Referral and management options for patients with chronic kidney disease: perspectives of patients, generalists and specialists

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Abstract

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Background Chronic Kidney Disease (CKD) is increasing in prevalence and significance as a global public health issue. Appropriate management of CKD stages 3–4 in either generalist or specialist care is essential in order to slow disease progression. As various consulting options between services may be used, it is important to understand how patients and practitioners view these options.

Objective To elicit patient and practitioner views and preferences on the acceptability and appropriateness of referral practices and consulting options for CKD stage 3–4.

Design A mixed methods approach involving a semi-structured interview and structured rating exercise administered by telephone.

Setting & participants Adult (18+) patients with CKD stage 3–4 were recruited via their General Practitioner (GP). Practitioners were recruited from both general and specialist services.

Results Sixteen patients and twenty-two practitioners participated in the study between July and September, 2011. Both patients and practitioners preferred 'GP with access to a specialist' and least preferred 'Specialist Review'. Computer review and telephone review were acceptable to participants under certain conditions. Practitioners favoured generalist management of patients with CKD 3. Specialists recommended active discharge of patients with stabilised stage 4 back to generalist care. Both generalists and specialists strongly supported sharing patients' medical records via electronic consultation systems.

Conclusion Participants tended to prefer the current model of CKD management. Suggested improvements included; increasing the involvement of patients in referral and discharge decisions; improving the adequacy of information given to specialists on referral and encouraging further use of clinical guidelines in practice.

Background

Chronic kidney disease (CKD) is a progressive, long-term condition involving impairment of the kidney structure or function; it is often associated with hypertension and diabetes and has an estimated population prevalence of between 8.8% and 10% of the adult population.^{1,2} As a global health issue, CKD is rising in prevalence and is associated with increasing rates of obesity and cardiovascular disease.³

The UK adopts the US kidney disease outcomes quality initiative (NKF-KDOQI), where CKD is classified in five stages based primarily on estimated glomerular filtration (eGFR) rate.⁴ Stages 1–2 indicate normal or slight changes in eGFR with other evidence of kidney damage; stage 3 (A&B) indicate moderate decreases in eGFR; stage 4, marked decrease in eGFR and stage 5, renal failure. Stages 1–2 are largely asymptomatic and rarely detected. Stage 3 requires clinical management and monitoring and stages 4–5 require renal replacement therapy (RRT).⁴

Early detection of CKD and monitoring at stage 3 is recommended in order to slow progression to stages 4 and 5 and reduce further complications.^{5,6} In the UK, there are clear NICE guidelines for the referral of patients with CKD to specialist, nephrologist-led care.⁴ In general, patients with stage 3 are considered suitable for primary (general practitioner) care management.^{6–8} Stabilized stage 4 may be suitably discharged back to primary care after specialist review.⁹ UK clinical guidance⁴ sets out criteria for patients who should be referred by their general practitioner (GP) for specialist assessment. Despite the existence of guidance, some evidence suggests a lack of shared understanding about when it is appropriate for GPs to refer a patient for specialist care.^{10–12} The discharge of CKD patients from specialist back to generalist care also comes with considerable scope for professional discretion because clinical guidelines make little reference to the best circumstances for back referral.

One US population-level study found that specialist-led review followed by generalist

management, provided effective assessment of CKD progression and promoted cost effectiveness¹³. However, there is a lack of UK-based research on patient and practitioner views of consulting options in CKD. Related research evidence in a range of long-term conditions highlights the potential of various consulting options. Telephone and computer review offers patients an active role in reviewing and updating their latest test results.¹⁴ Telephone review has also proven beneficial in the care of people with heart failure¹⁵ and in self-management of hypertension¹⁶ and diabetes in the UK¹⁷. In studies drawing on mixed illness groups, tele-consultation has been associated with a reduction in number of hospital visits^{18,19}, and high patient acceptability for telecare has been reported amongst older at-risk patients.²⁰ These options show potential for the improvement of patient care, but further research is needed to establish their acceptability and appropriateness in CKD.

Aim

To elicit patient and practitioner views on the acceptability and appropriateness of referral and consulting practices for patients with CKD Stages 3–4.

