

Referral management: rapid evidence scan

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Introduction

This document presents the results of a rapid review of evidence on referral management, which was commissioned to inform the design and development of a Multispeciality Community Provider. (MCP) model of care. This review was supported by an analysis of data showing the current position, highlighting the nature and scale of any 'problems' that might be addressed using schemes of the type considered here.

Methodology

Searches of key bibliographic databases, including Medline and HMIC, were undertaken in September 2016 as well as and key online sources including NHS Evidence and HSJ for case studies. Secondary research (syntheses of studies) including international studies has been included to provide evidence on the effectiveness on referral management interventions. Primary research and case study examples focusing on evidence from the United Kingdom have been included for relevance. The combination of keywords/phrases used in the search strategy were: *referral management, demand management, service, centre, gateway, clinical triage, clinical assessment, clinical assessment and treatment, general practice with specialist interests, peer review, clinical audit.*

What is a high-quality referral?

An important context for any assessment of referral management schemes is an understanding of the referral process and the challenges presented by referral (Imison and Naylor, 2010).

Research commissioned by the King's Fund GP inquiry (Foot et al. 2010) defines high-quality referral as one that involves the following elements:

- necessity – patients are referred as and when necessary, without avoidable delay;
- destination – patients are referred to the most appropriate place first time;
- process – the referral process itself is conducted well. For example:
 - o referral letters contain the necessary information, in an accessible format;
 - o patients are involved in decision-making around the referral;
 - o all parties are able to construct a shared understanding of the purpose and expectations of the referral ;
 - o appropriate investigations and tests are performed prior to referral.

Measuring referral quality is not straightforward. Foot et al (2010) warn that overall referral rates cannot be used as a simple proxy for referral quality, suggesting that the measurement of referral rates and benchmarking against peers can provide a useful tool for GPs. However, Foot et al explain that interpretation of these measurements is complex and variations in referral rates should be interpreted with reference to other data, such as population health needs and area deprivation.

Why use referral management?

Referral management schemes include interventions at the interface between primary and secondary care designed to improve GP referrals to specialist care. Davies and Elwyn (2006) outline three potential roles of referral management:

1. count and monitor referrals;
2. assess their nature, and potentially their quality; and
3. redirect or bar requests for referral.

Generally, referral management schemes are used to check the appropriateness of GP referrals and reduce over-referral. Referral management also has the potential to expose under-referral. Findings from the King's Fund (Imison and Naylor, 2010) point to evidence that under-referral may be as much of an issue as over-referral. The researchers recommend that any referral management strategy should look to expose under-referral as well as over-referral, acknowledging that this may limit the potential for reducing demand.

Referral management interventions

Models of referral management vary, encompassing a range of different functions which involve varying degrees of active intervention in the referral process. The King's Fund (Imison and Naylor, 2010) highlight six different approaches to referral management strategies that are most widely used:

1. referral management centres;
2. clinical triage and assessment;
3. peer review and feedback;
4. financial incentives;
5. guidelines; and
6. passive use of guidelines.

The interventions are listed on a continuum with the most active interventions starting first (referral management centres) down to passive interventions such as decision-support tools that aim to alter referral behaviour. Moreover, they are not always mutually exclusive: some element of peer review may be included as part of a referral management centre for example.

In line with local priorities for the commissioner of this review, we have focused on the active referral management interventions (i.e. referral management centres, clinical triage and assessment, and peer review and feedback). The review explores effectiveness (with the primary outcome being a reduction in referrals – the suitability of which is considered at the end of the report), value for money and lessons learned.

Evidence on active referral management

Summary of interventions

The evidence on effectiveness and value for money for each of the three interventions has been considered firstly at secondary research level and then a primary research level using studies from the UK. Evidence from secondary research includes guidelines, systematic reviews, realist reviews, evidence summaries and think tank publications (e.g. King’s Fund). Such review-level evidence contains summarised and synthesised evidence from primary studies and can therefore be treated with some confidence. Evidence from primary research is based on single clinical trials and individual studies which may differ in context.

Evidence from secondary research suggests that peer review and feedback may help to reduce referrals. The evidence on the effectiveness of clinical triage and assessment is more equivocal and earlier reviews on referral management centres (RMCs) found no evidence of a reduction in referrals through their use. More recently a systematic review (Blank et al., 2015) reports a more mixed evidence base on the use of RMCs to reduce referrals; however it must be noted that the two of the three supporting studies were considered to be at higher risk of bias. Table 1 summarises the evidence from secondary research on the association between referral management scheme and decreased referral volume.

Table 1. Evidence from secondary research on the association between referral management scheme and decreased referral volume

	Reviews reporting a reduction in referrals	Reviews reporting mixed evidence on association on referrals	Reviews reporting no reduction in referrals
Referral Management Centre		Blank et al., 2015	Imison and Naylor, 2010; National Leadership and Innovation Agency for Healthcare, 2007
Clinical triage and assessment		Akbari et al, 2008; Blank et al., 2015; Hussenbux et al., 2015; Imison and Naylor, 2010; National Leadership and Innovation Agency for Healthcare, 2007	
Peer review and feedback	Blank et al., 2015; Imison and Naylor, 2010		Akbari et al, 2008

The cost-effectiveness of interventions is not reported in detail. Secondary research by Imison and Naylor (2010) concluded that a referral management strategy built around peer review and audit, supported by consultant feedback, with clear referral criteria and evidence-based guidelines is most likely to be both cost- and clinically- effective.

Primary research identified in this review supports the fact that there is a stronger evidence base for the effectiveness (based on reduced referrals) of peer review and feedback, with a more mixed view of the evidence for referral management centres and clinical triage and assessment (see Table 2).

