

## **Appendix 1: Review methods**

The findings presented in this report are part of a wider systematic review conducted to understand the evidence that exists relating to different outpatient service innovations and their impact on outpatient service utilisation (e.g. waiting times, referral rates, attendances, missed appointments, costs, etc.). We adopted an evidence mapping approach. We followed a pre-defined protocol and reported the methods and findings according to the Preferred Reporting Items for Systematic Reviews and meta-analyses (PRISMA) guidelines<sup>1</sup>. Details of the search strategy and data extraction process are provided below.

### **Search strategy**

We searched the following online databases from January 2015 to end of June 2022 Medline, Embase, HMIC and SSCI. Additional hand searches were conducted of systematic reviews, as well as forward and backward citation searches.

### **Eligibility criteria**

Papers were eligible if they met the following criteria; focused on the effect of PIFU on specialist / secondary care utilisation; a primary or secondary focus on service utilisation (eg, waiting times, referral rates, attendances, missed appointments, costs, etc.), though secondary outcomes on patient experience and outcomes, staff experience, quality of care, patient outcomes were also reported on; empirical study and / or quantitative outcome data that is focused on service utilisation outcomes (e.g., resource utilisation, costs, levels of activity).

Papers were excluded if they met any of the following criteria; non-English language, published pre-2015; dissertations/thesis, conference proceedings, published abstracts, articles with no empirical data/research component (e.g., commentaries or published protocols); studies from outside the top 20 OECD countries (given differences in health system context that contribute to inefficiencies in outpatient delivery); papers focusing on only self-management, self-care, education or clinical treatment.

### **Search terms**

Search terms were developed by conducting scoping work for relevant studies. Search terms for the broader review included i) setting; outpatients, hospital, secondary, specialist services; ii) the innovation; telemedicine, virtual consultations, remote monitoring, patient-initiated follow-up, and to the iii) outcome of interest; efficiency, productivity, attendance rates, waiting lists, referral rates. We supplemented the broader

search strategy with PIFU-related terms adapted from the Whear et al. (2020) Cochrane review.

### **Procedure (data collection, data extraction and synthesis)**

All references retrieved were exported into Endnote referencing software (v20) and duplicates removed. Two independent reviewers screened the title and abstracts of citations for eligibility. For those identified as relevant, or in ambiguous cases, the full text was sought. If there was any uncertainty, final agreement was sought from a third and fourth researcher.

A data extraction database was developed and piloted independently by two reviewers. Data extracted included; type of study, country, sample, intervention, specialty, details of methods including data collection, outcomes, and analysis, and main findings. Innovations were categorised according to the part of the pathway; whether optimising referral and bookings, modernising consultations or personalising follow-ups.

### **Quality assessment**

The quality of the eligible studies was assessed using the modified Mixed Methods Appraisal Tool (MMAT), with adapted scoring from the ROBIS (risk of bias in systematic reviews) tool. The MMAT<sup>2</sup> has been widely used in similar rapid reviews and can be used for a range of study designs. The tool covers 5 domains, as determined by the study design. For randomised trials domains include; appropriateness of the randomisation, comparability of baseline groups, data completeness, blinding and adherence to the intervention(s). For non-randomised, observational studies, domains include; relevance of the sampling strategy, whether the sample is representative of the target population, appropriateness of measures, risk of nonresponse bias, appropriateness of the statistical analysis for the research question. The scoring was adapted from the Risk of Bias in systematic reviews (ROBIS) tool<sup>3</sup> - each domain was scored as yes (1), no (0) or can't tell (0). Scores were summed across the five domains to produce a total score. A score of 5 was indicative of high quality (low risk of bias), 4 moderate quality (moderate risk of bias), 3 low quality (high risk of bias) and 2 or less very low quality (very high risk of bias). Other quality related considerations were also noted (particularly relevant to the generalisability of findings) including selection bias, number of study sites, study power, length of follow-up.

Authors	Study aims	Specialty and study population	Country and setting	Intervention / PIFU model characteristics	Comparator	Study design and sample size	Results / relative effect	Stratified / sub-group analyses	Study duration	Study quality score
Fredriksson et al. 2016 <sup>4</sup>	To test whether implementing a patient-initiated system of care could improve clinical outcome in rheumatoid arthritis using disease activity guided management	Rheumatology Adult patients (18-80) with rheumatoid arthritis Patients with co-morbidities or unable to initiate contact excluded	Sweden Hospital outpatient clinics (multi-centre)	Safety netting/routine monitoring: Patients maintained standard 3 monthly monitoring appointments. Patient access / triage / escalation: Patients experiencing a flare in symptoms (as defined by themselves) between monitoring appts would contact dedicated study nurse and arranged for appt with specialist within 10 days. Also, nurses would arrange for appointment with consultant within 10 working days at monitoring appointment if active disease detected.  Education: Not described  Other model components: Combined patient-initiated appointments and disease activity guided treatment	Fixed monitoring appointments (3-month intervals)  Patients experiencing flares contact nurse and standard wait time applies (6 weeks)	Multi-site RCT  131 patients (64 PIFU)  77% acceptance rate	Service use No significant difference in median number of rheumatologist appointments (2) between groups (p=.2).  Clinical outcomes No significant differences in disease activity score, which decreased by .24 in patients with PIFU compared to .59 in the control group (significance of difference p=0.055; 95% CI -0.01 to 0.91).  Patient satisfaction No significant difference in patient satisfaction and confidence in care between groups.  Other Visits in the intervention group more often resulted in change of treatment (68% of visits vs 48% (p<0.001).	None reported	18 months	Moderate
Goodwin et al. 2016 <sup>5</sup>	To establish the impact of a	Rheumatology	UK	Safety netting/routine monitoring:	Pre-booked appointments	Single-site RCT	Patient satisfaction	None reported	12 months	Low