Methods

The study employed a mixed methods design utilizing semi-structured interviews and a structured rating exercise. Study participants included patients with CKD Stages 3 or 4 and health professionals (specialist and generalist) involved in the management of their care.

The rating exercise was based on a list of consulting options (Box 1). These were partly taken from a literature review. GP care only, GP care plus, specialist care and specialist review were added from clinical guidelines.⁴

Sites and sample

Data were collected from two specialist nephrology centres and general practices in Greater Manchester, UK. Generalists were recruited

Box 1 Referral and clinical management options

- GP care only: Patient care provided by a GP with involvement of other practice or primary care staff
- GP care plus: Patient care provided by a GP with the GP having access to a nephrologist for advice by phone, email or letter.
- Specialist Review: Patient to be referred for initial tests/diagnosis to a nephrologist at the hospital, then be transferred back to their GP for care
- Specialist Care: Patient referred to a nephrologist at the hospital for initial investigation or diagnosis, then receive their future care for kidney problems at the hospital
- Telephone Review: Patient updates their health information such as blood pressure on the phone for review by a nominated member of staff, e.g. GP, practice nurse or specialist.
- Computer Review: Patient updates their health information such as blood pressure on the computer for review by a nominated member of staff, e.g. GP, practice nurse or specialist.

from ten primary care trusts to provide geographical spread. Patients were recruited via their general practitioner. Purposive sampling²¹ was employed with both patients and practitioners to ensure a range of perspectives.

For patients, stage of illness (CKD 3 or 4) as indicated by eGFR was the main inclusion criteria. Both patients who had been referred to a specialist and patients who had not been referred were included in the sample. Stratified sampling was not used, but proportionality of age, gender and ethnicity were considered during sampling. Patients were expected to be of adult age (18+) for inclusion.

Purposive sampling of professionals sought to ensure a balance between specialist and generalist perspectives, reflecting different levels of experience in managing patients with CKD. Amongst generalists, purposive sampling sought to ensure inclusion of some GPs involved in service commissioning; this is to reflect current restructuring of service commissioning in the UK National Health Service.²²

Data collection

Participant recruitment took place between July and September 2011. Data were collected

via semi-structured telephone interviews of approximately 35-minutes duration. These were audio-recorded with permission. Where permission was not granted (2 instances), a 'note-only' interview was taken, and detailed field notes recorded. Participants were offered a face-to-face interview if preferred.

Interview guide

The first section of the interview was explorative. Patients were asked their views on current care and support, preferences for referral and ideas on how to improve health services. In recognizing that many patients experience several conditions and access multiple clinics, we asked for their views of health-care provision more generally. Practitioners were asked their views on clinical guidelines, current service provision and referral practices. The second section of the interview was a structured exercise. Patients were required to rate the 'acceptability' of six care delivery and referral options (Box 1), whilst practitioners were asked to rate the 'appropriateness' of these options for patients with stage 3-4 CKD. The term 'appropriateness' was used with practitioners to reflect the need for clinical effectiveness.²³ 'Acceptability' was used with patients to reflect their position as users of health care.²⁴ After these options had been rated separately, participants were asked to indicate their most preferred option and their least preferred option.

Analysis

Audio-recorded interviews were transcribed verbatim. Transcripts were then verified by the interviewer for terminology errors and then anonymized. Unrecorded field notes from interviews were typed up verbatim before analysis. Interview transcripts were read and coded independently by two project researchers (CW, SC). Both were analysed using the qualitative method of constant comparison.²¹ Main themes were identified, compared progressively to newly emergent themes and then finally agreed between researchers.

Ratings in the structured exercise were aggregated and presented as descriptive statistics. Data were interpreted with reference to qualitative findings. Key qualitative findings are structured by consulting option. Data extracts have been selected for illustrative purposes but chosen to represent common themes.

Ethics and governance

The study was granted ethical approval by a local NHS Research Ethics Committee (11/NW/0310). All participating NHS organizations gave permission for the study to take place, and arrangements were made to facilitate participation of those whose first language was not English.

Results

Participant characteristics

Twenty-four invitation letters and study packs were sent to clinical leads in both specialist nephrology centres. One hundred and sixteen information packs were sent to general practices from ten primary care trusts (PCTs); eight practices agreed to participate within the required time frame.