Table 2. Summary of the evidence from primary studies

Referral Management Approach	Effectiveness* (*based on reduced referrals)		Cost-effectiveness	
	Studies reporting a decrease in referral rate	Studies reporting an increase in referral rate	Studies reporting some degree of cost benefit	Studies reporting no degree of cost benefit
Referral Management Centre	Wright et al., 2015; North Manchester CCG; Wilkes, 2013	Imison and Naylor, 2010; Cox et al., 2013	Wright et al., 2015; Wilkes, 2013	Imison and Naylor, 2010
Clinical triage and assessment	Pollard et al., 2014; Offredy et al., 2008; Davies M et al., 2016; Levy et al., 2009)	Rosen et al., 2006; Levell, 2012.	Davies et al., 2016; Offredy et al., 2008; Levy et al., 2009	
Peer review and feedback	Evans et al., 2011; Evans, 2009; Elwyn et al., 2007; South Norfolk Healthcare Community Interest Company, 2013; NHS Alliance, 2014	Cox et al., 2013	South Norfolk Healthcare Community Interest Company (2013); NHS Alliance (2014)	

The comparison of costs across the different services is difficult as:

- referral management services seek to reject or divert referrals;
- clinical triage and assessment mainly substitute services;
- peer review seeks to alter future referral behaviour although more recently initiatives have started to use peer review for prospective referrals (NHS Alliance, 2014).

Notwithstanding these caveats, peer review was by far the cheapest intervention with the highest cost reported to be £2.54 per patient, and the lowest cost at £0.55 per registered patient. In contrast, costs for referral management were reported to be between £6 and £8 per referral. The

cost reported for clinical triage and assessment are based on substitution costs i.e. community versus secondary care costs. The costs for community services ranged from £35 (Rosen et al., 2006) to £207.92 (Coast et al., 2005).

Evidence of cost saving has been reported across all three interventions however many studies acknowledge that more research is needed to understand the cost implications of these interventions. Wide variation in cost savings has been reported. For example, studies on clinical triage and assessment showed a wide variation in savings, ranging from £1 million over a year for a musculoskeletal triage service to £21,280 over nine months for a primary care allergy service. Differences in specialty referral volumes will impact on savings when comparing interventions across different specialties but more details regarding costs is needed to understand these differences.

Evidence from both the secondary research and primary research included in this review found large heterogeneity and adaptation of services over time, making comparisons within interventions difficult. The following sections provide a brief review of the studies reviewed.

Referral management centres

Referral Management Centres (RMCs) involve the insertion of a new institution, centre or unit into the patient pathway to take over aspects of the referral decision-making process (Pawson et al., 2016). They are designed to be a centralised referral system that operates as an intermediary between primary care organisations and secondary care providers. This involves reviewing referrals and acting in response to them (i.e. to reject, divert, or provide advice or some additional function) (Winpenny et al., 2016).

RMCs aim to prevent referrals from reaching secondary care that: require further investigations to be done in primary care; do not meet current guidelines; or are for procedures that are not locally funded due to a lack of evidence on clinical effectiveness. They are also designed to triage patients and redirect them to alternative community services (such as those run by GPwSIs, Allied Health Professionals or the private sector), which better match the patient's needs or have greater capacity (Pawson et al., 2016).

Referral Management Centres (RMCs) vary widely in their design. The remit of referral management varies, and might include administrative triage and/or clinical triage, and may assess GP referrals only, or GP referrals as well as consultant-to-consultant referrals. As well as administrative and clinical triage, referral management centres activities might also include the creation of databases holding referral data; education and specialist feedback to referring GPs; collation of evidence for pathway redesign; and booking of secondary-care patient appointments on behalf of practices, using a national computer booking system (Cox et al., 2013). Some centres may cover all specialties and others focus on a subset of specialties.

Effectiveness

Secondary research evidence

One systematic review (Blank et al., 2015) was identified, which considers the evidence on the effectiveness of referral management centres, including major triage systems. A total of six papers (n= 5 UK, 1 USA) were included. Three studies showed a positive effect on referral outcomes (Watson, 2002; Whiting, 2011; Maddison, 2004); however two of these three studies were considered to be at higher risk of bias (Whiting, 2011; Maddison, 2004). The remaining three studies showed either a negative or neutral effect (Kim, 2004; Cox, 2013; Ferriter, 2006).

Reviews published prior to this systematic review (Imison and Naylor, 2010; National Leadership and Innovation Agency for Healthcare, 2007) found no systematic evaluations of referral management centres. The earlier review by the National Leadership and Innovation Agency for Healthcare (2007) included a small evidence base regarding specialty-specific referral management centres, mainly based on a number of pilot initiatives commissioned in Wales in 2005/6.

Primary research evidence from the UK

RMCs were reported in seven papers (Cox et al., 2013; Wright et al., 2015; Xiang et al., 2013; North Manchester CCG, unknown; NHS Confederation, 2014; Wilkes, 2013; and Imison and Naylor, 2010). Five of these reported on the impact of referral management centres on referral rate, as measured by attendance rate (Cox et al., 2013; Wright et al., 2015; North Manchester CCG, unknown; Wilkes, 2013; and Imison and Naylor, 2010). Three studies showed a reduction in referral rate (Wright et al., 2015; North Manchester CCG; Wilkes, 2013) however, the evidence was from small case study evaluations. The remaining two papers found no reduction (Imison and Naylor, 2010; Cox et al., 2013).

A mixed-methods pilot study (Wright et al., 2015), reporting on a computerised referral management and booking system (RMBS), found overall attendance rates declined for both pilot (46.0, 9.7SD to 39.4, 8.3SD, $p=0.002$) and control practices (42.3, 10.5 SD to 39.7, 7.6 SD, $p=0.050$) from 2010/2011 to 2012. The reduction was significantly stronger in pilot practices ($p=0.047$). Analysis of individual specialties showed significant differences for ophthalmology and dermatology; for ophthalmology, attendance rates did not increase significantly for pilot practices (7.6, 1.9 SD to 7.9, 2.3 SD, $p=0.274$) but increased significantly for control practices (6.6, 2.0 SD to 8.7, 3.2 SD, $p=0.001$); and for dermatology there was a non-significant reduction in pilot practices (3.3, 0.9 SD to 2.9, 1.3 SD, $p=0.089$), and a non-significant increase for control practices (3.1, 1.3SD to 3.4, 1.2 SD, $p=0.140$), which resulted in a significant difference ($p=0.041$).