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	patient-initiated review system (Direct Access) for people with rheumatoid arthritis compared with usual follow-up on patient satisfaction and service use	Adult patients (aged 18 years or over) who had rheumatoid arthritis for 2+ years  Patients unable to initiate telephone contact if needed	hospital setting (single centre)	No standard/routine appointments (clinical reviews) offered. Safety net for patients with no contact for a year proactively scheduled for clinical review (12-month appointments)  Patient access / triage / escalation: Patients or their GP who wanted to arrange prompt clinical advice or a review would contact nurse-led advice line where appointments could be accessed within 2 weeks.  Education: All patients received information sheet and attended education sessions led by rheumatologist nurse specialist. The sessions focused on issues such as the operation of the new system, what patients can expect, when and how to call the advice line and when and how to ask for appointments	with physician following fixed, standard schedule  Patients with no contact for a year proactively scheduled for clinical review	311 patients (156 PIFU)  Acceptance rate not reported	Slight differences favouring PIFU on accessibility (67% vs 54%, $p=.07$ ), ease of contacting specialist nurse (63% vs 46%, $.03$ ) and overall patient satisfaction (100 vs 80 on visual analogue scale, $p=.002$ ). No differences in other aspects of patient satisfaction.  Service use Self-reported visits to GP significantly lower for PIFU (median 0 and 1, respectively; $P = 0.03$ )  PIFU resulted in a greater number of telephone contacts (Incident rate ratio = 1.69; 95% CI 1.07, 2.68) but no significant difference in hospital contacts (face to face consultations).  A smaller proportion of PIFU appointments were with consultant compared to usual care (59% vs. 79%).  Costs			

Authors	Study aims	Specialty and study population	Country and setting	Intervention / PIFU model characteristics	Comparator	Study design and sample size	Results / relative effect	Stratified / sub-group analyses	Study duration	Study quality score
							Total costs similar across groups.			
Jeppesen et al. 2018 <sup>6</sup>	To compare traditional follow up with patient-initiated follow up regarding fear of cancer recurrence and healthcare use in early-stage, low- to intermediate-risk endometrial cancer	Gynaecology and obstetrics  Patients with stage 1 and 2 endometrial carcinoma  Patients with adjuvant chemotherapy or radiation therapy, high-risk tumours, and insufficient literacy or cognitive disability excluded.	Denmark  Four hospital gynaecology departments (multi-site)	Safety netting/routine monitoring Not reported  Patient access / triage / escalation: Patients experiencing symptoms or concerns (about recurrence) contacted designated nurse-led hotline, or their GP. Appts offered (within a week) as necessary.  Education Patient education session on alarm symptoms. This information was provided verbally by a doctor specialised in gynaecological oncology.	Conventional follow-up, in accordance with clinical guidelines (scheduled visits 4-6 months for 2 years, and every 6 months in third year)  Variation in frequency of follow-up allowed.  Follow-up visits included physical examination, biopsies in event of suspicious findings and imaging in case of symptoms.	Multi-site RCT  212 patients (105 PIFU)  69% acceptance rate	Patient experience Patient fear of cancer recurrence decreased significantly more in the control group from baseline to 10 months of follow up (difference -5.9, 95% CI -10.9 to -0.9) – score ranges from 1-168, with higher score indicating higher levels of fear of cancer recurrence.  Service use No evidence of a difference in the number of cancer-related visits to the GP (P = 0.77), privately practising gynaecologist (P = 0.31), or telephone contacts to the departments of gynaecology (P = 0.15)  PIFU patients had fewer examinations at the gynaecology department compared to control group (0 vs 2 median visits, p = <0.01)	None reported	10 months	Moderate

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Khoury et al. 2018 <sup>7</sup>	To investigate the effect of patient-initiated care consultation for patients with psoriasis in a dermatology outpatient clinic	Dermatology Adult patients (18 and over) with psoriasis undergoing well-controlled systemic treatment for more than 12 weeks, without adverse events and adherent to medication	Denmark Hospital setting dermatology department (single centre)	Safety netting/routine monitoring Patients maintained one scheduled consultation annually with a dermatologist (but no follow-up consultations). Every 12 weeks patients collected medication and provided lab tests in clinic, that were reviewed on same day with action taken to address any abnormalities Patients were called once monthly to confirm lab safety tests taken and medication received  Patient access / triage / escalation: Patients experiencing symptoms or concerns able to request a consultation by contacting designated nurse-led hotline who could also provide general advice and assistance (nurses did not take consultations).  Education Patient education session on self-monitoring	Regularly scheduled appointments every 12-16 weeks, during which lab tests taken.  Patients able to contact clinic with any concerns between appointments (but no designated support line).  Patients who miss appointments automatically rescheduled.	Single-site RCT  150 patients (77 PIFU)  90% acceptance rate	Patient outcomes No significant difference in QoL, anxiety or depression levels, or satisfaction between groups  Service use PIFU patients requested 63% fewer consultations with a dermatologist (mean = 2.5 ± 0.1 vs 5.1 ± 0.6, p=.001). The PIFU group missed significantly fewer consultations than the control group (6.9% vs 29%), with a mean difference of 0.26 (95% CI 0.10 -0.39, p=.003)  Safety In terms of adherence, fewer consultations with a dermatologist did not lead to a higher number of helpline phone calls or decrease patient adherence, which were similar between groups.	None reported	12 months	Low

