**Supplementary information**

**Supplementary material Table 1, Literature Search Strategies: PubMed and Google Alert**

|  |  |
| --- | --- |
| ***Disinvestment*** | |
| ***PubMed*** | ***Google Alert*** |
| (((deimplement\*[tiab] OR de-implement\*[tiab]) OR (((disinvest\*[tiab] OR dis-invest\*[tiab]) OR (deadopt\*[tiab] OR de-adopt\*[tiab]) OR (low value health\*[tiab] OR low value care[tiab] OR low value service\*[tiab]) OR (high value health\*[tiab] OR high value care[tiab] OR high value service\*[tiab]) OR (Choosing Wisely[tiab]) OR (deprescrib\*[tiab] OR de-prescrib\*[tiab]) OR (realistic medicine[tiab]) OR (slow medicine[tiab]) OR (prudent health\*[tiab]) OR ("Do Not Do"[tiab])) OR ((re-assess\*[tiab] OR reassess\*[tiab]) AND ("health technology"[tiab] OR "health technologies"[tiab] OR medical technology[tiab] OR medical technologies[tiab] OR HTA[tiab])))) OR (medical reversal[tiab]) OR ("evidence reversal"[tiab])) OR (((de-list\*[tiab] OR delist\*[tiab]) OR (decommission\*[tiab]) OR (obsole\*[ti]) OR (defund\*[tiab] OR de-fund\*[tiab]) OR (phasing out[ti] OR phase out[ti]) OR (reinvest[tiab] OR reinvesting[tiab] OR reinvestment\*[tiab] OR re-invest[tiab] OR re-investing[tiab] OR re-investment\*[tiab]) OR (reallocat\*[ti] OR re-allocat\*[ti]) OR (unnecessary procedures[mh]) OR (health services misuse[mh]) OR (redeploy\*[tiab] OR re-deploy\*[tiab]) OR (ineffective[ti]) OR (abandoning[ti]) OR (inappropriate[ti]) OR (overuse[ti] OR "over use"[ti]) OR (overutili\*[tiab]) OR (decrease use[tiab]) OR (discontinue use[tiab]) OR (change in practice[tiab]) OR (clinical redesign[tw]) OR (dis-adopt\*[tiab] OR disadopt\*[tiab]) OR (resource release[tiab]) OR (less is more[tiab]) OR ((waste[ti] AND (health[tiab] OR healthcare[tiab])) NOT (radioactive[tiab] OR food[tiab] OR agricultural[tiab] OR organic[tiab] OR environ\*[tiab] OR wastewater[tiab] OR chemical\*[tiab] OR pollut\*[tiab] OR industrial[tiab] OR recycl\*[tiab]))) AND ((program budgeting[tiab] OR programme budgeting[tiab] OR marginal analysis[tiab]) OR (health care rationing[mh]) OR (cost control[mh]) OR (cost-benefit analysis[mh]) OR (health priorities[mh]) OR (resource allocation[mh]) OR (technology assessment, biomedical[mh]) OR (budgets[mh]) OR (investments[mh]) OR (diffusion of innovation[mh]) OR (formularies as topic[mh]) OR (reimbursement mechanisms[mh]) OR (comparative effectiveness research[mh]) OR (decision making, organizational[mh]) OR (delivery of health care[mh]) OR (economics, medical[mh]) OR (priority setting[tiab]) OR (priorit\*[ti]) OR (technolog\*[ti] OR hta[ti]) OR (cost[ti] OR costs[ti] OR costing[ti]) OR (ration[ti] OR rationing[ti]) OR (decision\*[ti]) OR (reimburs\*[ti]) OR (resource allocation[ti]) OR (sustainab\*[ti]))) | (disinvestment OR deimplementation OR de-implementation OR reassessment OR de-commissioning OR low-value OR "low value") (healthcare OR medical OR medicine OR drug OR medication OR diagnostic) |
| ***Horizon scanning*** | |
| ("horizon scanning"[tiab] OR (horizon[ti] AND scan\*[ti])) OR ("early awareness"[tiab]) OR ("early alert"[tiab]) OR (awareness[mh] AND ("health technologies"[tiab] OR biomedical technology[mh] OR "Equipment and Supplies"[mh])) OR (forecasting[mh] AND (biomedical technology[mh] OR technology assessment, biomedical[mh] OR "health technologies"[tiab] OR health technology[tiab])) OR ((biomedical technology/trends OR technology assessment, biomedical/trends) AND (emerging[tiab] OR horizon[tiab])) OR new medical technolog\*[tiab] OR new health technolog\*[tiab] OR (diffusion of innovation[mh] AND ("health technologies"[tiab] OR "health technology"[tiab] OR medical technology[tiab] OR "medical technologies"[tiab])) OR *((emerging[ti] OR innovation\*[ti] OR disruptive[ti] OR forecast\*[ti] OR innovation[ot]) AND (procedure\*[ti] OR device\*[ti] OR technolog\*[ti] OR technique\*[ti] OR health[ti] OR healthcare[ti] OR medicine\*[ti] OR drug\*[ti]))* | ("horizon scanning" OR Forecasting OR "early awareness" OR "disruptive health technologies" OR "emerging health technologies" OR "new health technologies") (health OR medicine OR medical OR healthcare) -site:.com |

***Note:*** *search terms in italics were added from Alert issue 2 onwards.*

**Supplementary material Table 2, Informal response to alerts**

|  |  |
| --- | --- |
| **Questions** | **Responses** |
| Question 1. Is this Alert providing you with information that is relevant or of interest for your work? | 1. “There is an important quantity of information; so I guess that each reader will select the subjects of interest, in relation to what they are currently working on. So, a stakeholder (agency, industry, patients, …) working on glucose monitoring will for sure open that link and appreciate the input. I think that in that respect, the format with links to the articles is good because it allows selection.” (Respondent from consulting company in Switzerland) 2. “These alerts are extremely helpful” (Respondent from government health ministry in Canada) 3. “Great reports? Perfect for my line of work” (Respondent from government in Switzerland) 4. “Thanks, very interesting. I hope I have time to read everything. I will certainly find useful ideas for my work” (Respondent from university hospital centre in Italy) |