North Manchester CCG (unknown date) evaluated a city wide referral gateway piloting a referral management centre for one year. The evaluation reports a downward trend of 12-15% in outpatient referrals; a reduction of 3% in elective/day case activity and an increase in ICATS (integrated common assessment & treatment service) usage from 42% to 79%.

Wilkes (2013) and NHS Confederation (2014) report on a two year musculoskeletal pilot study by Newcastle West CCG. The evaluation reports:

- a 40% reduction in GP orthopaedic outpatient attendances;
- an 8% reduction in Rheumatology attendances;
- and a 44% reduction in neurosurgical attendances.

A corresponding increase in community consultations was observed: 81% increase in referrals to the clinical assessment and treatment service and 174% increase in physiotherapy. 15% of physiotherapy attendances were telephone only. Overall, there were 62% more patient episodes in 2012 compared with 2010.

Case study analysis (Imison and Naylor, 2010) reported no reduction in referral in two case studies involving referral management centres. Imison and Naylor (2010) also undertook quantitative

analysis of four years of national outpatient data (2005-2009) which found PCTs that had introduced full referral management centres were no more or less successful than others.

A retrospective before and after study (Cox et al., 2013) explored the impact of referral management (three groups) or internal peer review (two groups) on outpatient attendance rates. All groups reported an increase in attendance with four out of the five groups showing a statistically significant increase in attendance rates, ranging from 0.41 to 1.20 attendances per 1000 persons per month. After correction, only one group (a referral management centre) remained significant (1.05 attendances per 1000 persons per month, 95% CI 0.64 to 1.64; $p < 0.005$).

Ball et al (2016) (incorporated in research by Winnpenny et al., 2016) explores the perceived effectiveness of referral management centres, through a series of interviews, identifying key issues to consider in implementation and evaluation of RMCs. Many RMCs were described as successful by those involved with reference to a range of outcomes such as the collection of useful data or GP education; however, there was limited evidence of reduced referrals or cost savings. See Key points for reflection for further discussion on immediate outcomes.

Other outcomes

Primary research evidence from the UK

The quality of referral has been shown to improve following the introduction of RMCs. Wright et al (2015) report that the number of referrals challenged for administrative reasons declined over the course of a RMC pilot. Research by Xiang et al (2013) found the quality of referral letters improved following the introduction of a referral management centre; the proportion of letters containing each of the four core items increased compared to baseline. Statistically significant increases in the recording of 'past medical history' (from 71.2% to 84.3%, $p < 0.001$) and 'medication history' (77.7% to 86.8%, $p = 0.006$) were observed. Improvements in inclusion of 'blood pressure' (48.2% to 52.1%, $p = 0.38$) and 'body mass index' (40.5% to 43.6%, $p = 0.51$) were not significant.

Services have been rated as good or excellent with patients (Wright et al., 2015; NHS Confederation, 2014). GP practice staff satisfaction surveys indicate agreement the service has made a positive difference in providing a good service for patients, reducing telephone queries and increasing the use of Choose and Book (NHS Confederation, 2014). A musculoskeletal pilot pathway reports a significant reduction in waiting times, including less than 48 hours for physiotherapy telephone triage, and an average wait of six days for face to face physiotherapy (NHS Confederation, 2014).

Value for money

Secondary research evidence

The one systematic review (Blank et al., 2015) identified did not report on the cost-effectiveness of referral management centres. An earlier review (Imison and Naylor, 2010), based on limited

evidence, concluded that referral management centres were unlikely to be value for money, concluding that the greater the degree of intervention, the greater the likelihood the referral management approach does not present value for money.

Primary research evidence from the UK

Costs were reported in five of the studies, with savings reported in three (see Table 4). Reporting of costs varied. Start-up costs were only reported in one paper and were estimated to be in the region of £50,000. It is unclear whether the running costs reported in the other studies includes set up costs. Operational costs were reported in three different ways: cost per registered patient, cost per referral or annual costs. The most common denominator was cost per referral; costs reported by Imison and Naylor (2010) were far greater than costs reported more recently (Wright et al., 2015; Optum, 2014), suggesting costs per referral might be between £6 and £8 per referral.

Table 4. Referral management centre costs and cost savings

	Start-up costs	Cost per registered patient / cost per referral	Annual costs	Cost savings
Cox et al., 2013		Budget per registered patient: RMC3 £6.23 RMC4 £6.13 RMC5 £3.22 Mean annual budget £5.18	RMC3 £1,039,892 RMC4 £900,670 RMC5 £514,634	
Wright et al., 2015		£6.22 for each case referred via RMBS	6 months: 7859 referrals X contract cost of £6.22 = overall cost of £48,882.98	6 months net cost savings (2012): Savings (£229,700) – Costs (£48,882) = £180,858
NHS Confederation, 2014	£50,000	£2.40 per patient / £8 per referral		
Connect Physical Health (Wilkes, 2013)				Based on locally negotiated community tariffs applied to the modernised pathway, the total cost in a six month period in 2012 was £42,000 less than the same period in 2010. In a typical CCG population of 200,000, savings are likely to be around £220,000 a year. The pilot also saw a saving of 41% per average episode of care, with costs reducing from £281 in 2010 to £167 in 2012.

Imison and Naylor (2010)	Site B: £23 per referral	Site A: unknown – assumed to be higher than site B based on personnel. N.B support other practice-based commissioning activities as well Site B: £382,000 (2009/10)	Site A: estimates that potential gross savings for 2009/10 will be in excess of £1 million. Net savings: Estimated to be considerably less based on estimated running costs.
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North Manchester (unknown date) didn't report on the costs; however, they subsequently decided to bring services back in house to reduce costs.