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Schougaard et al, 2019 <sup>8</sup>	To compare utilization of health care resources, quality of care, and the patient perspective in patient-initiated PRO-based follow-up (open access telePRO) versus fixed-interval PRO-based follow-up (standard telePRO)	Neurology  Patients aged 15 years and older with epilepsy and complete patient questionnaires electronically	Denmark  Hospital neurology department (single site)	Safety netting/routine monitoring Patients prompted to complete questionnaire automatically if define time span lapses, or clinician proactively reaches out to patients who did not respond to these reminders.  Patient access / escalation / triage Patient contacted outpatient clinic based on preferences / when felt necessary. Patients complete questionnaire to get in contact with clinic via open access website, and would receive a response by telephone to determine need for face to face appointment. Patients could also phone the outpatient clinic if needed. All questionnaire responses coded as high alert since patients only instructed to contact if they needed to speak to a clinician. The clinician contacted all patients requesting contact by telephone, and a face-to-face appointment scheduled if necessary.  Education Patients received detailed written information about the intervention	Patients receive fixed-interval questionnaires at home every 3, 6 or 12 months to determine need for clinical attention. Patient responses coded by level of clinical need using pre-defined algorithm. Clinician contacted high alert patients as quickly as possible by telephone or via face-to-face appointment.  Patients could also request a telephone consultation or appointment regardless of responses to questionnaire	Single-site RCT  593 patients (346 PIFU)  Acceptance rate not reported	Service use No significant differences regarding mean number of teleconsultations or outpatient visits, or hospital admissions.  The mean difference in telephone consultations between the PIFU arm and the standard arm was - 0.32 (95% CI: - 0.68 to 0.05). Patients in the PIFU arm had a statistically significant, slightly lower number of emergency room visits than those in the standard arm -- mean difference was - 0.11 (95% CI: - 0.21 to - 0.01).  Clinical outcomes No statistically significant differences in clinical outcome measures such as mortality, number of seizures, and side effects.  Patient outcomes No statistically significant differences in self-management (health literacy, self-	Stratified analyses on gender and literacy levels did not change the result noticeably. After stratifying by age, patients in the younger age group (median below 45.7 years) receiving PIFU had fewer telephone consultations and emergency room visits (- 0.67, 95% CI: - 1.29 to - 0.04 and - 0.21, 95% CI: - 0.38 to - 0.03, respectively) compared to standard care.	18 months	Moderate

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							<p>efficacy, patient activation), or general health and health service evaluation (confidence, safety, satisfaction).</p> <p>Statistically significant lower score in the WHO-5 mental well-being score in the PIFU arm (- 3.21 (95% CI: - 6.38 to - 0.05). Mental well-being also scored lower in the PIFU arm compared to standard arm (- 5.95 95% CI: - 10.81 to - 1.08).</p>			
Sorensen et al. 2015 <sup>9</sup>	To compare cost-effectiveness of 3 types of follow-up for outpatients with stable low-activity rheumatoid arthritis (planned specialist consultation or nurse-led consultation following routine schedule,	Rheumatology Patients 18 years and over with rheumatoid arthritis diagnosis of at least 18 months with low disease activity and stable medication  Patients excluded if pregnant, on	Denmark  Rheumatology hospital outpatient clinic (multi-centre)	<p>Arm 1 (shared care group): Safety netting/routine monitoring Patients offered an annual hospital review with rheumatologist. No planned consultations apart from the annual review.</p> <p>Patient access / escalation / triage: Patients discuss problems with their GP or outpatient nurses through nurse-led hotline. Patient's GP assumes responsibility of monitoring pharmacological treatment.</p> <p>Education</p>	<p>Arm 2 (nurse-led fixed appointment group): Education and safety netting same as PIFU arm, but patients offered a 30-minute consultation with nurse specialist every 3 months. Patients could also address</p>	<p>Multi-centre-RCT  287 patients (96 PIFU, 97 control, 94 to nurse-led group)  Acceptance rate not reported</p>	<p>Service utilisation Statistically significantly more rheumatologist consultations (mean 5.5 in the control group than the PIFU group (3.0; p &lt; 0.01) and the nurse-led fixed appointment group (3.3; p &lt; 0.01). PIFU patients had fewer rheumatologist consultations than the nurse group, though not statistically significant (p=0.04)</p>	None reported	24 months	Moderate