| Question 2. Do you have any other feedback or suggestions for improving these Alerts? | 1. “An important area of interest is the updates of HTA reports. If the data identified can link back to reports that would need to be reviewed or updated in the light of new data, this could be very helpful. Clinical guidelines may also need to be updated as a result of new data becoming available.” (Respondent from consulting company in Switzerland) 2. “In addition to the methods for identifying technologies for disinvestment, I would love it if the page could include a list of disinvestment HTAs completed across the world.” (Respondent from government health ministry in Canada) |

**Supplementary material Table 3, PubMed indexed citations Disinvestment**

| **Disinvestment** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **PubMed citation** | **Alert issue** | **Type of publication** | **Broad forecast of technologies** | **Technology type** | **Medical speciality** | **Information on tools, methods or networks** | **Relevance for HTA** |
| Badgery-Parker T, Pearson SA, Chalmers K, et al. Low-value care in Australian public hospitals: prevalence and trends over time. BMJ Qual Saf 019;28(3):205-14. PMID: 30082331 | 1 | Primary study | No | Mixed | Mixed | Yes | Unclear |
| Badgery-Parker T, Pearson SA, Dunn S, et al. Measuring hospital-acquired complications associated with low-value care. JAMA Intern Med 2019;Feb 25. PMID: 30801628 | 1 | Primary study | No | Mixed | Mixed | Yes | Low |
| Degeling C, Thomas R, Rychetnik L. Citizens' juries can bring public voices on overdiagnosis into policy making. BMJ. 2019 Jan 30;364:l351. doi: 10.1136/bmj.l351. PMID: 30700440. | 1 | Primary study | No | Mixed | Mixed | Yes | Unclear |
| Helfrich CD, Hartmann CW, Parikh TJ, et al. Promoting health equity through deimplementation research. Ethn Dis 019;29(Suppl 1):93-96. PMID: 30906155 | 1 | Primary study | No | Mixed | Mixed | Yes | Unclear |
| Mitchell D, Bowles KA, O'Brien L, et al. Health care staff responses to disinvestment-A systematic search and qualitative thematic synthesis. Health Care Manage Rev 2019;Feb 1. PMID: 30807375 | 1 | Systematic review | No | Mixed | Mixed | Yes | Unclear |
| Moore L, Lauzier F, Tardif PA, et al. Low-value clinical practices in injury care: a scoping review and expert consultation survey. J Trauma Acute are Surg 2019;Mar 12. PMID: 31124896 | 1 | Scoping review | Yes | Mixed | Other | Yes | Unclear |
| Norton WE, Chambers DA, Kramer BS. Conceptualizing de-implementation in cancer care delivery. J Clin Oncol 2019;37(2):93-96. PMID: 30407894 | 1 | Other | No | Mixed | Oncology | Yes | Unclear |
| Oren O, Kebebew E, Ioannidis JP. Curbing unnecessary and wasted diagnostic imaging. JAMA 2019;321(3):245-46. PMID: 30615023 | 1 | Letter or comment | No | MD/IVD | Other | Yes | Unclear |
| Parker G, Rappon T, Berta W. Active change interventions to de-implement low-value healthcare practices: a scoping review protocol. BMJ Open 2019;9(3):e027370. PMID: 30904878 | 1 | Systematic review | No | Mixed | Mixed | Yes | Unclear |
| Pinto RM, Witte SS. No easy answers: avoiding potential pitfalls of de-implementation. Am J Community Psychol 2019;63(1-2):239-42. PMID: 30549283 | 1 | Letter or comment | No | Other | Other | Unclear | Unclear |
| Polisena J, Trunk G, Gutierrez-Ibarluzea I, Joppi R. Disinvestment Activities and Candidates in the Health Technology Assessment Community: An Online Survey. Int J Technol Assess Health Care. 2019 Jan;35(3):189-194. doi: 10.1017/S0266462319000229. Epub 2019 Apr 22. PMID: 31006390. | 1 | Primary study | No | Mixed | Mixed | Yes | High |
| Sauro K, Bagshaw SM, Niven D, et al. Barriers and facilitators to adopting high value practices and deadopting low value practices in Canadian intensive care units: a multimethod study. BMJ Open 2019;9(3):e024159. PMID: 30878979 | 1 | Primary study | No | Mixed | Other | Yes | Unclear |
| Squires JE, Graham ID, Grinspun D, et al. Inappropriateness of health care in Canada: a systematic review protocol. Systematic Reviews 2019;8:50. PMID: 30744703 | 1 | Systematic review | Yes | Mixed | Other | Yes | Unclear |
| Badgery-Parker T, Feng Y, Pearson SA, Levesque JF, Dunn S, Elshaug AG. Exploring variation in low-value care: a multilevel modelling study. BMC Health Serv Res. 2019 May 30;19(1):345. PMID: 31146744 | 2 | Primary study | No | Mixed | Mixed | Yes | Unclear |