Cost savings reported by Wright et al. (2015) are based on 7859 referrals managed through RMBS in the first half of 2012; the overall cost of referral management was £48,883 given a contract cost of £6.22 for each case referred via RMBS. Cost savings of at least £229,700 are based on the assumption that less than 2% of the 558 challenged cases were re-referred into secondary care and calculated at £420 saved per referral (558 – 2% = 547 × £420 = £229 740). A net cost saving of about £180,000 in the first half of 2012 has been estimated, however the authors acknowledge that more research will be needed to see whether RMBS, in conjunction with increased community services, is cost-effective in the long term.

Cost savings reported by the Connect Physical Health pilot (NHS Confederation, 2014; Wilkes, 2013) were based on locally negotiated community tariffs applied to the modernised pathway; the total cost in a six month period in 2012 was £42,000 less than the same period in 2010. This covered a population of 77,000, and the authors calculate that in a typical CCG population of 200,000, savings are likely to be around £220,000 a year.

One of the two case studies reported by Imison and Naylor (2010) estimated that potential gross savings for 2009/10 would be in excess of £1 million, however accurate running costs could not be calculated and the authors suggested that the net savings were estimated to be considerably less based on estimated running costs.

Lessons learned

Secondary research evidence

The intended outcomes of referral management centres are that patients are redirected to alternative services, referrals decrease, and GPs change their referral behaviour. However, Pawson et al. (2016) highlight unintended consequences that may occur as a result of the introduction of RMCs. Firstly, clinicians may circumnavigate RMCs and refer straight to secondary care if they have concerns about clinical governance. This problem is likely to be apparent if it is felt RMCs have been imposed on clinicians and they have not been not involved in the development of RMCs or in decisions about the means through which blocking or redirection is achieved. Furthermore, GPs may short-circuit RMCs if they have concerns about the skills and experience of those conducting

the triage. Secondly, referral management centres may increase referral volumes rather than decrease, particularly if alternative community services are set up in addition to secondary care, making access easier which may cause GPs lower their referral thresholds. In addition to increased access increasing referral, Pawson et al (2016) found if effective feedback is not provided to referring GPs then RMCs may de-skill GPs as they are no longer required to engage in decisions about the appropriate referral pathway for a patient. Subsequently, referrals might increase as GPs offload less complex or less interesting patients to services run by Allied Health Professionals.

Pawson et al (2016) conclude that RMCs are more likely to be successful if all those whose work is likely to be influenced by the introduction of a RMC (e.g. GPs, consultants and NHS managers, other Allied Health Professionals) are engaged in the set-up of the RMC. Most importantly, personnel should be involved in the revision of care pathways and the development of guidelines that determine how referrals are blocked and redirected. Pawson et al (2016) use the progress made in Manchester to highlight how stakeholder engagement over a long period of time and after plenty of discussion and collaboration with primary care through local meetings, the CCGs and the LMC, led to the vast majority of GPs in Manchester using the gateway.

Pawson et al (2016) also discuss the importance of timely feedback delivered directly to GPs, about why their referrals have been blocked or redirected, contributing to the success of the RMC, again using the development in Manchester to highlight how results have been achieved. The use of local GPWSIs and senior, well-known GPs has meant other GPs respected the decisions made and the feedback they received. Feedback is provided in a professional and supported way so that the GPs saw it as more of a CPD tool than a criticism of their decisions.

Primary research evidence from the UK

Ball et al (2016) (incorporated in research by Winnpenny et al., 2016) conducted interviews with health professionals and managers involved in the commissioning and provision of referral management centres, and GP users of the schemes. Held across four case study sites across England, the interviews explored key issues to be considered when implementing and evaluating such schemes. Interviewees described a wide range of aims and functions of referral management centres; the aims of the schemes varied between sites and within sites, and evolved significantly over time. The evolving aims of the system meant there were practical and administrative difficulties compounded by the need for schemes to evolve and meet changing needs which were reported to have a significant impact on the successful functioning of the RMCs. Furthermore, achieving buy-in and sustaining relationships between RMC stakeholders was also challenging, partly due to a lack of clarity in aims and implementation issues. Sustaining relationships with RMCs stakeholders was seen as a key enabler to the successful functioning of the RMCs.

Clinical triage and assessment

Clinical triage and assessment services provide specialty or condition-specific clinical triage and may also provide treatment. Most services will aim to treat as well as assess the majority of patients and reduce onward referrals to specialist secondary care services (Imison and Naylor, 2010). Such centres have been promoted by the Department of Health (2006) for management of musculoskeletal conditions. The Musculoskeletal Services Framework proposes the use of multidisciplinary interface services, acting as a one-stop shop for assessment, diagnosis, treatment or referral to other specialists, with the triage process identifying people who can benefit from rapid access to local services, and those who will need hospital referral.

Clinical assessment and triage services are likely to use GPs with a special interest (GPwSI). A King's Fund review on referral management (Imison and Naylor) includes GPs with a special interest (GPwSI) services as a form of clinical triage and assessment. The same review makes reference to clinical triage through methods such as sending enhanced information to consultants prior to referral e.g. consultant dermatologists were sent a photo of the presenting complaint prior to referral. Both of these types of intervention have been included in our review of the evidence.