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	shared care model with patient-initiated scheduled)	biological agents or mycristine, have significant co-morbidities or life expectancy of less than 5 years.		All patients received two 3-hour sessions provided by a multidisciplinary team on self-management and treatment knowledge  Other Shared-management with GP / rheumatologist	concerns through nurse-led hotline. Nurses involve specialist if blood test results above agreed limits.  Control (rheumatologist-led fixed appointment group): Education and annual safety net appointments same as the other arms, but patients continued with 20-30 minute consultations with rheumatologist every 3-12 months		While the average number of GP consultations was similar in the three groups, the total number of GP services was higher in the PIFU group (57.8) than the control group (55.2; p= 0.02) and the nurse group (46.9; p < 0.01).  Patient outcomes Changes in disease activity, functional status, and health-related quality of life were not statistically significantly different for the three groups, although the mean scores were better for shared care/PIFU compared with rheumatologist group.  Costs PIFU/shared care non-significantly less costly than rheumatologist care.  At EUR 10 000 per quality-adjusted life year threshold, PIFU/shared care was cost-effective with			

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							more than 90% probability.  Nurse care was cost-effective in comparison with shared care/PIFU with 75% probability.			
McBain et al. 2015 <sup>10</sup>	To determine the effectiveness of a patient-initiated disease-modifying antirheumatic drugs self-monitoring service for people with rheumatoid or psoriatic arthritis	Rheumatology  Adults with either rheumatoid or psoriatic arthritis on a stable dose of methotrexate  Excluded patients with significant comorbidities, and those who received monitoring of condition through their GP, and patients on infliximab	UK  Hospital rheumatology department (single-centre)	Safety netting/routine monitoring: Patients maintained routine appointments with rheumatologist every 6 months  Patients also performed routine blood monitoring every 4-6 weeks and were sent a copy of results to be able to detect change / out of range results. Patients also recorded symptoms and side effects with criteria for when to contact clinical nurse specialist. Any serious concerns would be acted on by nurse specialist (who reviewed all results) regardless of whether a patient activated appointment.  Patient access / triage / escalation: Patients given clear clinical criteria for when to initiate contact based on monitoring results. Patients could also contact clinical nurse specialist or rheumatologist through designated hotline or email, and would receive a response within 24-48 hours.  Education	Routine appointments with clinical nurse specialist every 3-6 months, and routine blood tests every 4-6 weeks.  The nurse hotline could be contacted for advice between appointments	Single-centre RCT  63% acceptance rate	Service use PIFU associated with 54.55% fewer visits to the clinical nurse specialist (30 vs 66, p<0.0001), and 6.8% fewer visits to the rheumatologist – though effect was not statistically significant (96 vs 103, p=0.23). PIFU also had 38.8% fewer visits with the GP compared to control (29 vs 47, p=0.07), but effect was also not statistically significant  Patient outcomes There was no association between trial arm and any of the clinical or psychosocial outcomes.	None reported	24-months	Low

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				2-hr group-based training session with specialist and health psychologist on self-monitoring						
Batehup et al. 2017 <sup>11</sup>	To compare patient-triggered follow-up for curatively treated colorectal cancer against traditional outpatient follow-up.	<p>Oncology</p> <p>Patients aged 18 years and older with colorectal cancer who received treatment with curative intent and no longer have symptoms and had no other cancer diagnosis during treatment</p> <p>Patients with dementia, memory loss, or learning disabilities excluded.</p>	<p>UK</p> <p>Cancer treatment centre (single site)</p>	<p>Safety netting/routine monitoring</p> <p>Patients take routine surveillance blood tests every 3 months for 2 years, and then every 6 months from years 3-5. CT scans performed at years 1,2 and 5 and colonoscopy at years 1 and 5 unless abnormal.</p> <p>Patient access / triage / escalation: Patients provide regular remote surveillance tests according to the agreed protocol using a customised IT system. Results are reviewed by the nurse and when normal, a letter was sent to the patient. Abnormal results are reviewed at the multidisciplinary meeting and further action taken as appropriate. Patients may phone nurse specialist to discuss concerns as needed.</p> <p>Education</p> <p>4-h self-management workshop run by a clinical nurse specialist and colorectal cancer survivor.</p>	<p>Patients receive alternating oncology / surgical follow-up appointments every 3 months for 2 years, and every 6 months for years 3-5. Surveillance blood tests at each clinic visit.</p> <p>CT scan at 1,2 and 5 years.</p> <p>Colonoscopy at 1,5 years unless abnormal</p>	<p>Service evaluation; Prospective observational cohort study</p> <p>84 PIFU patients vs 92 standard care</p> <p>Acceptance rate not reported</p>	<p>Patient satisfaction</p> <p>Patients were satisfied with their follow-up care regardless of model (EQ5-D L health score = 73.57 vs 83.07, p=.006, worst 0-100).</p> <p>Service costs</p> <p>PIFU was up to £142.24 per patient more expensive than usual care in the first year. Savings in outpatient appointments in PIFU were outweighed by the costs of the self-management workshop and remote surveillance.</p> <p>Service use</p> <p>No significant differences were found between utilisation of community and hospital services for any group comparison, except GP visits were higher for usual care patients than PIFU patients (1.84 vs 1.08, p = 0.024).</p>	None	12 months	Low