Invitations yielded agreement to participate from 24 practitioners. Two practitioners (consultant nephrologist and advanced nurse specialist) subsequently withdrew due to scheduling difficulties leaving a sample of $n = 22$. The final sample comprised 11 consultant nephrologists, five specialist secondary care nurses, one medical associate specialist and five general practitioners. All practitioners were interviewed by telephone.

A total of seventeen patients agreed to participate. One subsequently withdrew on the basis of study exclusion criteria. Of the sixteen participating patients, ten were men and six women. The mean age was 70, range 50–85, with nine being ≥ 70 years old. Most ($n = 12$) described their ethnicity as 'white British' (others included black African $n = 1$; Jamaican $n = 2$ and Pakistani $n = 1$). Over half of the sample ($n = 10$) had been referred to a nephrolo-

gist. Fourteen patients chose a telephone interview and three a face-to-face interview in their home.

Appropriateness and acceptability of care delivery options

Table 1 details patient and practitioner views on the acceptability and the appropriateness of care delivery options. Practitioner ratings for CKD stages 3A and 3B were similar. Table 2 compares their perspectives regarding 'best' and 'worst' options. Results are structured in the order of presentation detailed in Box 1. Computer review and telephone review have been combined because many issues raised were common to both options. Patient and practitioner views are presented together in each section to aid direct comparison.

GP care only and GP care plus

The majority of patients preferred 'GP care plus', trusting GPs to act as a gatekeeper to specialist care. 'GP only care' was not favoured. One stage 3 patient with few symptoms favoured seeing her GP only because she associated specialist care with deterioration. However, overall, little discernible difference was found in preferences between patients of CKD stage 3 and stage 4.

The majority of specialists and GPs expected most patients with stage 3 CKD or stable stage 4 CKD to be managed by GPs.

'GPs can manage the majority ... I think nephrologists would probably find that a bit better as well, rather than clogging up their clinics with inappropriate patients' (generalist: 20).

This was dependent on risk factors and underlying diagnosis. It was also conditional on GPs monitoring patients actively and establishing stability via regular testing.

Dissemination and application of national or local guidelines was generally deemed inadequate: 'it's going to go back to, time to find it, knowing where to look for it' (specialist: 14); 'a little flow diagram of who to refer in,... I do think that is very useful' (generalist: 6).

Table 1 A Comparison Of Health-Care Practitioner (HCP) & Patient Responses

	APPROPRIATE/ACCEPTABLE			NOT APPROPRIATE/NOT ACCEPTABLE		
	Patient (<i>n</i> = 16)	HCP S3A (<i>n</i> = 22)	HCP S3B (<i>n</i> = 22)	Patient (<i>n</i> = 16)	HCP S3A N/App (<i>n</i> = 22)	HCP S3B N/App (<i>n</i> = 22)
CARE-DELIVERY AND REFERRAL OPTIONS						
GP care only	10	18	16	6	4	6
patient care provided by a GP, with involvement of other practice or primary care staff						
GP care +	14	19	20	2	3	2
patient care provided by a GP but with the GP having access to a nephrologist for advice by phone, email or letter						
Specialist Review	12	13	14	4	9	8
patient to be referred for initial tests/diagnosis to a nephrologist at the hospital then transferred back to their GP for care						
Specialist Care	12	3	5	4	19	17
patient to be referred to a nephrologist at the hospital for initial investigation or diagnosis and have all future care for kidney problems at the hospital						
Telephone Review	11	12	12	5	10	10
patients update their health information such as blood pressure on the phone for review by a nominated member of staff, e.g. GP, practice nurse or specialist						
Computer Review	7	15	15	9	7	7
patients update their health information such as blood pressure on the computer for review by a nominated member of staff, e.g. GP, practice nurse or specialist						

Table 2 A Comparison Of Patient And Practitioner Consulting Option Preferences

Care-delivery options	BEST OPTION		WORST OPTION	
	Patient <i>n</i> -16	Practitioner <i>n</i> = 22	Patient <i>n</i> = 16	Practitioner <i>n</i> = 22
GP care only	1	4	3	6
GP care +	9	13	—	—
Specialist Review	3	3	1	2
Specialist Care	3	—	1	11
Telephone Review	—	1	5	—
Computer Review	—	1	6	3

Some specialists also expressed concerns about the quality of primary care. This care was considered variable and at times a result of low GP confidence in managing CKD (specialists: 1,9, 19, 21,22):

‘the perception is that often if you refer them back they end up coming back to you years later not having had the screening - annual reviews that you’ve recommended and are in worse trouble’ (specialist: 22)

Overall, both patients and practitioners considered GP care with access to a specialist the best option for care.

