

Effectiveness and cost effectiveness of targeted interventions to reduce unnecessary referrals and improve the quality of referrals from primary care to secondary care

A rapid review of the research literature

<20th August 2010>

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1) Request:

The Evidence Adoption Centre received a request for a literature review from NHS Cambridgeshire. The PCT (Primary Care Trust) asked for a literature review on ‘targeted interventions to reduce unnecessary referrals and improve the quality of referrals’.

2) Research Question:

What is the effectiveness and cost-effectiveness of targeted interventions to reduce unnecessary referrals and improve the quality of referrals (appropriateness of referrals) in the UK?

Problem: Inappropriate referrals from primary care to secondary care, increased unnecessary referrals

Intervention: Targeted primary care interventions (educational, managerial, financial)

Comparison: Usual care

Outcome: Improved patient experience arising from a reduction in inappropriate referrals from primary to secondary care, decreased unnecessary referral rates

3) Introduction:

The primary-secondary care interface is a key organisational feature of many health care systems. Primary care physicians provide primary health care and act as ‘gate keepers’ with responsibility for defining which patients require secondary care. The referral system is the organisational structure for referring medical problems from generalists to specialists.⁽¹⁾ The interventions to reduce unnecessary referrals and improve the appropriateness of referrals can be divided into Professional Educational Interventions, Managerial Interventions and Financial Interventions. A number of alternatives to reduce referrals have been evaluated including distribution of guidelines, providing secondary care services in primary care and other organisational, educational and financial interventions.⁽¹⁾

Around 30% of PCTs are reported to have Referral Management Systems (RMSs) in place.⁽²⁾ Evidence is emerging that PCTs without referral management schemes may be faring worse than those that have them. Department of Health figures show that the number of GP referrals increased by more than 350,000 in the first quarter of 2008/2009 as compared to the same period last year, an increase of 16%. But referrals from other areas of the NHS only increased by 8% year on year.⁽³⁾ Despite this overall picture in NHS East of England, NHS Bedfordshire, which does not have a referral management scheme, said that its second quarter figures showed an 11% increase.⁽⁴⁾

This rapid literature review will analyse what the available evidence is regarding interventions that can reduce unnecessary referrals and improve the quality of referrals from primary care to secondary care.

4) Methodology:

This is a rapid literature review which will be based on the secondary findings of other published papers. This review is not intended to be a systematic literature review and therefore the search strategy lacks sensitivity in some areas. It may be that some significant publications were not identified.

a) Data sources:

Data sources included were Medline, Cinhal, DARE, Pubmed, Trip and Cochrane databases.

b) Search Strategy:

The combination of keywords used in the search strategy were - general practice*, gp*, general practitioner*, primary care, primary health care, family practice*, referral*, referring, refer, referred, PATIENT REFERRAL, CONSULTATION AND REFERRAL/, rate*, pattern*, variation*, improve*, influence* , appropriate*, lower*, decrease*, fall*, reduce*, REFERRAL RATES/ REFERRAL PATTERNS/, manage* or scheme* or intervention* or innovation* or incentive* or reward*.

c) Study selection:

Due to the time limit, this review summarised the findings of the most recently published systematic review on the given topic. The studies published in languages other than English were excluded from the literature search.

d) Data Extraction:

The data was extracted in the three tables. In Table One the following details from the included studies were extracted: study no., title, first author, publication year, geographical setting, study design, problem, intervention, outcome and limitations.

In Table Two and Table Three the brief qualitative summary of outcomes from the Cochrane systematic review and the scoping literature review were extracted.

The tables can be accessed in the appendices.

e) Data Quality Assessment:

This review is essentially based on the findings of the Cochrane systematic review and a scoping literature review.