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Poggenborg et al. 2021 <sup>12</sup>	To compare a patient-controlled outpatient follow-up system with traditional scheduled routine follow-up regarding patient satisfaction and disease activity markers in rheumatoid arthritis patients	Rheumatology  Patients with rheumatoid arthritis aged 18 to 80 years and with a disease duration of at least 1 year.  Patients who received monthly intravenous biological medicine, and thereby already closely monitored at the clinic, were excluded, as were patients who did not want to take part in patient education or felt they could not manage to make a decision about their disease.	Denmark  Rheumatology hospital centre (single site)	Safety netting/routine monitoring: Pre-booked standard blood tests taken every 8 weeks. Results would be checked by a rheumatologist and would be contacted if concerns.  Patient access / escalation / triage Patients wanting an appointment booked directly with contact rheumatologist, and would be given an appointment within 5 days or less. Patients could also access nurse-led consultations without pre-booking appointments, and had access to nurse-led telephone helpline.  Education Information and education training with specialist nurse on how to use the open outpatient system, and how and when to contact the clinic. Educational material included self-management support.	Scheduled appointments every 3-8 months with rheumatologist.  Patients also had access to nurse-led hotline and nurse-led consultations without pre-booked appointments.  Patients told to contact clinic in between appointments with any issues.	Single-site RCT  239 patients (140 PIFU)  Acceptance rate not reported	Service use At 1 year PIFU had 16% fewer visits ( $3.2 \pm 1.9$ vs $3.8$ $p < 0.05$ ) and 31% fewer visits after 2 years ( $2.6 \pm 1.6$ vs $3.5 \pm 2.2$ ( $p < 0.0005$ )). However, PIFU patients had more telephone calls compared to standard follow-up ( $1.8 \pm 3.3$ vs $0.4 \pm .8$ , $p < 0.0005$ ) after 2 years.  Clinical outcomes PIFU/OOCP was comparable to standard care regarding clinical outcomes (no difference in disease activity, $2.7 \pm 1.2$ vs $2.5 \pm 1.0$ )  Patient outcomes No difference in psychological outcome measures., or patient satisfaction or confidence in care (Visual analogue scale, 0-100, $82 \pm 24$ vs $83 \pm 23$ ).	None reported	24 months	Low
Luqman et al. 2020 <sup>13</sup>	To explore the potential impact for both the	Oncology	UK university hospital	Safety netting/routine monitoring None – other than reminder letters received at 6 months and then at	For cost estimates, PIFU	Non-randomised, cohort study	Service use PIFU patients had 69 clinical appointments	None reported	5 years	Low

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	healthcare economy and patients of patient-initiated follow-up	Women with low risk endometrial cancer	(single centre)	12-monthly intervals from the clinical nurse specialist describing the symptoms that should prompt patients to make appointment and the contact details of the team  Patient access / escalation / triage Not reported  Education Not reported.	compared with routine follow-up over five years (year 1: 3-monthly; year 2: 4-monthly; year 3: 6-monthly; year 4: 6-monthly; year 5: 12-monthly).	187 patients  Acceptance rate not reported	and made 107 telephone contacts in 5 years, compared to the estimated 1673 appointments patients would have had under routine care. This is a 95.9% reduction in the number of clinic appointments/ PIFU patients 0.95 mean appointments per patient as compared with 9.0 appointments anticipated under usual care.  Health service costs PIFU cost £12,676.33 over 5 years, compared to the estimated £194,068.00 – a 93.5% reduction. PIFU is estimated to cost £16.92 annually per patient.			
Coleridge & Morrison 2020 <sup>14</sup>	To examine the uptake of patient-initiated follow-up, pattern of recurrences, and survival following surgical treatment of low-risk endometrial	Gynaecological oncology  Women with low-risk endometrial cancer treated surgically	UK  Gynaecological cancer centre (single site)	Safety netting/routine monitoring Not reported  Patient access / triage / escalation An open-door policy was emphasised and encouraged, and patients given contact details for how to make an appointment if required. No time frame for guaranteed appointment specified.  Other intervention(s)	Standard care (for cost comparison) Hospital follow-up involved a 15–20min appointment with a gynaecological oncologist every 3	Prospective audit  129 patients offered PIFU  90% acceptance rate	Cost (health service) Estimated that 1677 routine follow-up appointments would have been offered under routine follow-up, compared to the 264 appointments offered under PIFU protocol, saving £116 403 (median £988.60 per patient (range £0–£1071).	None reported	5 years	Very low