Electronic consulting

Practitioners supported electronic (email and telephone) methods, particularly shared records consulting. This option involves generalists and specialists accessing the same medical records and recent test results using an integrated system.

'If you've got real time access to the same information...then you would inevitably think that should make it easier to impart advice' (generalist: 5).

Several practitioners already used email or telephone consulting and welcomed a more widespread use of these options. These methods were mostly thought to support specialist review meaning that on-going care would remain with general practitioners.

'There's some nice examples of email services or writing back in response to referral methods instead of just seeing the patient, actually writing back an educational response....' (specialist: 3)

'I think we can do telephone clinics with patients, telephone clinics with GPs, email clinics with GPs, one stop clinics where the aim is not to continue to see them but just to provide a plan of action' (specialist: 22)

However, limitations with telephone and email consulting were identified. As unrecorded work activity, little time was allowed for these types of consulting and requests for advice often contained incomplete information. Practitioners therefore thought that the benefits of electronic shared medical notes far exceeded the options involving telephone or email alone.

Specialist review

The majority of patients expressed reassurance at being seen by a specialist for review and trusted GPs to make a referral at the right time. For example, 'I have some faith in my GP and, I assume if the situation had got

worse, they would have highlighted me to the fact' (ID 4).

However, once referred, patients had a strong expectation that they would remain under specialist care and at times were anxious about discharge. One patient found discharge from a specialist to be premature and his manner dismissive:

'It's a worry. ...He gave me the impression...that he was sweeping in "Oh, we'll get rid of some of these cases, we've got so many coming in"' (ID 15).

Other patients were unsettled that discharge would de-stabilize their condition: 'they keep me stable, I'd feel very unnerved about being discharged' (ID 18) or that their views had been poorly considered: 'I totally objected to being discharged when she thought it was right instead of confirming with myself whether I thought it was right' (ID 6). Patients also identified the need for greater continuity of care and improved communication between sectors.

Some practitioners – including GPs – favoured specialist review (Table 2), particularly for new patients (practitioners 3,4,7,9,12). Reasons included confirmation of an accurate diagnosis, to assess the likelihood of future deterioration and to provide tailor-made indications for re-referral.

Factors considered to trigger specialist intervention included underlying diagnosis, rapid decline or progressive renal impairment, particularly in the presence of cardiovascular risk, persistent proteinuria, diabetic nephropathy, anaemia and poorly controlled hypertension. Some nephrologists stated that they reject a quarter of all referrals for on-going specialist management 'on the basis that they are stable' (specialist:1).

Practitioners were strongly in favour of proactive discharge with advice for patients with stage 3 or stable stage 4;

'...the reason I kept my clinics civilised and sensible is by being pretty rigorous in referral back to primary care' (specialist: 1).

Having a clear prognosis and evidence of stable renal functioning was considered a key

indicator of appropriate discharge accompanied by an on-going management plan. There was also recognition that many patients need extra reassurance at the stage of discharge, because they just

‘want to carry on being followed up despite not having the clinical needs. Just thinking that they feel safer’ (specialist: 15).

A further issue for nephrologists was the poor quality of referral letters from general practitioners, particularly in terms of inadequate investigations or investigation reporting. This could lead to duplication of investigations, ineffective use of specialists’ time and delayed action or discharge. A general practitioner participant highlighted that this was in part a function of ‘confidence and competence’ (generalist: 8).

Specialist care

Many patients found specialist care acceptable but did not favour it as an option. This reflects their overall preference for GP care plus.

Specialist care was generally felt by specialists and GPs to be inappropriate for mild to moderate or stable (Stage 3-4) CKD and more appropriately reserved for those of young age or at high risk with unstable symptoms. Emphasis was placed on discharging patients back to primary care when stability had been achieved.