5) Literature Review:

a) Availability of information:

The studies discussing effectiveness and cost effectiveness of Referral Management Schemes were analysed by the EAC. 46 papers were identified in the literature search. 3 of them were systematic reviews, 3 were reports, 26 were primary studies and 14 were internet articles. The EAC identified a Cochrane systematic literature review analysing the interventions to improve outpatient referrals from primary care to secondary care. EAC also included the scoping literature review which was published by the NHS Service Delivery and Organisation R&D Programme. This literature review will mainly summarise the findings of the Cochrane review⁽¹⁾ and a scoping literature review⁽⁵⁾. The two studies identified in the literature search, discussing the behavioural patterns of the GPs, were also included in this review.

b) Findings:

The included reviews demonstrated that interventions that can reduce unnecessary referrals and improve the quality of referrals can be divided into three groups: Professional Educational Interventions, Managerial Interventions and Financial Interventions.

c) Professional Educational Interventions:

i) Structured referral sheets:

Five studies included in the Cochrane review⁽¹⁾ evaluated the dissemination of referral guidelines with structured referral sheets and observed improved management of patients. Four of the five studies (four RCTs and one interrupted time series analysis) included were carried out in the UK and the other in Palestine. Two of the studies had unit of analysis error and it was difficult to analyse the statistical significance of the findings. In three studies the intervention was part of a multifaceted strategy including meetings or reminders. One study reported over 50% reduction in referral rates and the other two did not show any significant difference. The quality of referrals significantly increased in one study. The Cochrane review found that the dissemination of referral guidelines with structured management sheets could reduce number of unnecessary referrals and increase the appropriateness of referrals although the level of evidence is low.

ii) Educational activities by secondary care providers:

Professional Education of GPs can reduce the number of referrals and improve the appropriateness of referrals. Two of the three included studies in the Cochrane review⁽¹⁾ were RCTs and one a controlled before-after study. Two of the three studies were carried out in the UK and one in the Netherlands. Two studies showed an increase in the appropriateness of referrals for specific conditions, however, there was an increase in the referral rates for the specific conditions. The Cochrane systematic review, 2008 found that the effects of educational interventions led by secondary care providers could improve the quality of referrals for certain conditions, compared with no interventions.⁽¹⁾ The effects of educational activities led by secondary care providers on the referral rate is unclear.

iii) Passive dissemination of referral guidelines:

The passive dissemination of referral guideline alone is unlikely to lead to an improvement in referral rates and quality of referrals.⁽¹⁾ Two studies included in the Cochrane review⁽¹⁾ evaluated the passive dissemination of locally developed referral guidelines and neither observed changes in the appropriateness or the rate of referrals. One study evaluated the development and dissemination of the management guidelines for dyspepsia. The authors concluded that the guidelines acceptance and adoption was variable and their measured effects on some aspects of clinical behaviour were relatively weak. The other study evaluated pool dissemination of referral guidelines for four tracer conditions. The study found no changes in the appropriateness and rate of referrals.

iv) Behavioural patterns among the GPs:

It is assumed that referrals to hospital services are likely to be misdirected due to lack of awareness. A study done in 2005⁽⁶⁾ reviewed 1087 consecutive referral letters to the musculoskeletal services. The letters were reviewed by a consultant rheumatologist. 682 referrals were to the orthopaedics and 393 to rheumatology. The appropriateness of referrals as analysed by the review's assessor is shown in the figure below.

Figure 1: Appropriateness of referrals analysed by the review's assessor

Specialty chosen by GP for referral	Specialty considered appropriate by assessor	% of referrals to that specialty
Orthopaedics	Definitely orthopaedics	41
	Probably orthopaedics	17
	Definitely rheumatology	12
	Probably rheumatology	15
	Either	15
Rheumatology	Definitely rheumatology	85
	Probably rheumatology	9
	Definitely orthopaedics	1
	Probably orthopaedics	1
	Either	4

The study concluded that referrals to hospital based services are likely to be misdirected. Integrated referral and care pathways are required to increase the quality of referrals. The development of such pathways will require significant support, education and training for the GPs.⁽⁶⁾

