In t r o d u c tIo n

Demands on nephrology services are growing. There were 32,406 Canadians with end-stage kidney disease (ESKD) in 2005, compared with 18,000 in 1996, an average annual growth rate of 6.6% (1, 2). Patients with ESKD represent only about 2% of all patients with chronic kidney disease (CKD) (3), implying there were 1.6 million Canadians with CKD in 2005. Many of these are cared for by primary care physicians, but many are followed by a nephrologist or a multidisciplinary team. In 2008, there were 491 nephrologists practicing in Canada (4), compared with 332 in 1998 (5).

The differing advice identified in the literature results in confusion as to when patients should be referred to a nephrologist. Nephrologists, an already strained human resource, must prioritize requests for consultation using an undefined and no doubt inconsistent metric. Standardized, diagnosis-neutral criteria would benefit both primary care providers and nephrologists.

Key words: Consultation, Glomerular filtration rate, Kidney diseases, Nephrology, Referral, Review

I n t r o d u c t i o n

Referrals to nephrologists comprise not only patients with chronic kidney disease but also those with other nephrological conditions. There may be confusion about when to refer a patient to a nephrologist. We conducted a literature review to identify preexisting priority-setting, triage or referral criteria developed to guide referrals from primary care to a nephrologist.

Methods: Medline and Cochrane databases were searched (1997 to 2008) using search terms: referral, consultation, triage and a list of specified nephrological conditions. Abstracts were assessed by 2 reviewers using criteria to determine relevance. Citation and hand searches were done on papers selected for review; relevant Web sites were also consulted. Two reviewers read all selected papers to determine if they met the objectives. One reviewer abstracted relevant data from each retained reference and compiled the results into a report, which was reviewed by 3 practicing nephrologists.

Results: There were 18 retained papers, reports or Web sites; 4 of these were professional national guidelines. All but 1 reference cited serum creatinine or estimated glomerular filtration rate as a criterion for referral. Other referral criteria were proteinuria (8 sources), blood pressure (5 sources), electrolytes (3 sources) or hematuria (3 sources). There was inconsistency in referral recommendations.

Ab s t rAc t

Introduction: Referrals to nephrologists comprise not only patients with chronic kidney disease but also those with other nephrological conditions. There may be confusion about when to refer a patient to a nephrologist. We conducted a literature review to identify preexisting priority-setting, triage or referral criteria developed to guide referrals from primary care to a nephrologist.

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Conclusions: The differing advice identified in the literature results in confusion as to when patients should be referred to a nephrologist. Nephrologists, an already strained human resource, must prioritize requests for consultation using an undefined and no doubt inconsistent metric. Standardized, diagnosis-neutral criteria would benefit both primary care providers and nephrologists.

Key words: Consultation, Glomerular filtration rate, Kidney diseases, Nephrology, Referral, Review

Criteria for referring patients with renal disease for nephrology consultation: a review of the literature

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remember that the scope of practice includes a variety of other nephrological conditions as well, such as acute infectious or inflammatory renal diseases, benign and malignant tumors, recurring urolithiasis, electrolyte abnormalities, hemodynamic imbalances and refractory hypertension (6). In addition, some systemic diseases such as the vasculitides or lupus erythematosus may have renal manifestations.

Not all patients with CKD will progress to ESKD; however, for those who will progress, earlier referral leads to improved outcomes (3, 5, 7, 8). Many patients can and should be managed by their primary care providers, but there may be uncertainty about when to refer. We conducted a literature review to assess whether there were uniform criteria to guide referrals from primary care to specialist care/consultation usually provided by a nephrologist. Furthermore we were interested to know if there were different levels of urgency or priority in referral criteria. This paper describes the findings of the review.

**METHODS**

The methods used were similar to standard methods used in systematic reviews, with some modifications (9-11). We allowed for the fact that we might uncover guidelines for prioritizing referrals used by individual facilities on Web sites or in letters to the editor. Therefore, we erred on the side of inclusiveness and followed up any papers that seemed potentially relevant, regardless of quality.