| Costa S, Bentley C, Regier DA,et al. Public perspectives on disinvestments in drug funding: results from a Canadian deliberative public engagement event on cancer drugs. BMC Public Health. 2019 Jul 22;19(1):977. PMID: 31331312 | 2 | Other | No | P | Oncology | Yes | Unclear |
| Dalzell MD. Heaps of health care waste. In Washington State, they are sifting through it. Manag Care. 2019 Feb;28(2):19-21. PubMed PMID: 30883319 | 2 | Primary study | No | Mixed | Mixed | Yes | Unclear |
| Guay M, Ruest M, Contandriopoulos D. Deimplementing untested practices in homecare services: a preobservational-postobservational design. Occup Ther 2 HTAi DEA-IG Alerts, Issue 2, September 2019 Int. 2019 Mar 19;2019:5638939. PMID: 31015826 | 2 | Primary study | No | Mixed | Other | Yes | Unclear |
| Hasson H, Nilsen P, Augustsson H, Ingvarsson S, Korlén S, von Thiele Schwarz U. To do or not to do-balancing governance and professional autonomy to abandon low-value practices: a study protocol. Implement Sci. 2019 Jul 8;14(1):70. PMID: 31286964 | 2 | Other | No | Mixed | Mixed | Yes | High |
| Herrera-Perez D, Haslam A, Crain T, et al. A comprehensive review of randomized clinical trials in three medical journals reveals 396 medical reversals. Elife. 2019 Jun 11;8. PMID: 31182188 | 2 | Primary study | Yes | Mixed | Mixed | Yes | High |
| Maratt JK, Kerr EA, Klamerus ML, et al. Measures used to assess the impact of interventions to reduce low-value care: a systematic review. J Gen Intern Med. 2019 Jun 27. [Epub ahead of print] PMID: 31250366 | 2 | Systematic review | No | Mixed | Mixed | Yes | High |
| Mitton C, Seixas BV, Peacock S, Burgess M, Bryan S. Health Technology Assessment as Part of a Broader Process for Priority Setting and Resource Allocation. Appl Health Econ Health Policy. 2019 Oct;17(5):573-576. doi: 10.1007/s40258-019-00488-1. PMID: 31161365. | 2 | Letter or comment | No | Mixed | Mixed | Yes | High |
| Born K, Kool T, Levinson W. Reducing overuse in healthcare: advancing Choosing Wisely. BMJ. 2019 Nov 5;367:l6317. PMID: 31690578. | 3 | Letter or comment | No | Mixed | Mixed | Yes | Unclear |
| Burton C, Williams L, Bucknall T, Edwards S, Fisher D, Hall B, et al. Understanding how and why deimplementation works in health and care: research protocol for a realist synthesis of evidence. Syst Rev. 2019 Aug 5;8(1):194. PMID: 31383018 | 3 | Other | No | Mixed | Mixed | Yes | Unclear |
| Fredriksson M, Gustafsson IB, Winblad U. Cuts without conflict: the use of political strategy in local health system retrenchment in Sweden. Soc Sci Med. 2019 Sep;237:112464. PMID: 31430657 | 3 | Primary study | No | Mixed | Mixed | Yes | Unclear |
| Le Bosquet K, Barnett N, Minshull J. Deprescribing: practical ways to support person-centred, evidencebased deprescribing. Pharmacy (Basel). 2019 Sep 3;7(3). PMID: 31484305 | 3 | Review | No | P | Mixed | Yes | Low |
| Linsky A, Gellad WF, Linder JA, Friedberg MW. Advancing the science of deprescribing: a novel comprehensive conceptual framework. J Am Geriatr Soc. 2019 Oct;67(10):2018-2022. PMID: 31430394 | 3 | Review | No | p | Mixed | Yes | Low |
| Makic MBF, Granger BB. Deimplementation in clinical practice: what are we waiting for? AACN Adv Crit Care. Fall 2019;30(3):282-286. PMID: 31462526 | 3 | Other | No | Mixed | Mixed | Yes | Unclear |
| Maloney MA, Schwartz L, O'Reilly D, Levine M. Health technology agency insights: informing modification of a qualitative benefit risk framework for health technology reassessment of prescription medications. Int J Technol Assess Health Care. 2019 Sep 16:1-9. PMID: 31524113 | 3 | Primary study | No | p | Mixed | Yes | High |
| McCabe C, Round J. Hard choices: reflections from the tomb of the unknown patient. Healthc Manage Forum. 2019 Nov;32(6):288-292. PMID: 31505957 | 3 | Letter or comment | No | Mixed | Mixed | Yes | High |
| Mitchell D, O'Brien L, Bardoel A, Haines T. Understanding health professional responses to service disinvestment: a qualitative study. Int J Health Policy Manag. 2019 Jul 1;8(7):403-411. PMID: 31441277 | 3 | Primary study | No | Mixed | Mixed | Yes | Low |
| Moes F, Houwaart E, Delnoij D, Horstman K. Collective constructions of 'waste': epistemic practices for disinvestment in the context of Dutch social health insurance. BMC Health Serv Res. 2019 Sep 5;19(1):633. PMID: 31488152 | 3 | Primary study | No | Mixed | Mixed | Yes | Low |
| O'Connor DA, Buchbinder R. More signals that overuse of healthcare is a pervasive problem contributing to health system waste. Intern Med J. 2019 Jul;49(7):815-817. PMID: 31295772 | 3 | Letter or comment | No | Mixed | Mixed | Yes | Low |
| Salerno S, Laghi A, Cantone MC, Sartori P, Pinto A, Frija G. Overdiagnosis and overimaging: an ethical issue for radiological protection. Radiol Med. 2019 Aug;124(8):714-720. PMID: 30900132. | 3 | Primary study | No | Mixed | Mixed | Yes | Low |