There is a growing move toward specialists providing advice and guidance on patient care without the need for referral, for example, via a messaging service or 'hotline' between GPs and specialists (NHS England, 2016). Such services are innovative with limited results available. NHS England (2016) cites a case study evaluation which reports on a telephone service linking GPs to consultants for immediate advice; the service is reducing inappropriate referrals and building relationships between local doctors in the South-West. Within the first year of running the service referral or admission was avoided in 56% of cases. Other case study examples include:

- Cambridgeshire and Peterborough CCG using the Advice and Guidance functionality within the NHS e-Referral service (ERS) to review the appropriateness of referrals - in 2015/16, 7,865 requests were made of which only 2,342 (30%) patients went on to require an outpatient appointment. There has been a 42% increase in the use of Advice & Guidance in first 2 months of 2016/17 of which only 20% converted to onward referral to providers.
- A Paediatric GP Advisory hotline has been set up at Imperial - GPs have access to specialist advice via a 24-hour email hotline and a telephone hotline (12pm to 2pm weekdays), run by consultants at St Mary's Hospital.
- Southampton City CCG has used a local CQUIN to ensure that GPs receive a 5 day response for agreed specialties through ERS. This guarantees a response for GPs within a specified timeframe, increases learning and reduces unnecessary referrals.
- Consultant Link is a service run by GP Care, a UK primary care federation – a call from a GP is linked to the first available, local consultant's mobile number, using 'hunt group'

telephone technology. GP Care reports that since 2012, 63% of calls have resulted in avoidance of a referral.

- Barts Health's dedicated email addresses offer GPs access to clinical advice in many specialties via dedicated specialty email addresses. Responses are expected within 5 days.

A qualitative study (Sampson et al., 2016) found email communication between primary and secondary care clinicians generally has a positive impact on patient access to specialist expertise. Governance issues around the appropriate storage, processing, and lines of responsibility of clinical email need to be defined. There may currently be a two-tier health service for those patients requiring 'quick answers', with some patients benefiting from their clinicians being more 'email active'.

Effectiveness

Secondary research evidence

A Cochrane review (Akbari et al, 2008), investigating interventions to improve outpatient referrals from primary care to secondary care found that providing a second opinion before referring (Kinnersley, 1999) and attaching a physiotherapist to the GP practice (O'Cathain, 1995) may reduce unnecessary referrals.

One systematic review (Blank et al., 2015) was identified that reported on the effectiveness of GP-led community specialist services and interventions including enhanced referral information. Both types of interventions were deemed relevant to clinical triage and assessment. The review included nine papers (n= 6 UK, 1 USA, 1 Italy, 1 Netherlands). Seven studies showed a positive effect on referral outcomes; four studies reporting on referral rate (Callaway, 2000; Sauro, 2005; Standing, 2001; Van Dijk, 2011) and three studies including patient reported outcomes (Ridsdale, 2008; Salisbury, 2005; Sanderson, 2002). The remaining two studies showed no association with referral outcomes (Levell, 2012; Rosen, 2006). One of the studies showing a negative effect was reported to be at higher risk of bias (Levell, 2012). For interventions including enhanced referral information, the systematic review identified five papers (n= 2 UK, 2 USA, 1 The Netherlands). These studies were dominated by studies conducted in dermatology (n=4), with the remaining paper exploring oncology (skin cancer). All five studies (Knol, 2006; Leggett, 2004; McKoy, 2004; Tadros, 2009; and Whited, 2002) reported a positive effect on referral outcomes. Three out of the five studies reported on the referral rates (Leggett, 2004; Whited, 2002; and Knol, 2006) and all showed a reduction in referral rate, although one study (Knol, 2006) was at higher risk of bias.

A systematic review (Hussenbux et al., 2015) exploring intermediate care pathways for musculoskeletal patients found that 72% to 97% of patients could be managed entirely within intermediate care with a 20% to 60% resultant reduction in orthopaedic referral rate. The review included three studies assessing rate of referral; two studies showed a positive effect (Bridgman et al., 2005; Sephton et al., 2010) and one study showed a negative effect (Maddison et al., 2004).

Earlier reviews (Imison and Naylor, 2010; National Leadership and Innovation Agency for Healthcare, 2007) also support the emerging evidence base supporting the effectiveness of about the benefits of some clinical triage services, in particular those for musculoskeletal conditions (Imison and Naylor, 2010; National Leadership and Innovation Agency for Healthcare, 2007), and dermatology (National Leadership and Innovation Agency for Healthcare, 2007).

Primary research evidence from the UK

Clinical triage and assessment interventions were reported in seven papers (Salisbury et al., 2005; Pollard et al., 2014; Offredy et al., 2008; Davies et al., 2016; Rosen et al., 2006; Levy et al., 2009; Levell, 2012). Six out of the seven of the studies reported on the association with referral rate. Four studies showed a reduction in referral rate (Pollard et al., 2014; Offredy et al., 2008; Davies M et al., 2016; Levy et al., 2009), and the remaining two papers found an increase in referral (Rosen et al., 2006; Levell, 2012). Services included across the studies included cardiology, dermatology, musculoskeletal and an allergy service.

A case study reporting on an Extended Cardiology Role GP (ECR GP) service (Pollard et al., 2014) reported a fall in referrals during the 12 week study period; a comparison of referral activity in practices during the pilot with the same period in the preceding year revealed a reduction of referrals to hospital based specialist cardiology services, with the post pilot number of referrals returning to pre- pilot levels.

Another case study (Offredy et al., 2008) reports on the development and implementation of a clinical assessment service at Harrow PCT. The service was initially introduced as a 3 month pilot for headache services (neurology), and extended to include cardiology and dermatology (2005), ophthalmology, gynaecology and minor surgery (2006). At the time of publication, rheumatology, paediatrics and ENT were to be implemented, bringing the total number of specialties offered to nine. The clinical assessment service involved GPwSI clinics located at the local hospital. The case study reports that in 2006 the NHS Better Care, Better Values Indicators show that Harrow was the 12th best-performing PCT in London for reducing outpatient appointments and was in the national top quartile for performance. The case study also reports that 70% of dermatology activity has been transferred from the hospital to community services.

The development of an MSK triage service in Ashford resulted in a reduction of some 30% in referrals to secondary care with savings of £1 million its first 12 months of operation (Davies et al., 2016).