We searched Medline and Cochrane databases from 1997 to 2008, English only, using the terms referral, triage or consultation AND at least 1 from a list of nephrology-specific search terms (Appendix). The list had been reviewed by a nephrologist and family physician and included terms such as glomerulonephritis, diabetic nephropathies, polycystic kidney diseases, proteinuria, renal dialysis, elevated BUN and Alport syndrome. The search yielded 655 abstracts and titles (Fig. 1).

Criteria for the selection of relevant abstracts were developed, tested and revised in an iterative process. All abstracts were reviewed by 2 reviewers and rated as Yes (Y), No (N) or possible (Q). Papers rated as Y/Q, Q/Q or Y/N were reviewed by a third reviewer. At the end of this process, 65 papers had been identified for retrieval. The criteria for inclusion/exclusion were revised further, and the 65 abstracts were assessed again by 3 reviewers. Twenty-four papers were subsequently retrieved and read in full by 2 reviewers; 13 of these papers were retained. Citation searches and manual reference list searches were also conducted on papers that were selected. As well relevant Web sites were consulted, including those of the Canadian Society of Nephrology; Kidney Disease: Improving Global Outcomes; Caring for Australians with Renal Impairment; European Best Practice Guidelines; and the Renal Association (UK). Five more citations were identified and retained. One reviewer abstracted the relevant data from each retained reference and compiled the results. The resulting report was then reviewed by 3 practising nephrologists.

**RESULTS**

Table I identifies the 18 retained papers, reports or Web sites (3, 5, 7, 8, 12-24). Four of the identified citations are professional national guidelines from Canada (18), the United States (16), the United Kingdom (15) or Australia (21). The largest number of citations were from the United States (8 citations), followed by Canada (4 citations), the United Kingdom (3 citations), other European countries (2 citations) and Australia (1 citation). Almost all of the criteria for referral included mention of either serum creatinine or estimated glomerular filtration rate (eGFR). Criteria that were sometimes, but not universally, included were measure of proteinuria (8 sources), blood pressure (5 sources), electrolytes (3 sources) or hematuria (3 sources). Other criteria were anemia, presence of diabetes, the need for a renal biopsy, problems with management or primary care provider concern.
## TABLE I
SOURCES FOR CRITERIA FOR REFERRAL TO NEPHROLOGY

<table>
<thead>
<tr>
<th>Author, source, year</th>
<th>Country</th>
<th>GFR ↓ or SeCR↑</th>
<th>Proteinuria</th>
<th>Electrolytes</th>
<th>Hematuria</th>
<th>BP</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bakris. Postgrad Med 2003 (12)</td>
<td>US</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Canadian Society of Nephrology. Can Fam Physician 2000 (7)</td>
<td>Canada</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crooks. Southern California Kaiser Permanente (PowerPoint presentation) 2005**</td>
<td>US</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Jenkins et al. Nurs Times 2007 (14)*</td>
<td>UK</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Joint Specialty Committee on Renal Medicine of Royal College of Physicians &amp; the Renal Association &amp; the Royal College of General Practitioners. Royal College of Physicians 2006 (15)</td>
<td>UK</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Levin. Nephrol Dial Transplant 2001 (17)</td>
<td>Canada</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Levin and Mendelsohn. Canadian Society of Nephrology 2006 (18)</td>
<td>Canada</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Mendelsohn et al. CMAJ 1999 (5)</td>
<td>Canada</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snyder and Pendergraph. Am Fam Physician 2005 (20)</td>
<td>US</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>St Peter et al. Am J Kidney Dis 2003 (3)</td>
<td>US</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thomas. Nephrology 2007 (21)</td>
<td>Australia</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Thorp and Eastman, Am J Manag Care 2004 (22)</td>
<td>US</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Van Biesen et al. Nephrol Dial Transplant 2006 (23)</td>
<td>Belgium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Wauters et al. Nephrol Dial Transplant 2005 (24)</td>
<td>Switzerland, Belgium, UK, Germany</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
</tbody>
</table>