| Sipilä R, Mäkelä M, Komulainen J. Highlighting the need for de-implementation - Choosing Wisely recommendations based on clinical practice guidelines. BMC Health Serv Res. 2019 Sep 5;19(1):638. PMID: 31488146 | 3 | Primary study | No | Mixed | Mixed | Yes | Unclear |
| Zadro JR, Farey J, Harris IA, Maher CG. Do choosing wisely recommendations about low-value care target income-generating treatments provided by members? A content analysis of 1293 recommendations. BMC Health Serv Res. 2019 Nov 11;19(1):707. PMID: 31707993 | 3 | Primary study | No | Mixed | Mixed | Yes | Unclear |
| Esandi ME, Gutiérrez-Ibarluzea I, Ibargoyen-Roteta N, Godman B. An evidence-based framework for identifying technologies of no or low-added value (NLVT). Int J Technol Assess Health Care. 2019 Dec 13:1-8. PMID: 31831086 | 4 | Primary study/Systematic review | No | Mixed | Mixed | Yes | High |
| Grimshaw JM, Patey AM, Kirkham KR, Hall A, Dowling SK, Rodondi N, et al. De-implementing wisely: developing the evidence base to reduce lowvalue care. BMJ Qual Saf. 2020 Feb 6. PMID: 32029572 | 4 | Review | No | Mixed | Mixed | Yes | Unclear |
| Johansson M, Bero L, Bonfill X, Bruschettini M, Garner S, Glenton C, et al. Cochrane sustainable healthcare: evidence for action on too much medicine. Cochrane Database Syst Rev. 2019 Dec 6;12:ED000143. PMID: 31808554 | 4 | Letter or comment | No | Mixed | Mixed | Yes | Unclear |
| Norton WE, Chambers DA. Unpacking the complexities of de-implementing inappropriate health interventions. Implement Sci. 2020 Jan 9;15(1):2. PMID: 31915032 | 4 | Letter or comment | No | Mixed | Mixed | Yes | Unclear |
| Sawan M, Reeve E, Turner J, Todd A, Steinman MA, Petrovic M, Gnjidic D. A systems approach to identifying the challenges of implementing deprescribing in older adults across different health care settings and countries: a narrative review. Expert Rev Clin Pharmacol. 2020 Feb 27:1- 13. PMID: 32056451 | 4 | Review | No | P | Mixed | Yes | Unclear |
| Berlin NL, Skolarus TA, Kerr EA, Dossett LA. Too much surgery: overcoming barriers to deimplementation of low-value surgery. Ann Surg. 2020 Jun;271(6):1020-22. PMID: 32209904 | 5 | Review | No | Other | Other | Yes | Unclear |
| Haslam A, Livingston C, Prasad V. Medical reversals in family practice: a review. Curr Ther Res Clin Exp. 2020;92:100579. PMID: 32180846 | 5 | Primary study | Yes | Other | Other | Yes | Unclear |
| Ho P, Dicker R, Haut ER, Coalition for National Trauma Research Scientific Advisory Council. Dissemination, implementation, and deimplementation: the trauma perspective. Trauma Surg Acute Care Open. 2020;5(1):e000423. PMID: 32154382 | 5 | Review | No | Other | Other | Yes | Unclear |
| Kherad O, Peiffer-Smadja N, Karlafti L, Lember M, Aerde NV, Gunnarsson O, et al. The challenge of implementing less is more medicine: a European perspective. Eur J Intern Med. 2020 Jun;76:1-7. PMID: 32303454 | 5 | Review | No | Mixed | Mixed | Yes | High |
| Pace J, Laba TL, Nisingizwe MP, Lipworth W. Formulating an ethics of pharmaceutical disinvestment. J Bioeth Inq. 2020 Mar;17(1):75-86. PMID: 32130652 | 5 | Review | No | P | Mixed | Yes | Unclear |
| Rietbergen T, Spoon D, Brunsveld-Reinders AH, Schoones JW, Huis A, Heinen M, et al. Effects of deimplementation strategies aimed at reducing lowvalue nursing procedures: a systematic review and meta-analysis. Implement Sci. 2020;15(1):38. PMID: 32450898 | 5 | Systematic review | Yes | Other | Other | Yes | Unclear |
| Smith ME, Vitous CA, Hughes TM, Shubeck SP, Jagsi R, Dossett LA. Barriers and facilitators to deimplementation of the Choosing Wisely guidelines for low-value breast cancer surgery. Ann Surg Oncol. 2020 Mar 2. [Epub ahead of print] PMID: 32124126 | 5 | Primary study | No | Other | Cardiology | Yes | Unclear |
| Sypes EE, de Grood C, Clement FM, Parsons Leigh J, Whalen-Browne L, Stelfox HT, et al. Understanding the public’s role in reducing low-value care: a scoping review. Implement Sci. 2020 Apr 7;15(1):20. PMID: 32264926 | 5 | Scoping review | No | Mixed | Mixed | Yes | Unclear |
| Sypes EE, de Grood C, Whalen-Browne L, Clement FM, Parsons Leigh J, Niven DJ, et al. Engaging patients in de-implementation interventions to reduce low-value clinical care: a systematic review and meta-analysis. BMC Med. 2020 May;18(1):116. PMID: 32381001 | 5 | Systematic review | No | Mixed | Mixed | Yes | Unclear |
| Badgery-Parker T, Pearson SA, Elshaug AG. Hospital characteristics associated with low-value care in public hospitals in New South Wales, Australia. BMC Health Serv Res 2020;20(1):750. PMID: 32795365 | 6 | Primary study | No | Mixed | Mixed | Yes | Unclear |