Computer and telephone review

In the rating exercise, only half of patients found the idea of computer review acceptable, and none indicated it as a preferred option. Patients tended to find telephone review more acceptable than computer review, but again, none indicated it as a preferred option. Computer review was thought to be most acceptable in conjunction with face-to-face consultation, particularly for medication changes. Face-to-face consultations were viewed as more responsive and reassuring.

For instance, ‘I’d rather talk to somebody face to face, and have advice. I wouldn’t feel happy putting it

all on the computer and getting something back. It still wouldn’t give me peace of mind’ (ID 10).

Others saw the advantages of computer review, for example, in avoiding the need to travel, but suggested they would need extra training or instruction to use it for health monitoring.

Some patients were also concerned that these options required them to take reliable blood pressure readings.

‘I prefer it done by professionals because, for the simple reason I’m not sure whether my wrist monitor is entirely accurate, it shows a trend... but I’m not sure whether it’s...calibrated as accurate as the professional equipment’ (ID 9).

Practitioner opinion on the appropriateness of telephone review and computer review was divided; in general, neither was seen as preferred options. Benefits of computer review included its speed, convenience and encouragement of patient self-management.

However, a reservation was the need for face-to-face contact: ‘we need to discuss their concerns, their ideas or their expectations really’ (specialist: 8); ‘just looking at figures alone, you don’t always pick up what’s going on. By direct questioning you can sometimes find out more’ (nurse specialist: 13). Many practitioners thought that face-to-face contact would allow them to explain matters more effectively and to offer more extensive advice.

Participants’ preferences compared

Table 2 shows that practitioner and patients’ most preferred option was ‘GP care plus’. This supports the current method of care delivery. Levels of support for specialist review were comparable between patients and practitioners. The least appropriate option for practitioners was specialist care only. Patients were more inclined to find this option acceptable but did not favour it. Neither patients nor practitioners preferred telephone or computer consulting options. Qualitative data revealed participants’ reservations about telephone, and computer review primarily concerned the lack of face-to-face communication.

Clinical guidelines

Most practitioners stressed the importance of exercising their professional discretion in relation to guidelines. However, several suggested NICE guidance was not used by GPs because it lacked user-friendliness, was 'too much to read' (specialist: 6) and 'waffly' (generalist: 18); 'I think just probably more clarification around guidance and at what point we should be seeking specialist advice' (generalist: 5).

Service provision

While service provision was considered adequate in the majority of cases, many practitioners discussed service-level pressures, including incompatible agenda for either costs savings (from general practice) or income generation (in hospitals). One GP commented, 'to save money, GPs are actively encouraged not to refer; so it's basically cost' (generalist: 18). Similarly, a nephrologist commented; 'we're under enormous pressure from essentially the trust not to reject referrals, no matter how inappropriate they are, because otherwise we won't get any money for them' (specialist: 6).

Discussion

Good quality care of CKD is essential in order to slow renal deterioration, prevent end stage renal failure, cardiovascular mortality and alleviate the burden of illness for patients.^{5,6}

This study focused on CKD stages 3 and 4 which – depending on other indications – can be managed in either primary or secondary care.⁴ Its justification was a better understanding of the appropriateness and acceptability of management in either sector, from the perspectives of practitioners and patients. This study provides evidence of general consensus between practitioners and patients. Both primarily favoured 'GP plus' care and considered 'specialist care' least appropriate at stage 3.

This is in line with current policy and clinical guidance and corresponds closely with the future of UK health service policy: GP-led referral.²²

Many practitioners, particularly specialists, found 'specialist review' appropriate; patients also found this option acceptable if GP recommended. Again, this is an option consistent with UK clinical guidelines and also supported by the specialists' view that discharge to generalist care could be more proactive. Evidence from urology further suggests that 'one stop' specialist review can be effective for clinical management.²⁵

Differences in perspective related more to varying degrees of confidence between patients, generalists and specialists rather than to disagreement. Suggestions to improve confidence include improving the explanation of referral and discharge decisions to patients and involving them in those decisions where appropriate. Greater utilization of clinical guidelines via effective training and use of shared electronic records may also improve confidence between generalists and specialists.