A qualitative study done in the UK in 2007⁽⁷⁾ concluded that high referrer GPs are typically cautious and believe it is better to admit patients if in doubt. The study selected GPs according to their rate of out-of-hours hospital referral. The GPs were

classified as high, medium or low referrers. Five interviews were carried out with GPs from each of the three categories. The high referrer GPs expressed anxiety about the consequences of a decision not to admit, both for the patient and for themselves. They had a negative attitude towards alternatives to hospital admissions. The study concluded that educational programs need to be developed to improve GPs' judgements of their competences and to build appropriate levels of confidence.⁽⁷⁾ Much of the variance in actual referral behaviour may be explained by cognitive attitudes and subjective norms. Interventions to reduce this variation should be focussing on educating GPs about actual norms and best practice guidelines.⁽⁸⁾

d) Managerial or Organisational Interventions:

The managerial systems implemented by PCTs to reduce unnecessary referrals are Referral Management Centres, Clinical Assessment and Treatment (CATS) and Clinical Assessment (CAS). There were no scientific literature studies found in the literature search analysing the evidence for referral management centres, polyclinics or clinical assessment and treatment.

The managerial systems discussed below are: in-house second opinion, primary care clinics for chronic diseases, discharge patients to no follow-up, patient initiated follow-up or GP follow-up, direct access by GPs to hospital services and direct access by GPs to hospital diagnostics.

i) In-house second opinion:

Providing a second in-house opinion before referring, or enhancing the services provided before a referral (eg. providing access to a physiotherapist) may improve the referral process.⁽¹⁾ The Cochrane review⁽¹⁾ included one RCT carried out in a UK general practice evaluating the effects of an in-house second opinion before outpatient referrals. The study found approximately 70% of patients having an in-house second opinion were judged to need referral to the same hospital department immediately (63.0%). 19.6% of patients were not referred in the next 12 months (there was missing data on four patients). The review concluded that in-house second opinion could reduce unnecessary referrals although the level of evidence is very low. Further research will be required to analyse this intervention.

ii) Primary care clinics for chronic disease:

Primary care clinics for chronic diseases can be effective in reducing the burden on secondary care. One Cochrane review and five empirical studies were analysed in the Scoping literature review⁽⁵⁾. The included Cochrane review analysed the management of diabetes patients.

The evidence suggested that primary care clinics need to be structured to be effective in chronic disease care. The structured primary care clinics included, a disease register and recall system, with clinical reviews conducted in accordance with evidence-based guidelines. In these circumstances short term health outcomes appear to be as good as those achieved in hospital outpatient clinics. Well structured clinics can reduce outpatient visits and improve patient's access to care.⁽⁵⁾ There is no evidence to evaluate if primary care clinics will increase the burden on the primary care. There is insufficient evidence to evaluate if these interventions can be cost effective.

iii) Discharge patients to no follow-up, patient initiated follow-up or GP follow-up:

Discharging patients from outpatients to no follow-up, patient initiated follow-up or GP follow-up can be effective in reducing the burden on secondary care.⁽⁵⁾ Eleven studies were analysed in the scoping literature review⁽⁵⁾, most of which were condition specific and located in the UK. The specific conditions analysed in the studies were cancer, surgery, rheumatoid arthritis and inflammatory disease. Eight of the studies were RCTs, two case control studies and one non-randomised controlled trial.

The review concluded that it is unclear if these models of care can be applied (transferred / extended) to other clinical conditions. Transferring follow-up from secondary care to primary care increases the workload in the latter sector, but its magnitude is unknown. Where there is good evidence that regular follow up can be clinically ineffective, discharge without follow up should be implemented.⁽⁵⁾ For example, NICE has shown that routine follow-up beyond three years after treatment for breast cancer is unnecessary.⁽⁵⁾ Further research will be required to scope this intervention.

iv) Direct access by GPs to hospital diagnostics:

Direct access by GPs to hospital diagnostic tests can be effective in reducing inappropriate referrals. It reduces waiting times and is considered to be cost effective.⁽⁵⁾ Twenty seven studies were analysed in the scoping literature review⁽⁵⁾. All included studies were located in the UK. The study designs included were one RCT, one before and after study, nine surveys, fourteen audits and one descriptive evaluation. The quality of studies included was poor.