| Koehlmoos TP, Madsen C, Banaag A, Li Q, Schoenfeld AJ, Weissman JS, et al. Use of low-value pediatric services in the military health system. BMC Health Serv Res 2020;20(1):770. PMID: 32819375 | 6 | Primary study | No | Mixed | Mixed | Yes | Unclear |
| Moynihan R, Johansson M, Maybee A, Lang E, Legare F. Covid-19: an opportunity to reduce unnecessary healthcare [editorial]. BMJ 2020;370:m2752. PMID: 32665257 | 6 | Other | No | Mixed | Mixed | Unclear | Unclear |
| Reid RO, Mafi JN, Baseman LH, Fendrick AM, Damberg CL. Waste in the Medicare Program: a national cross-sectional analysis of 2017 low-value service use and spending. J Gen Intern Med 2020;Jul 29. PMID: 32728953 | 6 | Letter or comment | Yes | Mixed | Other | No | Unclear |
| Wang T, Sabel MS, Dossett LA. A framework for deimplementation in surgery. Ann Surg 2020;Jul 24. PMID: 32740238 | 6 | Letter or comment | No | Other | Oncology | Yes | Unclear |

**Supplementary information table 4, PubMed indexed citations Horizon scanning**

| **Horizon Scanning** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **PubMed citation** | Alert issue | Type of publication | Broad forecast of technologies | Technology type | Medical speciality | Information on tools, methods or networks | Relevance for HTA |
| Dunning J. Disruptive technology will transform what we think of as robotic surgery in under ten years. Ann Cardiothorac Surg. 2019;8(2):274-8. PMID: 31032213 | 1 | Letter or comment | Yes | Other | Mixed | No | Unclear |
| Eriksson I, von Euler M, Malmstrom RE, Godman B, Wettermark B. Did we see it coming? An evaluation of the Swedish Early Awareness and Alert System. Appl Health Econ Health Policy. 2019;17(1):93-101. PMID: 30284150 | 1 | Primary study | No | P | Mixed | Yes | High |
| Farrah K, Mierzwinski-Urban M. Almost half of references in reports on new and emerging nondrug health technologies are grey literature. J Med Libr Assoc. 2019;107(1):43-8. PMID: 30598647 | 1 | Review | No | MD/IVD | Mixed | No | Unclear |
| Grossmann N, Wolf S, Rosian K, Wild C. Prereimbursement: early assessment for coverage decisions. Wien Med Wochenschr. 2019;Feb 6. PMID: 30725442 | 1 | Primary study | No | Mixed | Oncology | Yes | High |
| Lehoux P, Roncarolo F, Silva HP, Boivin A, Denis JL, Hébert R. What health system challenges should responsible innovation in health address? Insights from an international scoping review. Int J Health Policy Manag. 2018;8(2):63-75. PMID: 30980619 | 1 | Scoping review | No | Mixed | Other | No | Low |
| Lehoux P, Roncarolo F, Silva HP, Boivin A, Denis JL, Hébert R. What health system challenges should responsible innovation in health address? Insights from an international scoping review. Int J Health Policy Manag. 2018;8(2):63-75. PMID: 30980619 | 1 | Letter or comment | Yes | Other | Mixed | No | Unclear |
| Marangi M, Ivanovic J, Pistritto G. The Horizon Scanning System at the Italian Medicines Agency. Drug Disc Today. 2019;Apr 30. PMID: 31051267 | 1 | Review | No | Mixed | Mixed | Yes | High |
| Tarassoli SP. Artificial intelligence, regenerative surgery, robotics? What is realistic for the future of surgery? Ann Med Surg (Lond). 2019; 17;41:53-5. PMID: 31049197 | 1 | Review | Yes | Other | Mixed | No | Low |
| Brown K, Solomon MJ, Young J, Seco M, Bannon PG. Addressing the ethical grey zone in surgery: a framework for identification and safe introduction of novel surgical techniques and procedures. ANZ J Surg. 2019 Jun;89(6):634-638. PMID: 30974516. | 2 | Other | No | MD/IVD | Mixed | No | Unclear |
| Charlton V, Rid A. Innovation as a value in healthcare priority-setting: the UK experience. Soc Justice Res. 2019;32(2):208-38. PMID: 31281204 | 2 | Review | No | Mixed | Mixed | No | High |
| Hines P, Hiu Yu L, Guy RH, Brand A, Papaluca-Amati M. Scanning the horizon: a systematic literature review of methodologies. BMJ Open. 2019 May 27;9(5):e026764. PMID: 31133588 | 2 | Systematic review | No | Mixed | Mixed | Yes | High |
| Hines PA, Guy RH, Brand A, Humphreys AJ, PapalucaAmati M. Regulatory Science and Innovation Programme for Europe (ReScIPE): a proposed model. Br J Clin Pharmacol. 2019 Aug 19 PubMed PMID: 31426120 | 2 | Review | No | P | Mixed | Yes | High |
| Krabbe L, Buchberger B. [Horizon Scanning in Health Care: A German Perspective]. Gesundheitswesen. 2019 Jul;81(7):539-43. PMID: 29017192 | 2 | Systematic review | No | Mixed | Mixed | Yes | High |
| Maddern GJ. Introduction of new surgical techniques and technologies. ANZ J Surg. 2019 Jun;89(6):625-26. PMID: 31179633 | 2 | Letter or comment | No | Other | Mixed | No | Unclear |
| Smith V, Warty R, Nair A, et al. Defining the clinician's role in early health technology assessment during medical device innovation - a systematic review. BMC Health Serv Res. 2019 Jul 23;19(1):514. PMID: 31337393 | 2 | Systematic review | No | MD/IVD | Mixed | No | High |