Dots indicate that this criterion was included in the reference cited.
BP = blood pressure; GFR ↓ = decrease in glomerular filtration rate; ↑SeCR = increase in serum creatinine.
*Referenced the UK Joint Specialty Guidelines.
**Crooks P. GFR implementation & CKD program at Southern California Kaiser Permanente. October 4, 2005 [powerpoint presentation].
<table>
<thead>
<tr>
<th>Author, year</th>
<th>Note</th>
<th>GFR ↓ or SeCr ↑</th>
<th>Proteinuria</th>
<th>Electrolytes, hematuria, BP</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bakris, 2003 (12)</td>
<td>Referral for diabetics with diabetic nephropathy</td>
<td>SeCr 1.5 mg/dL</td>
<td>Threefold-to-fourfold increase in albuminuria in 6 months Cannot reduce albuminuria by 30% with good BP control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burden and Tomson, 2005 (13)</td>
<td>See Royal College (UK) 2006</td>
<td>Established progressively increasing SeCr OR SeCr ≥300 µmol/L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canadian Society of Nephrology, 2000 (7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crooks, 2005</td>
<td>eGFR &lt;30 ml/min per 1.73 m²</td>
<td>&gt;1,000 mg/day</td>
<td>Hypertension hard to manage</td>
<td>Suspected EPO-deficiency anemia</td>
<td></td>
</tr>
<tr>
<td>Jenkins et al, 2007 (14)</td>
<td>See Royal College (UK) 2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royal College (UK), 2006 (15)</td>
<td>eGFR &lt;30 mL/min/1.73 m²* eGFR &lt;60 ml/min per 1.73 m² Fall of GFR &gt;20% associated with use of ACEIs or ARBs 15% fall GFR in 12 months</td>
<td>PCR &gt;45 mg/mmol Proteinuria with edema and low serum albumin* Proteinuria + hematuria Diabetes w. increasing proteinuria</td>
<td>K⁺ ≥6-7 mmol/L* Malignant hypertension* Abnormal K⁺, Ca²⁺, PO₄⁻ BP &gt;150/90 on 3 agents Microscopic hematuria Unexplained macroscopic hematuria</td>
<td>Suspected systemic illness, e.g., SLE* Unexplained anemia (Hgb &lt;11 g%) PTH &gt;70 ng/L (7.7 pmol/L)</td>
<td></td>
</tr>
<tr>
<td>KDOQI, 2002 (16)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Levin, 2001 (17)</td>
<td>Advises timely referral but no criteria</td>
<td>eGFR &lt;30 ml/min per 1.73 m²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Levin and Mendelssohn, 2006 (18)</td>
<td>eGFR &lt;30 ml/min per 1.73 m²</td>
<td>Persistent dipstick proteinuria OR PCR &gt;100 mg/mmol or ACR &gt;60 mg/mmol</td>
<td></td>
<td>Progressive loss of kidney function Problems w. management of BP, meds or other</td>
<td></td>
</tr>
</tbody>
</table>
Table II describes in more detail criteria for referral of patients with reduced kidney function, excluding patients with acute renal failure. The most common criterion is either serum creatinine or eGFR; since 2000, eGFR is used more commonly than serum creatinine. CKD is commonly divided into 5 stages, based on 2 readings from 1 to 3 months apart: from stage 1 to stage 5, the associated eGFRs are >90, 60 to 89, 30 to 59, 15-29 and <15 ml/min per 1.73 m², respectively. GFR estimates alone are insufficient for a diagnosis of CKD stage 1 and 2; other evidence of kidney damage must be present (5, 13, 16, 18). Other evidence for kidney damage includes persistent microalbuminuria, proteinuria or hematuria, structural abnormalities of the kidneys or biopsy-proven glomerulonephritis (13). Sources conflicted on whether referral should occur at CKD stage 3 (3, 13, 21) or stage 4 (7, 22, 25).