In terms of study limitations, most of our samples were medical specialists, so the study findings may be skewed in favour of their views rather than those of general practitioners. As only four patients from ethnic minority groups were included in the patient sample, the views of non-white patients may also be under-represented. Furthermore, CKD covers a range of structural and functional abnormalities not strictly measured by eGFR alone³. In terms of the rating exercise, some patients found it difficult to consider consulting options which were beyond their experience, and practitioners felt clinical cases were more complex than the rating exercise implied. In terms of 'preference', study participants asked to compare the value of a familiar option against an unknown or less familiar option, often revealing a bias towards the status quo.²⁶ A preference for *GP plus* may therefore be seen as a bias towards the most familiar option rather than an outcome of informed choice.

However, the study has several strengths. Open-ended interview questions allowed for a better understanding of responses given in the rating exercise. Participants were also asked to rate in terms of the 'average' patient: an exploratory approach rather than one intended to capture the full variation or complexity of experience. Patients also received a thorough explanation of alternative consulting options. This was to maximize *informed choice* in the rating exercise.

Overall, the various consulting options were considered by participants to have distinct advantages and disadvantages. That many patients found telephone and computer review acceptable supports current research evidence on patient amenability to these options in CKD,¹⁴ heart failure,¹⁵ hypertension¹⁶ and diabetes.¹⁷ To develop these options, patient education in computer use and blood pressure management is needed. Regular and complete reporting of eGFR test results may also give practitioners a greater confidence that changes in renal functioning are being effectively monitored, leaving more scope for telephone and computer options. One way to improve practice would be via generalist and specialist record sharing. This may avoid the need for physical referral in patients with moderate CKD, minimize service burden and allow for the targeting of resources on more complex cases. Incorporating national and local e-guidance in primary care record systems may also increase medical and nurse practitioners' guideline use²⁷. A further option would be follow-up care combining hospital visits and telecare for those patients requiring some on-going specialist review. However, future implementation of these consulting options is dependent on their universal availability and clinicians' willingness and ability to offer them²⁸.

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Conflict of interest

The authors declare that they have no competing interests.

References

- 1 NHS Kidney Disease Key Facts and Figures (2010) *NHS Kidney Care*. Nottinghamshire: East Midlands Public Health Observatory (EMPHO). Available: <http://www.kidneycare.nhs.uk/Library/KidneyDiseaseKeyFacts.pdf>, Accessed June 2010.
- 2 Stevens PE, O'Donoghue D.J. de Lusignan, S. Van Vlymen J. Klebe, B. Middleton, R. *et.al.* Chronic kidney disease management in the United Kingdom: NEOERICA project results. *Kidney International*, 2007; **72**: 92–99.
- 3 Levey AS, Coresh J. Chronic Kidney Disease. *Lancet*, 2012; **379**: 165–180. doi:10.1016/S0140-6736(11)60178-5
- 4 NICE Chronic Kidney Disease: *national clinical guidance for early identification and management in adults in primary and secondary care*. London: Royal College of Physicians, September 2008 London, UK.
- 5 Griffith KE, Kalra PA. Ten Steps before you refer for Chronic Kidney Disease. *The British Journal of Cardiology*, 2010; **17**: 81–85.
- 6 Sharma P, McCullough K, Scotland G, Prescott G, Fluck N, Cairns Smith W. Does stage-3 chronic kidney disease matter? *A systematic literature review*. *British Journal of General Practice*, 2010; **60**: 266–276. doi: 10.3399/bjgp10X502173
- 7 Stevens KK, Woo YM, Rodger RSC, Geddes CC. Discharging patients from the nephrology clinic to primary care-will they get appropriate monitoring of renal function. *QJM An International Journal of Medicine*, 2009; **102**: 425–428.
- 8 Klebe B, Farmer C, Cooley R *et. al.* Kidney disease management in UK Primary Care: guidelines, incentives and information technology. *Family Practice*, 2007; **4**: 330–335.
- 9 Meran S, Don K, Shah N, Donovan K, Riley S, Phillips AO. Impact of chronic kidney disease management in primary care. *QJM An International Journal of Medicine*, 2011; **104**: 27–34.
- 10 De Coster C, McCaughlin K, Noseworthy TW. Criteria for referring patients with renal disease for nephrology consultation: a review of the literature. *Journal of Nephrology*, 2010; **23**: 399–407. no.4