| Wieseler B, McGauran N, Kaiser T. New drugs: where did we go wrong and what can we do better? BMJ. 2019 Jul 10;366:l4340. PMID: 31292109 | 2 | Review | No | P | Mixed | Yes | High |
| Xu S, Jayaraman A, Rogers JA. Skin sensors are the future of health care. Nature. 2019 Jul;571(7765):319-21. PMID: 31316200 | 2 | Letter or comment | Yes | MD/IVD | Mixed | No | Low |
| Bublitz F, Oetomo A, Sahu K, Kuang A, Fadrique L, Velmovitsky P, Nobrega R, Morita P. Disruptive technologies for environment and health research: an overview of artificial intelligence, blockchain, and Internet of Things. Int J Environ Res Public Health. 2019 Oct 11;16(20). pii: E3847. PMID: 31614632 | 3 | Review | Yes | Other | Other | No | Low |
| Carroll C, Dickson R, Boland A, Houten R, Walton M. Decision-making by the NICE Interventional Procedures Advisory Committee. Br J Surg. 2019 Oct 25. PubMed PMID: 31654418 | 3 | Primary study | Yes | Other | Mixed | No | High |
| Dinh-Le C, Chuang R, Chokshi S, Mann D. Wearable health technology and electronic health recordintegration: scoping review and future directions. JMIR Mhealth Uhealth. 2019 Sep 11;7(9):e12861. PMID: 31512582 | 3 | Scoping review | Yes | MD/IVD | Mixed | No | Low |
| Dzau VJ, Balatbat CA. Future of hypertension. Hypertension (Dallas, Tex : 1979) 2019;74(3):450-7. PMID: 31352827 | 3 | Other | Yes | Mixed | Cardiology | No | Low |
| Farrar J. Science, innovation and society: what we need to prepare for the health challenges of the twenty-first century? Int Health. 2019 Sep 2;11(5):317-320. PMID: 31529109 | 3 | Other | Yes | Mixed | Mixed | No | Low |
| Fitzpatrick MB, Thakor AS. Advances in precision health and emerging diagnostics for women. J Clin Med. 2019 Sep 23;8(10). pii: E1525. PMID: 31547515 | 3 | Review | Yes | Mixed | Mixed | No | Unclear |
| Garrison LP Jr, Towse A. A strategy to support efficient development and use of innovations in personalized medicine and precision medicine. J Manag Care Spec Pharm. 2019 Oct;25(10):1082- 1087. PMID: 31556828 | 3 | Review | Yes | Mixed | Mixed | No | Low |
| Grutters JPC, Govers T, Nijboer J, Tummers M, van der Wilt GJ, Rovers MM. Problems and promises of health technologies: the role of early health economic modeling. Int J Health Policy Manag. 2019 Aug 1;8(10):575-82. PMID: 31657184 | 3 | Primary study | No | Mixed | Mixed | No | High |
| Loncar-Turukalo T, Zdravevski E, Machado da Silva J, Chouvarda I, Trajkovik V. Literature on wearable technology for connected health: scoping review of research trends, advances, and barriers. J Med Internet Res. 2019 Sep 5;21(9):e14017. PMID: 31489843 | 3 | Scoping review | Yes | MD/IVD | Mixed | No | Unclear |
| Miller BJ, Wilensky G. New drugs, new ideas: payment policy innovations for high-cost pharmaceuticals. Milbank Q. 2019 Sep 30. PMID: 31571272 | 3 | Letter or comment | No | P | Mixed | No | Low |
| Ramsey AT, Proctor EK, Chambers DA, Garbutt JM, Malone S, Powderly WG, Bierut LJ. Designing for accelerated translation (DART) of emerging innovations in health. J Clin Transl Sci. 2019 Jun;3(2- 3):53-58. PMID: 31528365 | 3 | Review | No | Mixed | Mixed | No | Low |
| Shekelle PG, Goldman DP. Development of a group judgment process for forecasts of health care innovations. JAMA Network Open 2018;1(7):e185108. PMID: 30646380 | 3 | Primary study | No | Mixed | Mixed | Yes | Low |
| Stafinski T, Deber R, Rhainds M, Martin J, Noseworthy T, Bryan S, Menon D. Decision-making on new non-drug health technologies by hospitals and health authorities in Canada. Healthc Policy. 2019 Aug;15(1):82-94. PMID: 31629458 | 3 | Primary study | No | Other | Mixed | No | High |
| Stafinski T, Deber R, Rhainds M, Martin J, Noseworthy T, Bryan S, Menon D. The introduction of new non-drug health technologies into Canadian healthcare institutions: opportunities and challenges. Healthc Policy. 2019 Aug;15(1):95-106. PMID: 31629459 | 3 | Primary study | No | Other | Mixed | No | High |
| Stevens B. Impact of emerging technologies in prenatal genetic counseling. Cold Spring Harb Perspect Med. 2019 Sep 30. pii: a036517. PMID: 31570384 | 3 | Review | Yes | MD/IVD | Other | No | Low |
| Støme LN, Moger T, Kidholm K, Kværner KJ. Early assessment of innovation in a healthcare setting. Int J Technol Assess Health Care. 2019 Jan;35(1):17-26. PMID: 30744712. | 3 | Systematic review | No | Mixed | Mixed | No | High |
| Armstrong JPK, Stevens MM. Emerging technologies for tissue engineering: from gene editing to personalized medicine. Tissue Eng Part A. 2019 May;25(9-10):688-92. PMID: 30794069 | 4 | Review | Yes | MD/IVD | Mixed | No | Low |
| Brooks BW, Gerding JA, Landeen E, Bradley E, Callahan T, Cushing S, et al. Environmental health practice challenges and research needs for U.S. health departments. Environ Health Perspect. 2019 Dec;127(12):125001. PMID: 31799881 | 4 | Letter or comment | No | Mixed | Other | No | Low |
