S. Troyan, P. S. Roshanov, K. A. McKibbin, C. Lokker, S. M. Handler, L. R. Dolovich, A. M. Holbrook, D. O'Reilly, R. Tamblyn, B. J. Hemens and R. Basu (2012). "The effectiveness of integrated health information technologies across the phases of medication management: a systematic review of randomized controlled trials." Journal of the American Medical Informatics Association **19**(1): 22-30.

Meißner, A. and W. Schnepf (2014). "Staff experiences within the implementation of computer-based nursing records in residential aged care facilities: a systematic review and synthesis of qualitative research."

Mickan, S., H. Atherton, N. W. Roberts, C. Heneghan and J. K. Tilson (2014). "Use of handheld computers in clinical practice: A systematic review." BMC Medical Informatics and Decision Making **14**(1).

Nicolson, A., L. Moir and J. Millsteed (2012). "Impact of assistive technology on family caregivers of children with physical disabilities: a systematic review." Disability & Rehabilitation: Assistive Technology **7**(5): 345-349.

Ofek Shlomai, N., S. Rao and S. Patole (2015). "Efficacy of interventions to improve hand hygiene compliance in neonatal units: a systematic review and meta-analysis." European Journal of Clinical Microbiology and Infectious Diseases **34**(5): 887-897.

Oliver, D. P., G. Demiris, E. Wittenberg-Lyles, K. Washington, T. Day and H. Novak (2012). "A systematic review of the evidence base for telehospice." Telemed J E Health **18**(1): 38-47.

Pearce, A. J., B. Adair, K. Miller, E. Ozanne, C. Said, N. Santamaria and M. E. Morris (2012). "Robotics to enable older adults to remain living at home." J Aging Res **2012**: 538169.

Reis, Z. S. N., T. A. Maia, M. S. Marcolino, F. Becerra-Posada, D. Novillo-Ortiz and A. L. P. Ribeiro (2017). "Is There Evidence of Cost Benefits of Electronic Medical Records, Standards, or Interoperability in Hospital Information Systems? Overview of Systematic Reviews." JMIR Med Inform **5**(3): e26.

Roshanov, P. S., N. Fernandes, J. M. Wilczynski, B. J. Hemens, J. J. You, S. M. Handler, R. Nieuwlaat, N. M. Souza, J. Beyene, H. G. C. Van Spall, A. X. Garg and R. B. Haynes (2013). "Features of effective computerised clinical decision support systems: Meta-regression of 162 randomised trials." BMJ (Online) **346**(7899).

Van der Roest, H. G., J. Wenborn, C. Pastink, R. M. Droes and M. Orrell (2017). "Assistive technology for memory support in dementia." Cochrane Database Syst Rev **6**: Cd009627.

Vedel, I., S. Akhlaghpour, I. Vaghefi, H. Bergman and L. Lapointe (2013). "Health information technologies in geriatrics and gerontology: a mixed systematic review." J Am Med Inform Assoc **20**(6): 1109-1119.

Walia, G. S., A. L. Wong, A. Y. Lo, G. A. Mackert, H. M. Carl, R. A. Pedreira, R. Bello, C. S. Aquino, W. V. Padula and J. M. Sacks (2016). "Efficacy of Monitoring Devices in Support of Prevention of Pressure Injuries: Systematic Review and Meta-analysis." Advances in Skin & Wound Care **29**(12): 567-576.