What new drugs can nephrologists look forward to in the next year or two?

Chloë Harman

Many of the great leaps and bounds achieved in nephrology over recent decades must be ascribed to the development of newer and better drugs. Transplant specialists can now choose from an array of more selectively targeted immunosuppressants, and the progression of chronic kidney disease (CKD) can be slowed with the use of angiotensin-converting-enzyme inhibitors and angiotensin receptor blockers. In the interests of immediate clinical relevance, articles published in *Nature Clinical Practice Nephrology* usually focus on drugs that are already available to prescribe; however, this Editorial peers a little way into the future and highlights some of the innovations that nephrologists might soon be able to add to their therapeutic armamentarium.

In March, the FDA approved aliskiren as the first renin inhibitor for the treatment of hypertension. By reducing plasma renin activity, aliskiren inhibits the conversion of angiotensinogen to angiotensin I. Its manufacturer, Novartis, believes that once-daily oral dosing will offer sustained 24 h blood pressure control.

Notwithstanding recent controversy over the optimal target hemoglobin level in patients with CKD (see page 245 for commentary), erythropoiesis-stimulating agents have been the mainstay of treatment for renal anemia since their introduction in the late 1980s. This year is expected to see the launch of the 'continuous erythropoietin receptor activator', Mircera® (Roche, Basel, Switzerland). With its reduced affinity for erythropoietin receptors, Mircera® has a half-life of around 135 h, which is intended to allow up to once-monthly intravenous or subcutaneous dosing in patients on dialysis.

Nanotechnology has so far been less exploited by nephrology than it has by other specialties such as oncology. The latter half of 2007 could, however, see a US approval application

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C Harman is Associate Editor of Nature Clinical Practice Nephrology.

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for the iron oxide nanoparticle agent ferumoxytol as an intravenous iron replacement therapy for CKD patients both receiving and not receiving dialysis. If the FDA agrees that ferumoxytol's nanoparticle structure gives it greater flexibility in both the time required for administration and the amount of iron that can be given to a patient in a single dose compared with existing agents, it could be available to prescribe in 2008.

Several new formulations of existing drugs are also scheduled to be launched in 2007–2008, among them a single-tablet combination of amlodipine besylate and valsartan, and a once-daily modified release version of tacrolimus that is intended to improve patient compliance.

Delving a little further back into the drug development pipeline reveals several promising new agents currently in phase III trials. If the oral vasopressin V₂ antagonist tolvaptan follows in the footsteps of the combined V₁/V₂ antagonist conivaptan, which was approved in 2005 for parenteral administration, patients with hyponatremia could be receiving this agent within the next year or two. In transplantation, much excitement surrounds the progress of belatacept, which works by blocking the costimulatory signal for T-cell activation—a strategy that it is hoped will avoid the adverse effects of blanket T-cell suppression by targeting only activated T-cells.

Nephrologists are faced daily with the reality of a swelling CKD population and an ever-worsening shortage of kidneys available for transplantation. These grim facts do, however, at least provide the incentive for pharma to invest the sums required to develop new drugs—currently estimated at US\$800 million each—and should ensure that a steady stream of new and effective medicines continue to emerge for the foreseeable future.