| Cutler DM. Early returns from the era of precision medicine. JAMA. 2020 Jan 14;323(2):109-10. PMID: 31935015 | 4 |  | No | P | Oncology | No | Low |
| de Ruiter HP, Skärsäter I. Introducing a futureoriented approach to health-care technologies and welfare policies: an innovative ethics project in Sweden. Creat Nurs. 2020 Feb 1;26(1):e35-e39. PMID: 32024746 | 4 | Letter or comment | No | Mixed | Mixed | No | High |
| Didyuk O, Econom N, Guardia A, Livingston K, Klueh U. Continuous glucose monitoring devices: past, present, and future focus on the history and evolution of technological innovation. J Diabetes Sci Technol. 2020 Jan 13. PMID: 31931614. | 4 | Review | Yes | MD/IVD | EndocriNology | No | Low |
| Gomes PTC, Mata VE, Borges TC, Galato D. Horizon scanning in Brazil: outputs and repercussions. Rev Saude Publica. 2019 Nov 28;53:111. English and Portuguese. PMID: 31800908 | 4 | Primary study | No | Mixed | Mixed | Yes | High |
| Greaves RF, Bernardini S, Ferrari M, Fortina P, Gouget B, Gruson D, et al. Key questions about the future of laboratory medicine in the next decade of the 21st century: a report from the IFCCEmerging Technologies Division. Clin Chim Acta. 2019 Aug;495:570-89. PMID: 31145895 | 4 | Review | Yes | MD/IVD | Mixed | No | Low |
| Handa N, Mochizuki S, Fujiwara Y, Shimokawa M, Wakao R, Arai H. Future development of artificial organs related with cutting edge emerging technology and their regulatory assessment: PMDA's perspective. J Artif Organs. 2020 Feb 28. PMID: 32112156 | 4 | Review | Yes | Other | Mixed | No | Low |
| Jennings P, Hussain S. Do-it-yourself artificial pancreas systems: a review of the emerging evidence and insights for healthcare professionals. J Diabetes Sci Technol. 2019 Dec 17:1932296819894296. PMID: 31847570 | 4 | Review | Yes | Other | EndocriNology | No | Low |
| Krabbe L, Buchberger B. [Horizon scanning in health care: a German perspective]. Laryngorhinootologie. 2020 Feb;99(2):96-100. German with English abstract. PMID: 32023648- Duplicate issue 2 PMID 29017192 | 4 | Systematic Review | No | Mixed | Mixed | Yes | High |
| Lehoux P, Roncarolo F, Silva H, Boivin A, Denis JL, Hebert R. Revisiting the relationship between systems of innovation and health systems: a response to recent commentaries. Int J Health Policy Manag. 2020 Jan 1;9(1):45-6. PMID: 31902196 | 4 | Letter or comment | No | Mixed | Mixed | No | Low |
| Lewis SJ, Gandomkar Z, Brennan PC. Artificial intelligence in medical imaging practice: looking to the future. J Med Radiat Sci. 2019 Dec;66(4):292-95. PMID: 31709775 | 4 | Letter or comment | Yes | Other | Mixed | No | Low |
| Liao Y, Thompson C, Peterson S, Mandrola J, Beg MS. The future of wearable technologies and remote monitoring in health care. Am Soc Clin Oncol Educ Book. 2019 Jan;39:115-121. PMID: 31099626 | 4 | Review | Yes | MD/IVD | Mixed | No | Low |
| Manero A, Smith P, Sparkman J, Dombrowski M, Courbin D, Kester A, et al. Implementation of 3D printing technology in the field of prosthetics: past, present, and future. Int J Environ Res Public Health. 2019 May 10;16(9). pii: E1641. PMID: 31083479 | 4 | Review | Yes | MD/IVD | Mixed | No | Low |
| Markham MJ, Wachter K, Agarwal N, Bertagnolli MM, Chang SM, Dale W, et al. Clinical cancer advances 2020: annual report on progress against cancer from the American Society of Clinical Oncology. J Clin Oncol. 2020 Feb 4. PMID: 32013670 | 4 | Other | Yes | Other | Oncology | No | Low |
| Morganti S, Tarantino P, Ferraro E, D'Amico P, Duso BA, Curigliano G. Next generation sequencing (NGS): a revolutionary technology in pharmacogenomics and personalized medicine in cancer. Adv Exp Med Biol. 2019;1168:9-30. PMID: 31713162 | 4 | Review | Yes | Other | Oncology | No | Low |
| Sapci AH, Sapci HA. Innovative assisted living tools, remote monitoring technologies, artificial intelligence driven solutions, and robotic systems for aging societies: systematic review. JMIR Aging. 2019 Nov 29;2(2):e15429. PMID: 31782740 | 4 | Systematic review | No | Other | Mixed | No | Low |
| Skaria R, Satam P, Khalpey Z. Opportunities and challenges of disruptive innovation in medicine using artificial intelligence. Am J Med. 2020 Jan 22. PMID: 31981487. | 4 | Letter or comment | No | Other | Mixed | No | Low |
| Sparrow R, Hatherley J. High hopes for "deep medicine"? AI, economics, and the future of care. Hastings Cent Rep. 2020 Jan;50(1):14-7. PMID: 32068275 | 4 | Other | Yes | Mixed | Mixed | No | Low |
| Sterling R, LeRouge C. On-demand telemedicine as a disruptive health technology: qualitative study exploring emerging business models and strategies among early adopter organizations in the United States. J Med Internet Res. 2019 Nov 15;21(11):e14304. PMID: 31730038 | 4 | Primary study | No | Other | Mixed | No | Low |