- 11 Navaneethan SD, Kandula P, Jeevanantham V, Nally JV, Jr, Liebman SE. Referral patterns of primary care physicians for chronic kidney disease in general population and geriatric patients. *Clinical Nephrology*, 2010; **73**: 260–267.
- 12 Navaneethan SD, Aloudat S, Singh S. A systematic review of patient and health system characteristics associated with late referral in chronic kidney disease. *BMC Nephrology*, 2008; **9**: 3. doi:10.1186/1471-2369-9-3
- 13 Lee BJ, Forbes K. The role of specialists in managing the health of populations with chronic illness: the example of chronic kidney disease. *British Medical Journal*, 2010; **339**: 800–802. doi:10.1136/bmj.b2395
- 14 Mukoro F. Evaluation of New Features of Renal Patient View: Phase 1 Report NHS Kidney Care. 2011 Accessed: January 2012, Available: <http://www.kidneycarematters.nhs.uk/>
- 15 Staples P, Earle W. The nature of telephone nursing interventions in a heart failure clinic setting. *Canadian Journal of Cardiovascular Nursing*, 2008; **18**: 27–33. no.4
- 16 McManus RJ, Mant J, Bray EP *et al.* Telemonitoring and self-management in the control of hypertension (TASMINH2): a randomised controlled trial. *Lancet*, 2010; **376**: 144–146.
- 17 Wu L, Forbes A, Griffiths P, Milligan P, While A. Telephone follow-up to improve glycaemic control in patients with type 2 diabetes: systematic review and meta-analysis of controlled trials. *Diabetic Medicine*, 2010; **27**: 1217–1225.
- 18 Jaatinen PT, Aarnio P, Reemes J, Hannukainen J, Koymari-Seilonen T. Teleconsultation as a replacement for referral to an outpatient clinic. *Journal of Telemedicine & Telecare*, 2002; **8**: 102–106.
- 19 Liddy C, Dusseault J, Dahrouge S, Hogg W, Lemelin J, Humbert J. Tele-homecare for patients with multiple chronic illnesses. *Canadian Family Physician*, 2008; **54**: 58–65.
- 20 Campbell KH, Smith SG, Hemmerich J, Stankus N, Fox C, Mold JW. Patient and provider determinants of nephrology referral in older patients with severe chronic kidney disease: a survey of provider decision making. *BMC Nephrology*, 2011; **12**: 47–57.
- 21 Miles MB, Huberman M. *Qualitative Data Analysis: an expanded sourcebook*. London: Sage, 1994.
- 22 Mannion R. General practitioner-led commissioning in the NHS: progress, prospects and pitfalls. *British Medical Bulletin*, 2011; **97**: 7–15. no.1, DOI:10.1093/bmb/ldq042
- 23 Brook RH. Appropriateness: the next frontier. *British Medical Journal*, 1994; **308**: 218–219. doi: 10.1136/bmj.308.6923.218
- 24 Department of Health, 2010. *Equity and excellence: Liberating the NHS White Paper*. London, UK: HMO Stationery Office, ISBN: 9780101788120
- 25 Coull N, Rottenberg G, Rankin S *et al.* Assessing the feasibility of a one-stop approach to diagnosis for urological patients. *Annals of the Royal College of Surgeons of England*, 2009; **91**: 305–309. doi: 10.1308/003588409X391802
- 26 Kahneman D. *Thinking, fast and slow*. London: Penguin, 2011.
- 27 Stoves J, Connolly J, Cheung CK *et al.* Electronic consultation as an alternative to hospital referral for patients with chronic kidney disease: a novel application for networked electronic health records to improve the accessibility and efficiency of healthcare. *British Medical Journal: Quality and Safety in Health Care*, 2009; **19**: 1–4. doi:10.1136/qshc.2009.038984.
- 28 Coulter A. Do patients want a choice and does it work? *British Medical Journal*, 2010; **341**: 973–975. doi: 10.1136/bmj.c4989.