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	cancer and compare estimated costs with hospital follow-up			<p>Those requiring additional psychological support were identified and offered specialist cancer centre-based counselling with nurse counsellors, or referred to further psychologist support, if required.</p> <p>Education Patients received a holistic needs assessment with the clinical nurse specialist, as well as leaflets and advice detailing symptoms to look out for and contact details for the team</p>	<p>months in year 1, 4 months in year 2, 6 months in years 3 and 4, and a 12-month follow-up at year 5 (13 hospital appointments total)</p> <p>No control / comparator arm for clinical outcomes.</p>		<p>Cost (patient) Patients saved an estimated £7122 in transport and parking costs (median £57.22 per patient, range £4.98–£147.70).</p>			
Ryg et al. 2021 <sup>15</sup>	To investigate the effects of replacing regular outpatient follow-up through prescheduled visits with patient-initiated visits on patient satisfaction and clinical variables of type 1 diabetes	<p>Diabetes &amp; endocrinology</p> <p>Adults with type 1 diabetes for a minimum of 6 months; visiting outpatient clinic; treatment with insulin injection or pump therapy; aged between 18 and 80 years; and internet</p>	<p>Denmark</p> <p>Diabetes outpatient clinics (two clinics, single site)</p>	<p>Safety netting/routine monitoring Patients received reminder messages stating the time since their latest visit or HbA1c test via the patient portal 6 months after their last visit, and every 3 months thereafter. Participants who did not read the messages, and had no visits for 6 months, were contacted by phone. HbA1c, LDL, and creatinine levels and uACR were measured if &gt;9 months had passed since the last test.</p> <p>Patient access / escalation / triage By default, patients made contact through their usual personal health care provider to maintain continuity.</p>	<p>Regular pre-planned visits initiated by the physician (typically annually with physician, 1-2 visits with a diabetes specialist nurse, and dietician visits when appropriate)</p> <p>Control group also had access to patient portal</p>	<p>Single-site RCT</p> <p>357 patients (178 PIFU)</p> <p>60% acceptance rate</p>	<p>Patient outcomes PIFU patients reported greater benefit from consultations compared with baseline within groups (P &lt; 0.05) and fewer unnecessary visits compared with control (P &lt; 0.05).</p> <p>58% of PIFU patients preferred PIFU to fixed follow-up. In the control group, only 20% expressed a preference for PIFU setup (P &lt; 0.001)</p>	<p>Findings related to patient satisfaction and preferences did not differ between sex or age groups except for a more pronounced preference for the physician-initiated routine setup in patients over 50 years of age in the</p>	24 months	Low

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		user.		<p>Participants also could contact specialist nurse by phone or via patient portal to request a phone call or visit by calling a secretary or by sending a secured e-mail or message via the patient portal. Additionally, participants could request HbA1c testing. Patients guaranteed an appointment with the diabetes nurse within 1 week and with the physician (endocrinologist) or dietitian within 2 weeks of request. HbA1c was measured prior to each visit.</p> <p>Education Not reported</p> <p>Other components All patients could determine whether the visit they initiated would be with a diabetes nurse, physician, or dietitian.</p>	to track results and health record – and could initiate appointments when needed but would not be guaranteed a slot.		<p>Patients in the PIFU group reported feeling more involved in the management of their diabetes compared with control (P &lt;0.05). There were no between-groups differences in patient empowerment and diabetes distress</p> <p>Patient satisfaction with the outpatient clinic were high and unchanged in both groups, and accessibility increased (P &lt; 0.05).</p> <p>Clinical outcomes There were no significant changes in HbA1c, LDL, blood pressure, and complication status.</p> <p>Service use PIFU patients visited the outpatient clinic less frequently than control (4.4 ± 2.8 and 6.3 ± 2.7 visits respectively; P &lt;0.001).</p> <p>The number of missed appointments was lower in PIFU (P &lt; 0.05).</p>	<p>control group.</p> <p>There was no difference between sex or age groups for clinical outcomes.</p> <p>There were no differences in outpatient clinic visits between age groups, however participants of both sexes had significantly fewer visits with a larger difference for males. The number of lost appointments was lower in the intervention group (P &lt; 0.05); this was mainly attributable</p>		

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							PIFU made more telephone calls to the clinic than control group (3.1 ± 3.4 vs. 2.5 ± 3.2; P < 0.01).	to the male participants (P < 0.001) and younger age group (P < 0.001). The intervention group made more telephone calls to the clinic than the control group (3.1 ± 3.4 vs. 2.5 ± 3.2; P < 0.01), with a greater intergroup difference observed in females.		
Johnson & Choy 2021 <sup>16</sup>	Is patient-initiated follow-up post-surgical treatment of early endometrial cancer safe and can it be used holistically to improve cardiovascular health, and what are the cost implications	Gynaecology and obstetrics, oncology  Patients who underwent post primary surgical treatment of early endometrial cancer with low risk of	UK  Site not specified	Safety netting/routine monitoring: Not described  Patient access / escalation / triage: Nurse-led triage service whereby patients initiated telephone consultations with symptoms or other need for support.  Education Patients received a one-day course about their cancer, treatment, how to report recurrence symptoms, as	N/A	Retrospective review/audit 54 months follow-up  98 PIFU patients  Acceptance rate not reported	Costs Estimated that regularly scheduled follow-up would result in 1372 appointments over five years, costing the health service £109,760. By shifting to PIFU, estimated 96.5% savings in this time period.	None reported	54 months	Very Low