| Tully J, Dameff C, Longhurst CA. Wave of wearables: clinical management of patients and the future of connected medicine. Clin Lab Med. 2020 Mar;40(1):69-82. PMID: 32008641 | 4 | Review | Yes | MD/IVD | Mixed | No | Low |
| Van Velthoven MH, Cordon C. Sustainable adoption of digital health innovations: perspectives from a stakeholder workshop. J Med Internet Res. 2019 Mar 25;21(3):e11922. PMID: 30907734 | 4 | Primary study | No | Other | Mixed | No | High |
| Gooding P. Mapping the rise of digital mental health technologies: emerging issues for law and society. Int J Law Psychiatry. Nov-Dec 2019;67:101498. PMID: 31785726 | 5 | Review | Yes | Other | Other | No | Low |
| Graboyes E, Cramer J, Balakrishnan K, Cognetti DM, López-Cevallos D, de Almeida JR, et al. COVID-19 pandemic and health care disparities in head and neck cancer: scanning the horizon. Head Neck. 2020 Jun 20. [Epub ahead of print] PMID: 32562325 | 5 | Review | Yes | Mixed | Oncology | No | Low |
| McDonald S., Elliott JH, Green S, Turner T. Towards a new model for producing evidence-based guidelines: a qualitative study of current approaches and opportunities for innovation among Australian guideline developers. F1000Res. 2019 Jun 24;8:956. PMID: 31543956 | 5 | Primary study | No | Mixed | Mixed | No | High |
| Mundy L, Trowman R, Kearney B. Sustainability of healthcare systems in Asia: exploring the role of horizon scanning and reassessment in the health technology assessment landscape. Int J Technol Assess Health Care. 2020; May 11:1-8. PMID: 32389130 | 5 | Other | No | Mixed | Mixed | Yes | High |
| Natal C, Fernandez-Somoano A, Torá-Rocamora I, Vidal C, Castells X, Tardón A, et al. Dissemination of health technologies: trends in the use of diagnostic test in breast cancer screening. J Healthc Qual Res. 2019;34(4):177-84. PMID: 31713528 | 5 | Primary study | Yes | MD/IVD | Oncology | No | Low |
| O'Mahony JF. Beneluxa: what are the prospects for collective bargaining on pharmaceutical prices given diverse health technology assessment processes? Pharmacoeconomics. 2019;37(5):627-30. PMID: 30847759 | 5 | Letter or comment | No | P | Mixed | Yes | High |
| Scott BK, Miller GT, Fonda SJ, Yeaw RE, Gaudaen JC, Pavliscsak HH, et al. Advanced digital health technologies for COVID-19 and future emergencies. Telemed J E Health. 2020 May 26. [Epub ahead of print] PMID: 32456560 | 5 | Review | Yes | Other | Other | No | Low |
| Silva H, Lefebvre A, Oliveira R, Lehoux P. Fostering responsible innovation in health: an evidenceinformed assessment tool for innovation stakeholders. Int J Health Policy Manag. 2020;Mar 15. PMID: 32610749 | 5 | Primary study | No | Mixed | Mixed | No | Unclear |
| Vuille-Dit-Bille RN. Special issue on surgical innovation: new surgical devices, techniques, and progress in surgical training. J Int Med Res. 2020;48(3):300060519897649. PMID: 32228129 | 5 | Letter or comment | Yes | Other | Mixed | No | Low |
| Alami H, Rivard L, Lehoux P, Hoffman SJ, Cadeddu SB, Savoldelli M, et al. Artificial intelligence in health care: laying the foundation for responsible, sustainable, and inclusive innovation in low- and middle-income countries. Global Health 2020;16(1):52. PMID: 32580741 | 6 | Primary study | No | Other | Mixed | No | Low |
| Facey KM, Rannanheimo P, Batchelor L, Borchardt M, de Cock J. Real-world evidence to support payer/HTA decisions about highly innovative technologies in the EU – actions for stakeholders. Int J Technol Assess Health Care 2020;Sep3:1-10. PMID: 32878663 | 6 | Primary study | No | Mixed | Mixed | No | High |
| Gardasevic G, Katzis K, Bajic D, Berbakov L. Emerging wireless sensor networks and Internet of Things technologies – foundations of smart healthcare. Sensors (Basel) 2020;20(13):3619. PMID: 32605071 | 6 | Review | Yes | Other | Mixed | No | Low |
| Lehoux P, Silva H. Transforming disciplinary traditions comment on “Problems and promises of health technologies: the role of early health economic modeling”. Int J Health Policy Manag. 2020; 9(7):309-11. PMID: 32613802 | 6 | Letter or comment | No | Mixed | Mixed | No | High |
| Mucha T, Halminen O, Tenhunen H, Seppälä T. Commercial adoption of AI in the healthcare sector: an exploratory analysis of S&P500 companies. Stud Health Technol Inform. 2020 Jun 16;270:113-17. PMID: 32570357 | 6 | Primary study | No | Other | Mixed | No | Low |
| Sholl LM, Oxnard GR, Paweletz CP. Traditional diagnostics versus disruptive technology: the role of the pathologist in the era of liquid biopsy. Cancer Res 2020;80(16):3197-99. PMID: 32606002 | 6 | Review | Yes | MD/IVD | Oncology | No | Low |
| Wong WQ, Lin L, Ju H, Ng K, Wong WQ, et al. Towards greater impact in health technology assessment: horizon scanning for new and emerging technologies in Singapore. Int J Technol Assess Health Care 2020; Jun 22:1-7. PMID: 32624047 | 6 | Review | No | Mixed | Mixed | Yes | High |