The review concluded that the quality of included studies was poor making conclusions tentative. Direct access by GPs to hospital diagnostics probably increases the demand for testing, but there is no evidence that it reduces the appropriateness of referrals.⁽⁵⁾ The studies did not discuss the effect of GPs failing to take an appropriate clinical action in response to test results.

v) Direct access by GPs to hospital services:

Direct access by GPs to hospital services can be effective in reducing unnecessary referrals. Thirteen studies were included for analysis in the scoping literature review⁽⁵⁾. The included studies discussed physiotherapy, surgery, hearing aid fitment and urological investigation. Eleven of the thirteen studies were located in the UK. The quality of included studies was variable. There were two systematic reviews, three RCTs, one survey and seven audits. The included systematic reviews were of good quality but the other included studies were of variable quality.

The review concluded that the impact of this intervention on overall demand for services is inconsistent. There were no reported adverse effects on patient health outcomes or satisfaction.⁽⁵⁾ Further scoping of this intervention will be required.

vi) GPs with Special Interests (GPSIs):

There is insufficient evidence if GPs with special interests can be effective in reducing the unnecessary referrals and improving the quality of referrals. The scoping review⁽⁵⁾ analysed 2 RCTs, 1 audit, 2 before after study, 1 controlled before after study and 1 non-randomised trial.

The lack of consistency in the different GPSIs model made it difficult to interpret the findings. Further research will be required to analyse this intervention.

vii) Risks of Managerial RMSs:

PCT's willing to commission Referral Management Schemes (based mainly on the administrative aspects) should be aware of the potential risks.⁽²⁾ The Managerial RMSs can create hidden waiting times and increase referral rates. It can result in lengthening the patient journey. It can also reduce patient choice and clinical freedom.⁽²⁾ RMSs based on administrative purposes can effect the quality of referrals.

e) Financial Interventions:

The Cochrane review⁽¹⁾ concluded that financial interventions (for example, giving incentives to GPs) can reduce referral rates but it may also reduce the quality and appropriateness of referrals.⁽¹⁾ Giving financial incentives to the GP can affect the health outcomes of the patients. GPs have a duty to make referrals on the basis of the clinical needs of the patient.

Professor Martin Roland, Professor of General Practice at the National Primary Care Research and Development Centre (NPCRDC) and a GP colleague in Manchester said "If the aim of any Referral Management System is to offer incentives to simply reduce referrals by refusing them without judging their appropriateness, that could harm patient care. Anything that involves a quota also could, because there is no relationship between high rates of referral and poorer patient outcomes."⁽⁹⁾

f) Cost- effectiveness:

Only two papers included in the Cochrane review⁽¹⁾ included some economic evaluation and in both cases this was limited to a small cost analysis which did not amount to a full cost effectiveness analysis.

The first paper⁽¹⁰⁾ reported a study which investigated a new 'guideline-based open access service' to improve the efficiency of urology outpatient clinics and GP's compliance with referral guidelines. The resource implications of the intervention were taken into account. These included both NHS direct costs incurred by GP practices and hospital management, as well as patient costs, such as travel costs due to the intervention. Sensitivity analyses based on the cost estimates were also reported. Although there was not a full economic analysis with any cost per QALY estimates, the paper concluded that the new service was probably a cost saving to the NHS (of £8037 per patient in a base case scenario, and up to £33421 in a best case scenario) largely because of reductions in hospital management costs when combined with various benefits such as reduced out-patient waiting times, fewer out-patient and investigation appointments and release of specialist and clinic time.