Table II
CONTINUED

<table>
<thead>
<tr>
<th>Author, year</th>
<th>Note</th>
<th>GFR↓ or SeCr↑</th>
<th>Proteinuria</th>
<th>Electrolytes, hematuria, BP</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mendelsohn et al, 1999 (5)</td>
<td>SeCr 300 µmol/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obrador and Pereira, 1998 (8)</td>
<td>SeCr 1.5 mg/dL in women or 2.0 mg/dL in men</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schwartz and Textor, 2006 (19)</td>
<td>eGFR &lt;30 ml/min per 1.73 m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snyder and Pendergraph, 2005 (20)</td>
<td>eGFR &lt;60 ml/min per 1.73 m²</td>
<td></td>
<td></td>
<td>Renal biopsy, help w. management</td>
<td></td>
</tr>
<tr>
<td>St. Peter et al, 2003 (3)</td>
<td>eGFR &lt;60 ml/min per 1.73 m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thomas, 2007 (21)</td>
<td>eGFR &lt;30 ml/min per 1.73 m²</td>
<td>&gt;1 g/24 hours</td>
<td>Uncontrolled hypertension</td>
<td>Anemia (&lt;110 g/L) Significant comorbid illness</td>
<td></td>
</tr>
<tr>
<td>Thorp and Eastman, 2004 (22)</td>
<td>eGFR 30-60 ml/min per 1.73 m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Van Biesen et al, 2006 (23)</td>
<td>eGFR 30-60 ml/min per 1.73 m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wauters et al, 2005 (24)</td>
<td>eGFR &lt;25-30 ml/min per 1.73 m² 20% decrease in GFR</td>
<td>Established microalbuminuria in diabetics</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ACEI = angiotensin-converting enzyme inhibitor; ARB = angiotensin II receptor blocker; ACR = albumin to creatinine ratio; BP = blood pressure; Ca²⁺ = serum calcium; eGFR = estimated glomerular filtration rate; EPO = erythropoietin; Hgb = hemoglobin; K⁺ = serum potassium; PCR = protein to creatinine ratio; PTH = parathyroid hormone; PO₄³⁻ = serum phosphate; SeCr = serum creatinine; SLE = systemic lupus erythematosus.

*Indication for urgent referral.
Proteinuria is a hallmark of many renal disorders (26). Consequently, several sources cited proteinuria or albuminuria as a criterion for referral. The UK guidelines recommend referral when the protein to creatinine ratio (PCR) is more than 45 mg/mmol, which is equivalent to an albumin to creatinine ratio (ACR) of more than 30 mg/mmol or a urinary protein excretion of about 0.5 g/24 hours (15). The UK values are lower than those recommended by the Canadian Society of Nephrology; it advises referral with persistent dipstick proteinuria, PCR >100 mg/mmol or ACR >60 mg/mmol. The Canadian values are similar to those recommended by Crooks (United States) and Thomas (Australia) (21) who used protein excretion of more than 1 g in 24 hours to define proteinuria that should be referred.

Diabetes is a leading cause of CKD. It is estimated that 40% of all diabetics in the United States have CKD, compared with 15% of nondiabetics, and Canadian estimates are that 35% of new ESKD patients have diabetes as the primary cause (27, 28). Three sources suggested that diabetic patients be referred based on proteinuria: Bakris advised referral when there had been a threefold-to-fourfold increase in albuminuria in 6 months or an inability to reduce albuminuria by 30% even with effective control of hypertension (12); Wauters et al suggested referral with established microalbuminuria (24) and the UK guidelines recommended referral when proteinuria is increasing. Microalbuminuria may be defined as 30 to 300 mg urinary albumin per 24 hours, whereas macroalbuminuria is more than 300 mg urinary albumin per 24 hours (29).