A service evaluation of a locally enhanced primary care allergy service (Levy et al., 2009) asked referring practitioners to document on the referral proforma whether they would otherwise (if the

clinic did not exist) have referred the patient elsewhere. GPs stated that they would have referred 99 (66%) of the patients to secondary or tertiary care had the allergy clinic not been available.

A comprehensive evaluation of GPwSI services exploring four sites, three implementing GPwSI dermatology clinics and the fourth providing a musculoskeletal service found the association between the introduction of GPwSI clinics and hospital referral rates was variable and unpredictable (Rosen et al.,2006).

Levell et al. (2012) assessed the effect of introducing dermatology intermediate care services on the numbers of dermatology referrals to secondary care. Following the introduction of the dermatology intermediate service in 2005, the numbers of dermatology new patients seen, which had been stable for 5 years, showed an increase in 2007 followed by a substantial increase in 2008 and then 2009. The mean number of new patients seen in dermatology in 2004–6 was 6927 patients per year; in 2007, 7844 patients; and the mean number of new patients seen between 2008 and 2010 was 11 535 patients per year. This was an increase of 67% in the number of new patients seen. Overall, over this period, there was a 23% increase in dermatology new patients seen in secondary care dermatology in England.

Other outcomes

The evaluation of a GPwSI service for dermatology (Salisbury et al., 2005) uses patient reported outcomes to assess the effectiveness of the service. There were no noticeable differences reported for dermatology life quality index; the GPwSI service was reported to be more accessible and patients expressed slightly greater satisfaction with consultations with a GPwSI.

Value for money

Secondary research evidence

Blank et al. (2015) reported no costs for interventions including enhanced referral information, and costs were only recorded for one out of the nine papers (Ridsdale, 2008) exploring community provision of specialist services by GPs. This study evaluated a GPwSI in a headache clinic in general practice compared with the existing neurology service; the costs of the GPwSI clinic were lower than costs for neurologist contacts. The cost per first appointment was estimated to be £136, with £68 for subsequent contacts.

Imison and Naylor (2010) question the cost-effectiveness of clinical triage and assessment service; while services have proved successful in diverting a proportion of patients they might increase costs if: either additional funding is provided for new services without a commensurate disinvestment in secondary care (Salisbury et al., 2005) or services stimulate additional demand (Maddison et al 2004).

Primary research evidence from the UK

Three studies report on the estimated cost of referral to the GPwSI service (Rosen et al, 2006; Coast et al., 2005; Levy et al., 2009). The lowest costs were estimated to be £35 (Rosen et al., 2006) and the highest costs £207.92 (Coast et al., 2005). Cost savings were reported in three studies (Davies et al., 2016; Offredy et al., 2008; Levy et al., 2009). Savings reported varied widely, from £1 million over a year through a MSK triage service to an £21,280 over nine months using a primary care allergy service.

In their comprehensive evaluation of GPwSI service, Rosen et al (2006) found no consistency across sites in the methods used to monitor and evaluate the costs of establishing and running GPwSI clinics. Using available data, the authors calculate the cost per GPwSI appointment in each site ranged from £35 to £93; however, data was not available to compare the costs of hospital and GPwSI clinics.

Coast et al. (2005) found the costs associated with patients treated by a GPwSI service for dermatology were higher than for those treated as hospital outpatients. Adding in the costs of consultations in primary care, investigation, treatment, and drugs increased this difference, and the total NHS costs associated with general practitioner with special interest care are about 75% higher than those associated with hospital outpatient care; the total per patient costs to the NHS were £207.92 for patients attending the GP with special interest service, compared with £118.14.

A service evaluation of a locally enhanced primary care allergy service (Levy et al., 2009) calculated the cost per patient visiting the GPwSI clinic to be £159.57, although the service was under-utilised. Had the service been fully utilised (i.e. all available appointments fully booked), this would work out at just under £116.58 per patient visit. Economic evaluation of the service estimates a net saving of at £21,280 through reducing referrals to secondary and tertiary care.

The development of the clinical assessment service at Harrow PCT was a 'spend to save' scheme costing £241,000 in 2006/2007. The authors (Offredy et al., 2008) of the case study evaluation report that this investment led to significant reduction in outpatient referrals, giving the PCT a saving of £1.2 million in its first year (2006/ 2007).

Another case study evaluation of a MSK triage service (Davies et al., 2016) reports in its first 12 months of operation the approach resulted in a reduction of some 30% in referrals to secondary care with annual savings of £1 million.

Lessons learned

Secondary research evidence

Pawson et al (2016) warn that the ambition of intermediate professional roles, such as GPwSI managing demand, fails to realise and becomes a "holding station" when (1) consultants remain in relative control of referral decisions and the protocols that govern them and either (2) GPs retain

referral habits by maintaining direct referrals to secondary care or (3) GPs use the new GPwSI pathway to offload many cases for purposes of patient reassurance. Instead the establishment and success of intermediate professional roles only comes to fruition when there is protracted negotiation on (1) division of labour; (2) recruitment strategy; (3) case-mix; and (4) physical spacing.

Primary research evidence from the UK

The Extended Cardiology Role (ECR) GP role reported by Pollard et al. (2014) demonstrated reductions in referral rates and high levels of patient experience; however, staff experience suggests a significant additional workload associated with the ECR GP. Staff highlighted that having dedicated sessions for the cardiology clinics, access to administrative staff and a clear referral guidelines were vital to manage the workload.

The service evaluation of a locally enhanced primary care allergy service (Levy et al., 2009), highlights the cost effectiveness implications where the service is not fully utilised; from June 2005 to March 2006, 141 patients were seen in clinic costing an estimated £159.57 per patient based on the total budget cost for the clinic. Had the service been fully utilised (i.e. all available appointments (193) fully booked), this would work out at just under £116.58 per patient visit.

Peer review and feedback

Peer review and feedback is intended to encourage GPs to reflect on their referral practice, and alter future referral behaviour. This mechanism encourages GPs to comply with local pathways and protocols (Imison and Naylor, 2010).