Authors	Study aims	Specialty and study population	Country and setting	Intervention / PIFU model characteristics	Comparator	Study design and sample size	Results / relative effect	Stratified / sub-group analyses	Study duration	Study quality score
		recurrence, and had attended one outpatient consultation 6–12 weeks post-operatively		well as learning about diet, exercise and smoking cessation. Training delivered by a consultant, cancer nurse specialist and health instructor. Patients educated to look out for red flag symptoms that would trigger an urgent review.  Other Patients could enrol in optional 10-week exercise programme						
Jakobsen et al. 2021 <sup>17</sup>	Comparing patient-led follow-up with standard outpatient follow-up; including type and number of contacts, patient-reported involvement and satisfaction	Gastroenterology / Surgical oncology  Patients aged 18 and older with rectal cancer who underwent major surgical resection  Excluded patients with metastases, cognitive deficits, or with two-year life expectancy	Denmark  Hospital surgical centres (four sites)	Safety netting/routine monitoring: No pre-planned visits, except for annual CT scan, and one at 36 months. Patients informed of results by telephone or mail, unless further clinical assessment indicated.  Patient access / escalation / triage Patients self-refer to a nurse via dedicated hotline. Management of any problem triaged based on standardised response algorithms.  Education Patients received standardised education and thorough patient information regarding relevant symptoms	Fixed follow-up schedule at 6, 12, 18, 24, and / or 36 months.	Multi-site RCT  168 PIFU and 168 standard follow-up  66% acceptance rate	Service use The total number of hospital contacts did not differ significantly between groups (n=1451 vs n=1229, p = 0.44). More patients had ≥15 contacts in the PIFU arm (17%) than the control arm (7%) (p = 0.004).  Total number of outpatient doctor visits significantly lower in the PIFU arm (n= 137 vs n=299, p < 0.001).  PIFU patients had more nurse visits due to the education session delivered by a specialist nurse. Otherwise, clinical nurse visits did not	Patients with low baseline self-management measured by PAM did not have significantly more self-referral contacts than patients with a high level of self-management (p=0.61). Other baseline factors (age, gender) showed no association with number of self-referrals.	12 months	Low

Authors	Study aims	Specialty and study population	Country and setting	Intervention / PIFU model characteristics	Comparator	Study design and sample size	Results / relative effect	Stratified / sub-group analyses	Study duration	Study quality score
							<p>differ between the two arms (p = 0.27).</p> <p>Overall, the number of telephone contacts did not differ (p = 0.59). Fewer patients (p = 0.01) in the control arm had e-mail/postal contacts due to the design difference in how the one-year CT scan result was delivered.</p> <p>Patient satisfaction Patients in both arms rated involvement and satisfaction high; yet patients in the PIFU arm scored significantly higher on two of six items regarding involvement (p=.04 and .004) and all five items regarding satisfaction with the information and level of support received.</p>			
Balhorn et al. 2022 <sup>18</sup>	To present a clinical pathway for patients referred with rectal bleeding at a large tertiary public hospital and demonstrate the	Colorectal/surgical  Patients with rectal bleeding. Excluded if presented with	New Zealand  Large tertiary public hospital, surgical outpatient	A once monthly dedicated clinic was set up to see patients with PR bleeding only. This new clinic was an extra clinic, which ran in addition to the other clinics.  Safety netting/routine monitoring: Not described	A historical control of successive patients with PR bleeding, seen in mixed clinics by both Colorectal Surgeons and	Comparison with historical cohort  133 patients in the new clinic (PIFU)	Service use There were significantly less follow ups in the new clinic (6% versus 45%, p < 0.0001). A small percentage of patients in the new clinic group were directly discharged	None reported	5 years	Very Low

Authors	Study aims	Specialty and study population	Country and setting	Intervention / PIFU model characteristics	Comparator	Study design and sample size	Results / relative effect	Stratified / sub-group analyses	Study duration	Study quality score
	utility of PIFU and its impact on reducing follow up appointments.	colorectal symptoms other than bleeding (e.g., perianal fistula, rectal prolapse, pruritis ani etc.).	clinic (single site)	<p>Patient access / escalation / triage All patients were given a PIFU 'card' which they could use to contact the Nurse Specialist directly for any queries or to set up a follow up appointment as required. There was no time limit to the use of the PIFU card.</p> <p>Education: Not described</p> <p>Other: PIFU part of new clinical pathway</p>	General Surgeons. No timing of follow-up appointments specified.	<p>and 135 in the historical comparison</p> <p>Acceptance rate not reported</p>	<p>(10%) whilst 70% of patients were discharged with either a PIFU card or a PIFU card along with a chart review.</p> <p>There were also significant differences between the two arms for treatment provided. Band ligation was performed more frequently in the NC group (36% versus 15%, <math>p = 0.001</math>). However, there were no significant differences in elective surgery rates (14% in NC versus 16% in HC).</p> <p>In terms of investigations performed, the rates of colonic studies overall were similar between the two groups (45% in NC versus 40% in HC). There were significantly more CT colonographies performed in the NC group (24% versus 5%, <math>p = 0.0001</math>).</p> <p>Clinical outcomes 5 year follow up, there was a single colorectal</p>			