Only the UK guidelines made specific reference to electrolytes as a reason for referral, stating that a serum potassium above 7.0 mmol/L required an emergency consultation with a nephrologist, serum potassium between 6.0 and 7.0 mmol/L required an urgent consultation and elevated levels of potassium, calcium or phosphate in a stage 3 CKD patient requires routine referral. Hematuria was also mentioned only in the UK guidelines. Refractory hypertension was identified in 4 sources (15, 18, 21). The UK guidelines were the most specific, advising emergency referral for malignant hypertension and routine referral for refractory hypertension, defined as blood pressure (BP) of 150/90 mm Hg despite therapy with 3 drugs from different classes. Anemia as a reason for referral was identified by 3 sources (15, 21).

**DISCUSSION**

Our review demonstrated that there is a lack of consistency in referral recommendations, and furthermore, that many guidelines mention only eGFR or serum creatinine as a referral criterion. The UK guidelines provided the most comprehensive description of when patients should be referred and included 3 urgency bands (15). These guidelines described not only absolute values of eGFR, but also a change in eGFR that should prompt referral. Other criteria included proteinuria, electrolytes, hypertension, hematuria, parathyroid hormone, anemia and systemic illness. They also outline the types of patients who can be managed by the primary care provider, possibly with advice from a nephrologist. No other sources included that level of detail. The Australian guidelines cite eGFR, proteinuria, hypertension, anemia and comorbid illness (21). The Canadian guidelines include eGFR, proteinuria and problems with management of hypertension, medications or other issues (18). These 3 guidelines are the most detailed, whereas several other sources focused only on eGFR or serum creatinine as the criterion for referral (3, 8, 16, 19, 22, 23). It is worth noting that different recalculation methods can yield eGFR results varying by as much as 85% (23).

Sources conflict on whether referral should occur at CKD stage 3 (3, 13, 21) or stage 4 (7, 22, 25). Earlier referral has the potential to improve the outcomes of comorbid diseases; decrease the number of complications such as anemia, cardiovascular disease, diabetes, hypertension and malnutrition; delay the onset of end-stage kidney disease; improve patient survival; reduce the use of temporary vascular access devices; optimize the patient’s biochemical, physical and psychological state for the initiation of dialysis; improve vocational outcomes and reduce hospital stays (3, 5, 7, 8). The differential impact on nephrologists between referral at CKD stage 3 or 4 is quite substantial; St. Peter et al reported that 39% of patients with CKD are in stage 3, whereas only 2% are in stage 4, or 700,000 versus 64,000 patients, using 2005 estimates of CKD in Canada (3). The Canadian Society of Nephrology recommends referral at stage 4 (7, 25). Two sources also stated that a decrease in GFR of 15% (15) or 20% (30) should prompt referral.

While earlier referral has been recommended for improved outcomes, earlier referral coupled with longer survival of patients may overwhelm nephrological services (3, 7, 23). Therefore joint management of patients with CKD has been suggested (3, 7, 17, 18, 20, 22). Multidisciplinary renal teams can provide patients with better information and education, monitoring and follow-up, and also create opportunities for discussion groups and contacts with other ESKD patients (31). A survey found that most Canadian nephrologists utilize such clinics routinely (32). While the majority of patients were referred when they are in CKD stage 4, two thirds of nephrologists surveyed said they would prefer referral while patients were still in stage 3 (32).
Wauters et al proposed a timetable for sharing the care of CKD patients, progressing from a single consultation to establish a diagnosis and suggest a follow-up plan, to annual appointments with the nephrologist once CKD has been diagnosed but does not progress to ESKD, to management of the patient once GFR is <30 ml/min per 1.73 m² (24). As a referral criterion, there was also somewhat conflicting advice regarding proteinuria, with the UK guidelines suggesting referral at approximately half the level suggested by the Canadian and Australian guidelines. How proteinuria is to be measured is an additional source of potential confusion: dipstick proteinuria, protein to creatinine ratios, albumin to creatinine ratios, microalbuminuria, albuminuria and 24-hour urinary protein were all mentioned.