Peer review can take a number of formats. NHS England (2016) highlight the following methods: weekly practice-level review meetings; written feedback between groups of referrers; and larger multi-disciplinary cross-practice team meetings, often including consultants, to discuss key themes in referrals.

Most peer review interventions have typically involved retrospective audit of referrals, however a number of referral management centres have started to incorporate feedback to referring GPs on alternative treatment options for assessment or management (Wright et al., 2015).

NHS England (2016) cite a Consultant Advice and Triage Service provided by West Birmingham Hospital NHS Trust as an example of a peer review of referrals intervention. Referrals are reviewed by a consultant through an enhanced triage service, with inappropriate referrals being sent back to GPs with advice and support

Effectiveness

Secondary research evidence

A Cochrane review (Akbari et al, 2008), investigating interventions to improve outpatient referrals from primary care to secondary care included one study (Grimshaw, 1998) that evaluated peer review. Grimshaw (1998) evaluated the effects of feeding back information about referral rate to general practitioners and discussions between general practitioners and an independent adviser about referral. The study found no significant improvements in referral following feedback on referral rates or discussion with an independent adviser. The most promising interventions were educational interventions and those involving secondary care specialists and structured referrals sheets when distributing guidelines for referral; however the evidence was mixed.

A further systematic review (Blank et al., 2015) considered the effectiveness of peer review and training/feedback. A total of four papers (n= 4 UK) were included. All four of the studies showed a positive effect on referral outcomes (Cooper, 2012; Evans, 2009; Evans et al., 2011; Jiwa et al, 2004).

An earlier review (Imison and Naylor, 2010) supports the need for improved feedback loops in referral processes, providing supporting evidence that peer review and feedback provides an effective educational tool to improve referral quality.

Primary research evidence from the UK

Peer review and feedback was reported in six papers (Cox et al., 2013; Evans et al., 2011; Evans, 2009; Elwyn et al., 2007; South Norfolk Healthcare Community Interest Company, 2013; NHS Alliance, 2014). Five of the six of the studies reported a reduction in referral rate, and one paper observed an increase in referral rate (Cox et al., 2013).

The Torfaen referral evaluation project in Wales is reported in two papers (Evans et al., 2011; Evans, 2009). The most recent (Evans et al., 2011) reports a decrease in the referral rate (per 1000 patients per quarter) range from 2.6 - 7.7 to 3 - 6.5. The median referral rate fell from 5.5 to 4.3 per 1000 patients per quarter for the specialties in question. Earlier reports (Evans, 2009) found that referral rates in orthopaedics showed a striking reduction of up to 50%. Referrals to hospitals decreased overall by up to 30% in the three practices and referrals were directed instead to a range of alternatives such as physiotherapy, podiatry, and a local multidisciplinary team.

A quality improvement project (Elwyn et al., 2007) using feedback of adherence to NICE guidelines for dyspepsia referrals found an estimated reduction of 3.2 referrals per week for GPs, however this reduction was not significant ($p=0.065$). The quality improvement project also evaluated the impact on hospital doctors referrals; the corresponding estimated decrease of 10 referrals per week was very significant ($p=0.001$).

A peer review service provided by South Norfolk Healthcare Community Interest Company (2013) reviews (by a GP) 80% of referrals captured. The introduction of the service has led to a reduction

of 1685 outpatient, 2927 follow-up and 252 inpatient appointments compared with expectations for the same 12-month period.

NHS Alliance (2014) reports on a service provided by Corby CCG that undertakes a prospective review of all hospital referrals. The CCG reports that in 2011–12 the number of referrals was reduced by 25 per cent compared with the previous period.

A retrospective before and after study (Cox et al., 2013) explored the impact of referral management (three groups) or internal peer review (two groups) on outpatient attendance rates. All groups reported an increase in attendance with four out of the five groups showing a statistically significant increase in attendance rates, ranging from 0.41 to 1.20 attendances per 1000 persons per month. After correction, only one group (a referral management centre) remained significant (1.05 attendances per 1000 persons per month, 95% CI 0.64 to 1.64; $p < 0.005$).

Value for money

Secondary research evidence

Imison and Naylor (2010) conclude that peer review and feedback alongside the use of guidelines and structured referral sheets appears to offer the greatest potential for a cost-effective approach to referral management.

Primary research evidence from the UK

Two studies report on the costs of peer review services (Cox et al., 2013; Evans et al 2011), and cost savings were reported in two studies (South Norfolk Healthcare Community Interest Company, 2013; NHS Alliance, 2014)

The two peer review sites reported by Cox et al. (2013) were reported to cost £85,946 per year (£2.54 per patient) and £113,303 (£0.55 per registered patient). The Torfaen referral evaluation project in Wales (Evans et al., 2011) reports practices were paid 80p per registered patient to cover administration costs and doctors' time, under a local enhanced service (LES) directive, totalling between £3700 and £9230 for the range of practice sizes. The total cost of payments for the ten practices in Wave 1 was £59 200.

The peer review service provided by South Norfolk Healthcare Community Interest Company (2013) has demonstrated a saving of £167,000 per year once recurrent service costs of £632,000 are taken into account. This is based on a reduction of 1685 outpatient, 2927 follow-up and 252 inpatient appointments compared with expectations for the same 12-month period. This equates to a saving of £120,000 per 100,000 population. The evaluation also includes the costs of change amounting to £110,000, which are less than 1 year's savings, from setting up the CIC.

NHS Alliance (2014) report that the prospective review service has resulted in Corby CCG seeing a £300,000 saving on referral costs.

Lessons learned

Secondary research evidence

Imison and Naylor (2010) report that peer review and feedback schemes have been undertaken using locally-enhanced service payments under the General Medical Services (GMS) contract to encourage the uptake of the intervention.

Primary research evidence from the UK

Evans et al. (2011) highlight the issue of sustainability of change; reductions appeared sustainable while the intervention continued and referral rates rose in keeping with local trends once the intervention had finished.