Authors	Study aims	Specialty and study population	Country and setting	Intervention / PIFU model characteristics	Comparator	Study design and sample size	Results / relative effect	Stratified / sub-group analyses	Study duration	Study quality score
							malignancy found in both groups.			
Lawes-Wickwar et al. 2022 <sup>19</sup>	This study aims to evaluate a patient-initiated treatment model for people with blepharospasm or hemifacial spasm receiving BoNT/A, in terms of clinical impact and associated costs.	Neurology  Patients aged 18 years or over) diagnosed with hemifacial spasm or blepharospasm by a consultant and on a stable dose of BoNT/A,  Patients excluded with significant comorbidities, and/or is unable to communicate fluently in English.	UK  Treatment clinic at eye hospital (single site)	Safety netting/routine monitoring: Not described  Patient access / escalation / triage: Patients contacted nurse-led clinic via dedicated booking line to schedule treatment when they felt their symptoms returning. All patients with a disease activity score of 1 or above on the Jankovic Rating Scale were booked into the next available clinic slot.  Education Patients provided with instruction leaflet	Follow-up appointments determined by clinician based on historical patterns of treatment	Single site RCT  65 patients in PIFU group & 65 in control.  63% acceptance rate	Clinical outcomes PIFU demonstrated no statistically significant difference to usual care for disease severity or functional disability.  Patient outcomes Levels of anxiety differed significantly (F2, 142.39 = 1.65, p = 0.02), with PIFU, exhibiting a decrease and the control arm an increase (Hedges' g = -0.26 [99% CI -0.83, 0.32]). No statistically significant differences found for depression, quality of life, satisfaction with care and confidence with the service.  Costs Mean total costs of care were £198 more expensive per participant for usual care compared to PIFU (95% CI -£654.67, £256.76), however this difference was not statistically	Group was not a predictor of number of treatments received during the trial even after adjusting for age, sex, type of diagnosis, year of diagnosis, and years of education (Exp(β) = 1.022, χ2 (0.03, n = 113); df = 1, p = 0.86).	9 months	Moderate

Authors	Study aims	Specialty and study population	Country and setting	Intervention / PIFU model characteristics	Comparator	Study design and sample size	Results / relative effect	Stratified / sub-group analyses	Study duration	Study quality score
							<p>significant (<math>t(96) = 0.86</math>, <math>p = 0.39</math>).</p> <p>The average cost of primary care was slightly higher in the control compared to PIFU by £13.37 (95% CI-£16.62, £5.06). Secondary care costs lower in PIFU compared to control by £193.63 (95% CI -£521.78, £134.53), largely due to reduced inpatient stays. The costs of delivering primary services did not differ significantly between arms.</p> <p>Service use On average participants in both groups made two visits to the nurse-led clinic during the trial. Group was not a predictor of number of treatments received during the trial even after adjusting for age, sex, type of diagnosis, year of diagnosis, and years of education (<math>df = 1</math>, <math>p = 0.86</math>). There was also no significant difference between groups on the number</p>			

Authors	Study aims	Specialty and study population	Country and setting	Intervention / PIFU model characteristics	Comparator	Study design and sample size	Results / relative effect	Stratified / sub-group analyses	Study duration	Study quality score
							of days between clinic visits.			
Laurberg et al. 2022 <sup>20</sup>	This study aims to assess the impact of clinician-initiated visits versus patient-controlled flexible visits on clinical and patient-reported outcomes in people with type 1 diabetes.	Endocrinology individuals with type 1 diabetes who are age >18 years, diagnosis of type 1 diabetes for >1 year, have internet access and ability to understand, read and write Danish.	Denmark  Academic hospital outpatient clinic (single site)	Safety netting/routine monitoring: Patients complete regular questionnaires, and include details of blood pressure, weight, and HbA1c levels. Three reminders are sent to non-respondents automatically, after which non-responders are contacted by telephone to complete questionnaire. Patient maintains annual fixed appointment.  Patient access / escalation / triage: In addition to fixed appointment, patient offered pre-booked optional appointment every 4 months. Two weeks prior to each consultation, patients complete questionnaire. Diabetes nurse assesses results, and triages patient to f2f appointment, teleconsultation, or cancels appointment and schedules date for patient to complete next questionnaire. Nurse discusses any discrepancy between patient response / preference for appointment and clinical evaluation.  Education Not described  Other	Routine f2f consultations every 4 months with a doctor or specialist diabetes nurse, initiated by clinician. Patients may also see a dietician when needed.	Single-site RCT.  320 patients (160 in each arm)  63% acceptance rate	Clinical outcomes: Similar adjusted mean difference in HbA1c between both groups. No intergroup mean changes in lipid or blood pressure observed, and no adverse clinical event report.  Patient experience and well-being PIFU group showed improved overall diabetes well-being relative to comparator arm: the WHO- 5 index (range: 0– 100) increased by 4.5 points (95% CI: 1.6, 7.3) and the participation score (range: 0– 25) increased by 1.1 points (0.5, 2.0), whereas the diabetes well-being PAID score (range: 0– 100) decreased by -4.8 points (-7.1, -2.6).  Service use Registered mean number of visits per person was similar across groups (2.9 in the	None reported	15 months	Moderate

Authors	Study aims	Specialty and study population	Country and setting	Intervention / PIFU model characteristics	Comparator	Study design and sample size	Results / relative effect	Stratified / sub-group analyses	Study duration	Study quality score
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Tele-health / patient monitoring system called DiabetesFlex. Before appointments patients could specify mode of appointments (f2f or teleconsultation), or cancel.

standard care vs. 3.0 in the PIFU group).

The proportion of face-to-face visits cancelled ahead of time was greater in the PIFU group than in standard care (17%vs. 8.7%; risk difference: 8.4% [4.2, 13]).

DNAs occurred less frequently with PIFU than in the standard care group (2% vs.8%; risk difference: -6.0% [-8.8, -3.1]).

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