The differing advice identified in the literature results in confusion as to when patients should be referred to a nephrologist. Nephrologists on the other hand must assess requests for consultation and prioritize patients using some sort of undefined metric and one that no doubt varies among individual nephrologists. Development of a prioritization referral tool would benefit both primary care providers and nephrologists. For primary care providers, the tool would help to standardize the referral process, reducing the frustration of multiple forms and referral requirements. For nephrologists, required information will be available; studies show that 50% or more of referral letters are missing information that specialists require (33-37). Referrals would be prioritized in order of urgency in a transparent process. To this end, a clinical panel comprising nephrologists and primary care providers, informed by this literature review, are completing the work of formulating a nephrology priority referral score, and plan to test the reliability and validity of the tool for prioritizing patients referred to nephrologists.

**APPENDIX**

**Nephrological conditions searched**

Acute interstitial nephritis (AIN)
Acute kidney failure
Acute kidney injury
Acute renal failure
Acute renal insufficiency
Acute tubular necrosis (ATN)
Alport syndrome
Amyloidosis
ANCA vasculitis
Anti-GBM disease
Bladder cancer
Bladder infection(s)
Bladder neoplasm(s)
BUN creatinine ratio
Chronic interstitial nephritis (CIN)
Chronic kidney disease(s)
Chronic kidney failure
Chronic renal insufficiency
Contrast nephropathy
Crescentic glomerulonephritis
Cystic kidney diseases/disorders
Cystitis
Diabetic nephropathies
Dialysis
Electrolyte disorders
Elevated BUN
Elevated creatinine
End stage renal disease (ESRD)
Fanconi syndrome
Fibromuscular dysplasia (FMD)
Focal segmental glomerulosclerosis
Glomerular diseases
Glomerulonephritis
Glomerulosclerosis
Glomerulopathy
Goodpasture’s syndrome
Hemodialysis
Hematuria
Hemodiafiltration
Hemodialysis
Hemofiltration
Hepatorenal syndrome
Hydronephrosis
Hypercalcemia
Hyperkalemia
Hypernatremia
Hypertensive nephrosclerosis
Hypocalcemia
Hypokalemia
Hypomagnesemia
Hyponatremia
Hypophosphatemia
IgA nephropathy
Kidney calculi
Kidney cancer
Kidney cortex necrosis
Kidney cysts
Kidney damage
Kidney diseases
Kidney failure
Kidney infection(s)
Kidney neoplasms
Kidney stones
Kidney transplantation
Kidney tubular necrosis
Kidney(s)
Light chain cast nephropathy
Lupus nephritis
Membranous nephropathy
Membranoproliferative glomerulonephritis
Mesangioproliferative
Mesoblastic nephroma
Microalbuminuria
Microscopic polyangiitis
Minimal change disease
Multiple myeloma
Nephritic syndrome
Nephritis
Nephrocalcinosis
Nephrolithiasis
Nephrologist(s)
Nephrology
Nephropathy
Nephrosclerosis
Nephrosis
Nephrotic syndrome
Paediatric nephrology
Painful bladder syndrome
Pancreas transplantation
Pediatric nephrology
Perinephritis
Peritoneal dialysis
Polycystic kidney
Polycystic kidney diseases
Post infectious glomerulonephritis
Prostate enlargement
Prostatitis
Proteinuria
Pyelitis
Pyelocystitis
Pyelonephritis
Renal
Renal artery obstruction
Renal artery stenosis
Renal cell carcinoma
Renal cystic disorders
Renal diabetes
Renal dialysis
Renal diseases/disorders
Renal failure
Renal insufficiency
Renal replacement therapy
Renal transplantation
Renal tuberculosis
Thin basement membrane disease
Uremia
Urinary tract infections
Wegener granulomatosis
Wilms tumor
Wolfram syndrome

Financial support: This work was funded by Alberta Health and Wellness – Access to Medical Services Grant.

Conflict of interest statement: None of the authors has a financial or other relationship that might lead to a conflict of interest with respect to the research.

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