The second paper⁽¹¹⁾ investigated the effect of clinical guidelines on the management of infertility across the primary-secondary care interface. The study was a cluster randomised controlled trial where GPs in the intervention group received locally developed clinical guidelines and control practices received them one year later. Cost data was collected from case notes to determine the effect of the guidelines on the cost of referral (relating to tests, investigations, and clinic attendances). No costs of developing or disseminating the guidelines were considered. No significant differences were found between the two groups in the total costs to the NHS, although the median cost was lower in referrals from control than intervention practices. Given that the study found no evidence that patient outcomes were improved, the paper concludes that “the cost effectiveness of clinical guidelines should not be assumed.” This is an important point and underlines the importance of further rigorous economic analysis of any referral management scheme to determine whether or not it is a cost effective use of NHS resources.

6) Limitations:

This review did not describe how the keyword searches were filtered and refined to the final studies.

The studies used in this rapid literature review had methodological limitations. The level of evidence was of low quality.

No studies included a full economic analysis of the intervention. Just two studies in the Cochrane review included some form of cost analysis. Further economic analysis will be necessary to determine whether referral management schemes are a cost effective use of NHS resources and how those services can be best designed to deliver best value for money.

The studies included in the literature review had limited statistical interpretation of the results.

7) Need for further research:

There is a lack of evidence to suggest that managerial Referral Management Schemes can reduce referral rates and improve the quality of referrals. Further research will be essential to explore Primary-Care based referral systems and interventions.

Further research is required to scope intermediate primary care pathways.

There is a lack of evidence on 'in-house' second opinion and further analysis will be required to evaluate its effectiveness.

Future evaluations should analyse the effects of financial interventions on the quantity and quality of referrals.

Economic modelling will be required to analyse the cost effectiveness of targeted interventions in reducing referral rates.

8) Conclusions and Recommendations:

Commissioners in the East of England might consider commissioning the following interventions, to reduce the number of inappropriate referrals from primary to secondary care.

Educational Interventions:

- There is low quality evidence that structured referral guidelines provided to GPs can improve the quality of referrals and reduce the unnecessary referrals.⁽¹⁾
- There is low quality evidence that educational activities led by secondary care providers can increase the appropriateness of referrals.⁽¹⁾
- Practice Based Commissioning can be used for benchmarking the data to inform commissioning decisions. GPs with high and low referral rates can be identified. GPs with high referral rates can be supported with educational interventions.

Managerial Interventions:

- In-house second opinion before referring can reduce the referral rates although the level of evidence is very low.⁽¹⁾
- Primary care clinics and community services for patients with long term conditions can reduce unnecessary outpatient visits, However, there is insufficient evidence about whether, primary care clinics for chronic diseases can be cost effective.⁽⁵⁾
- GPs having direct access to hospital based diagnostics tests, investigations and treatments can be effective. Furthermore, discharging hospital patients to no follow-up, patient initiated follow-up or GP follow-up can be effective. Further scoping of these interventions will be required before rolling them out at Primary care level.⁽⁵⁾

Financial Interventions:

- There is a lack of evidence to suggest that financial interventions (for example, GP incentives) can reduce unnecessary referrals without compromising the quality of referrals.⁽¹⁾ Commissioners willing to give financial incentives to GPs need to further evaluate this intervention.

9) Appendices:

a) Table 1: Data extraction from the included studies

S. no	Title of the study	Validity of the study
1	Akbari et al, 2008.	<p>Study title: Interventions to improve outpatient referrals from primary care to secondary care.</p> <p>Type of Study: Cochrane systematic review.</p> <p>No. of included studies: Seventeen studies were included in the original review, all but one study reported since 1990.</p> <p>Geographical settings: Twelve included studies were based in the UK, two in the US and one each in the Netherlands, Palestine, and Finland.</p> <p>Study designs: Eight cluster randomised trials (which randomised by professional or practice) ; two patient randomised trials ; one controlled clinical trial (which allocated by practice) ; five controlled before and after studies and one interrupted time series.</p> <p>Problem: Improve outpatient referrals from primary care to secondary care</p> <p>Interventions: Nine studies evaluated professional educational interventions (including 14 comparisons), four studies evaluated organisational interventions and four studies evaluated financial interventions (including five comparisons).</p> <p>Outcomes: Objectively measured provider performance in a health care setting (for example, referral rates or appropriateness of referral) or health outcomes were included.</p> <p>Limitations: The main weakness of the review is inevitably the limited number, methodological quality and limited evaluation of the identified studies. All of the studies had some methodological weaknesses, in particular, relatively few studies correctly analysed data from clustered randomised trials limiting statistical interpretation of the results.</p>
2	Batra et al, 2008.	<p>Study title: This paper reviews the evidence for and against referral management centres as a method of cutting clinical threshold procedures activity.</p> <p>Type of Study: A report. Does not discuss the methodology of the paper.</p> <p>Geographical settings: UK</p>

		<p>Problem: Referral management centres as a method of cutting clinical threshold procedure activity.</p> <p>Interventions: Referral management centres</p> <p>Outcomes: Effectiveness and cost effectiveness as a method of cutting clinical threshold procedure activity.</p> <p>Limitations: There was no methodology reported for this report. Author did not mention that how the selected references were included for this review.</p>
3	Pulse News, 2008.	An article from the website. (An opinion)
4	Pulse, 2008.	An article from the website. (An opinion)
5	National Primary Care Research and Development Centre and Centre for Public Policy and Management of the University of Manchester, 2007.	<p>Study title: Outpatient Services and Primary Care: A scoping review of research into strategies for improving outpatient effectiveness and efficiency.</p> <p>Geographical settings:</p> <p>Study designs: A scoping literature review</p> <p>Problem: Can primary care reform reduce demand on hospital outpatient departments?</p> <p>Interventions: Transfer of outpatient services to primary care Relocating specialists into community settings Liaison between primary care and specialists Professional behaviour change</p> <p>Outcomes:</p> <ul style="list-style-type: none"> • Patient outcomes <ul style="list-style-type: none"> — Satisfaction, quality of life, acceptability, preferences — Health status • Service outcomes <ul style="list-style-type: none"> — Quality of care — Impact on hospitals: waiting time, outpatient attendance, acceptability to clinician — Impact on primary care: waiting time, workload, acceptability to clinician • Costs <ul style="list-style-type: none"> — NHS costs, patient costs, full economic costing.

		<p>Limitations: The review was not intended to be a comprehensive systematic review, and is thus likely to have missed publications of relevance. Inclusion decisions, data extraction and data synthesis were conducted by only one reviewer for each model or sub-type of care. This was necessary to ensure completion of the review within the available time and resources but is likely to have produced some inconsistencies and inaccuracies.</p>
6	Speed et al, 2005.	<p>Study title: Referrals to hospital-based rheumatology and orthopaedic services: seeking directions.</p> <p>Geographical settings: UK</p> <p>Study designs: Observational. One thousand and eighty-seven consecutive referral letters to orthopaedic and rheumatology services were reviewed by a consultant rheumatologist.</p> <p>Problem: Referrals to musculoskeletal services are frequently misdirected.</p> <p>Interventions: Triage of musculoskeletal referrals to rheumatology and orthopaedic services at a large teaching hospital</p> <p>Outcomes: Effectiveness in reducing demand on secondary care and improving quality of referrals.</p>
7	Calnan et-al, 2007.	<p>Study title: A qualitative study exploring variations in GPs' out-of-hours referrals to hospital.</p> <p>Geographical settings: Bristol, UK.</p> <p>Study designs: Interviews</p> <p>Problem: Marked variations in hospital referral rates for GPs working in out-of-hours care.</p> <p>Interventions: Identify the reasons for variations in GPs referral rates.</p> <p>Outcomes: Behaviour of the GPs.</p> <p>Limitations: The sample size was very small. The interviews were based on the retrospective accounts of decision making. In some cases, doctors were not involved in with out-of-hours care at the time of the interview and that may have influenced their beliefs and reporting of it.</p>