South Norfolk Healthcare Community Interest Company (2013) report the costs of change amounted to £110,000. However, they suggest that using a CCG instead of a CIC may avoid some of the costs associated with legally establishing a separate company. In areas where equivalent facilities already exist, these costs may be avoided.

Key points for reflection

Design principles

Research by Pawson et al (2016) emphasises there are no silver bullet solutions to demand management although the solutions that seem to work have usually emerged through trial and error as practitioners think through a succession of challenges: *“successful demand management depends on synchronising a complex array of strategic, organisational, procedural and motivational changes”*. From the study, Pawson et al developed guidance that sets out a series of design principles aimed to help local health economies think about on how they might ‘think through’ all of the interdependencies, which bring demand and capacity into equilibrium:

- What (exactly) is the problem?
- What are the options?
- Will reorganisation work?
- Can intermediaries do the trick?
- Will direct access to test results reduce excess referrals?
- Will guidelines be followed?
- Can productive change be accelerated?

Pawson et al (2016)

Mechanisms and moderating factors

Blank et al. (2015) explored mechanisms leading to the demand management effect. Factors highlighted as key to the change process relate to:

1. the general practitioner - including GP knowledge, attitudes, beliefs and referral behaviour;
2. the patient - including patient knowledge and patient attitudes and beliefs; and
3. influence of the doctor–patient relationship.

Analysis also reported a number of moderating factors (or barriers and facilitators) which could impact on the success of any intervention relating to the local health-care context and system:

- GP factors including years in practice, age, ethnicity, UK-qualified, sex, previous experience / familiarity with service, satisfaction with specialist service, emotional response, and ability to judge own referral;
- Patient factors including ethnicity, age, sex, level of education, general patient-related social/clinical factors, comorbidity/complexity, responsiveness to treatment/suitability/likely benefit, self-reported health; and

-
- Service and organisational factors including practice location, size of practice, other practice characteristics, physician burden / time pressure, waiting time, and availability of specialist.

Blank et al (2015) have used the findings from their systematic review to produce an evidence-based logic model which illustrates the pathway from interventions to system-wide demand management outcomes. The logic model synthesis demonstrates the complexity of the referral process and multiple elements that will impact on intervention outcomes:

“It illustrates the multitude of assumptions that are made between interventions and demand management outcomes and that successful referral outcomes are highly dependent on the individuals involved in the referral and also the context in which the referral is taking place. Furthermore, in relation to context, the complexity of the intervention-outcomes pathway highlights that, in order to tackle demand management of primary-care services, the focus cannot be on primary care alone – a whole-systems approach is needed as the introduction of interventions in primary care is often just the starting point of the referral process”

Blank et al., 2015

Whole-systems strategy

Imison and Naylor (2010) make a series of recommendations that commissioners should consider when designing and implementing any referral management intervention:

- any intervention to manage referrals cannot look at the referral in isolation but needs to understand the context in which it is being made;
- changing referral behaviour is a major change-management task that will require strong clinical leadership from both primary and secondary care;
- any referral management strategy needs to include a robust means of managing the inherent risks at the point when clinical responsibility for a patient is handed over from one clinician to another (so-called clinical hand-offs);
- any strategy to reduce over-referral is likely also to expose under-referral, and thus to limit the potential for reducing demand;
- financial incentives to drive blanket reductions in referral numbers should not be introduced;
- reductions in referrals from one source can be negated by rises in referrals from other sources, so any demand-management strategy needs to consider all referral routes rather than target just one;
- a whole-systems strategy will be required to manage demand, with active collaboration between primary, secondary and community care services.

Pawson et al. (2016) also emphasise system-wide thinking and the importance of system-wide collaboration in affecting sustainable change, and the authors suggest that the 'group model building' approach offers considerable potential in realising this goal. This is described as *"a form of decision-making that involves diverse stakeholder groups working with a facilitation team to solve a focused problem within a complex system. The classic components involve testing different scenarios and strategic options, modelling their outcomes (intended and unintended) from different perspectives and testing to find points of compromise between different 'scripts'"*.

Alternative passive interventions

A recent study, exploring unwarranted variations and opportunities for disinvestment (Hollingwood et al., 2015), recognises that a natural response from commissioners with high local procedure rates is to try to enforce convention through criteria-based access (CBA) and referral management. However, the authors argue that there is limited evidence of the effectiveness and concerns that the costs and bureaucracy of more intensive methods may defeat their objective of providing more efficient care. The authors highlight the possible use of patient-centred approaches such as shared decision making aids as alternatives to these criteria-based approaches. NHS England (2016) also cites shared-decision making as an approach which CCGs are expected to use elements of in their approach to demand management.

Under-referrals

Research by the King's Fund (Imison and Naylor, 2010) reports the degree of variation in referrals, and some evidence of the late diagnosis of cancer, suggesting that under-referral may be as much of an issue as over-referral. A report prepared for Cancer Research UK (Incisive Health, 2014) found marked variations in the proportion of patients who are diagnosed with cancer at an early stage. For colorectal cancer, there is a nearly a threefold variation between the highest and lowest performing CCGs; for lung cancer, the variation is nearly fourfold; and for ovarian cancer, it is nearly fivefold. Furthermore, early stage cancer treatment is significantly less expensive than treatment for advanced disease:

- Colon cancer: stage 1 treatment costs £3,373, whereas stage 4 treatment costs £12,519;
- Rectal cancer: stage 1 treatment costs £4,449, whereas stage 4 treatment costs £11,815;
- Lung cancer: stage 1 treatment costs £7,952, whereas stage 4 treatment costs £13,078;
- Ovarian cancer: stage 1 treatment costs £5,328, whereas stage 4 treatment costs £15,081.

Imison and Naylor (2010) recommend that any referral management strategy should look to expose under-referral as well as over-referral, however acknowledge that such a strategy would limit the potential for reducing demand.

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