8	Green et-al, 2008.	<p>Study title: General practitioner attitudes towards referral of eating-disordered patients: a vignette study based on the theory of planned behaviour.</p> <p>Geographical settings: UK</p> <p>Problem: Individual differences between general practitioners (GPs) and their impact on the variations in the referrals.</p> <p>Study designs: Observational (Survey)</p> <p>Interventions: Reasons for variations in GP referral rates.</p> <p>Outcomes: Behaviour (GPs' decisions to refer)</p> <p>Limitations: The vignette approach means that the study could only explore intention to refer a hypothetical case. It is not clear from this study on what the cognitive attitudes regarding referral are based. Due to the low response rate, the sample size for this study was smaller than anticipated.</p>
9	Pulse, (2008).	An article from the website. (An opinion)

b) Table 2: Summary of Cochrane Review Findings

Intervention Sub-type	Settings	No of studies evaluated	Quality/ Appropriateness of referrals	Referral rates	General practice impact	Costs	Adoption
Passive dissemination of guidelines	British general practice	2 studies. 1 RCT* and 1 non-randomised trial	Insufficient evidence.	Little or no effect on the referral rates.	Insufficient evidence.	Insufficient evidence.	-
Structured Referral sheets	Four studies were conducted in UK and one in Palestine.	4 RCT* and 1 interrupted time series analysis.	Appropriateness improved	Appropriate reductions in referral rates.	Increased workload	Insufficient evidence.	Development of referral sheets. Increased workload in primary care may restrict use to small number of clinical problems.
Educational outreach by specialists			Appropriateness improved	Appropriate reductions in referral rates.	Insufficient evidence.	Insufficient evidence.	No obvious impediments to adoption.
In-house second opinion	UK	1 RCT*	Insufficient evidence. Appropriateness of referrals may be improved.	Insufficient evidence but could reduce unnecessary outpatient attendances.	Insufficient evidence. In theory should increase workload.	Insufficient evidence.	No obvious impediments to adoption.
Financial Incentives		4 studies. 1 RCT* and 3 CBA	Insufficient evidence. In theory, could reduce quality by discouraging .	Reduced outpatient attendance but appropriateness of this unknown.	Insufficient evidence.	Insufficient evidence.	Requires development and testing of financial incentives. High risk of perverse behavioural response.

*RCT = Randomised clinical trial

** CBA = Controlled before-after study

c) Table 3: Summary of Scoping Review Findings

Intervention Sub-type	Settings	No of studies evaluated	Quality/ Appropriateness of referrals	Referral rates	General practice impact	Costs	Adoption
Primary care clinics for chronic disease		1 Cochrane review	-	Can reduce referral rates.	Unknown	Unknown	Well structured clinics can be effective.
Discharging patients to no-follow-up, patient-initiated follow-up or GP follow-up	UK	8 RCTs* + 2 Cohort study + 1 non-randomised trial	-	Can reduce referral rates.	Can increase the workload but the magnitude is unknown.	Insufficient evidence.	Transferring follow-up from secondary care to primary care can increase the workload in primary care but the magnitude is unknown.
Direct access by GPs to hospital diagnostic tests and services	UK	-	Insufficient evidence.	Can reduce referral rates.	-	Can cut costs.	There is a risk that GPs might fail to take an action on the test results but it was not addressed in any study.
Merits of GPs with Special Interest (GPSI)	UK	2 RCTs* + 1 CBA** + 1 Audit + 2 BAS*** + 1 non-randomised trial	Insufficient evidence.	Insufficient evidence.	Insufficient evidence.	Insufficient evidence.	The lack of uniformity in the GPSI model and in arrangements for monitoring GPSI services makes the finding interpretation difficult.

*RCT = Randomised clinical trial

** CBA = Controlled before-after study

*** BAS = Before-after study

10) Additional Information

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