Editorials

Acute kidney injury in the community:

why primary care has an important role

REASONS FOR FOCUSING ON ACUTE KIDNEY INJURY

There is mounting evidence that awareness of kidney function is central to the delivery of safe and clinically-effective care, in terms of preventing both cardiovascular events, and progression to established renal failure, with significant impacts on quality of life and healthcare expenditure.[1,2] However, the staging of chronic kidney disease (CKD) has not been without controversy, and like all disease classifications has the potential to both structure and constrain the delivery of care.[3,4] General practice has played a central role in the identification and management of CKD becoming a routine aspect of care delivery.[1,5] Nevertheless, professional uncertainty remains on the merits of disclosure of the early stages of CKD, especially in older people.[6] This is reflected in low levels of patient awareness of CKD, with discussions often limited to reassurance.[6,7]

In addition to maintenance of vascular health and prevention of progression of renal disease, another important reason to focus on the delivery of care for people with early stage CKD is its association with acute kidney injury (AKI). This is a syndrome which is common, harmful, and preventable.[8,9] The term AKI is a shift away from the previous inconsistent use of the diagnosis of acute tubular necrosis and acute renal failure.[8] Furthermore, the classification system highlights that AKI encompasses a spectrum of acute injury from minor changes in kidney function to acute failure requiring renal replacement therapy.[8] This is important as it provides an opportunity to consider people at risk and identify people who may benefit from earlier intervention. It also takes into account the evidence that even small, reversible changes in kidney function (as seen in hospitalised patients) are associated with significantly worse short- and long-term outcomes.[8] AKI results in increased utilisation of healthcare resources, notably increased frequency, intensity, and duration of hospitalisation; higher risk of a further episode of AKI; increased risk of CKD including end stage renal disease; and is associated with higher mortality rates both in the immediate and longer term.[8,9]

As highlighted by the Kidney Disease Improving Global Outcomes (KDIGO) guidelines, AKI is a syndrome with multiple aetiologies and *'it is the interaction between susceptibility and the type and extent of exposure to insults that determines the risk of occurrence of AKI.'*[8] In terms of susceptibility, AKI is more common in older patients and those with complex comorbidities, the prevalence of which is greater in areas of socioeconomic deprivation.[8–10] CKD is reported to be the most consistent pre-existing condition associated with the development of AKI.[8] Hypovolaemia associated with any type of insult including exposure to sepsis and nephrotoxic drugs is the most modifiable risk factor.[8]

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The management of those presenting with AKI is often 'primarily dependant on risk factors being identified and removed'.[11] However, the 2009 report *Adding Insult To Injury* by the National Confidential Enquiry into Patient Outcomes and Deaths (NCEPOD), indicated that risk factors are often not addressed.[11] Contributory medicines, presence of comorbidities, and hypovolaemia were the risk factors least likely to be assessed on admission to hospital. AKI affects over 20% of acute admissions and is associated with approximately 50% of preventable hospital deaths.[11,12] Considering that a large number of cases start to deteriorate before hospital admission, the ability to improve outcomes for a large number of patients is possible.[11] Currently there remains limited research focused on the role of general practice in preventing AKI, as well as little attention to addressing the interface between primary and secondary care.

A SYSTEMATIC APPROACH TO DOING THE BASICS WELL

Recognising that there are limitations in applying serum creatinine as an accurate marker of kidney injury,[8] the introduction of the classification system for AKI has the potential to structure a more systematic approach to medicines management, as well as the assessment and treatment of acute episodes of sepsis in primary care. Building on existing quality improvement initiatives around CKD (including audit and educational support),[13] the emphasis needs to be on a more systematic approach to doing the basics well. This includes improving the use of computer systems to identify and manage people at risk of AKI and its consequences, clinical assessment of volume status and management of people with acute illness, and patient involvement in decision making.

First, with computerisation and a capitation-based system, UK general practice is in a unique position to identify people at increased susceptibility to AKI and address potentially modifiable exposures. In addition to supporting maintenance of vascular health, the CKD register within the Quality and Outcomes Framework offers an opportunity to improve medicines management for people with stage 3 CKD and address their increased risk of AKI.[5] A systematic approach to reviewing patients taking non-steroidal anti-inflammatory drugs (NSAIDs) is essential. There is also a need to consider the prescribing of angiotensin-converting enzyme inhibitors (ACEIs), which have proven effectiveness in the patients with CKD and proteinuria (especially with diabetes), but which have no known added value over and above blood pressure control in those without proteinuria.[1] With this, there is a need to recognise their associated risk of both severe renal artery stenosis and AKI.[1] Systems also need to be integrated into practice that monitor and support individuals post-discharge. Clear coding is essential even when AKI is not the primary diagnosis. Relevant Read Codes for AKI are awaited.

Second, both NCEPOD and the recent consensus statement published by the Royal College of Physicians, Edinburgh, emphasise the importance of systematic assessment of fluid status for patients experiencing acute illness.[9,11] In the

community, this does not require expensive tests but does require the clinician to be alert to evidence of existing CKD as well as attention to both prescribed and over the counter medication. In particular the use of ACEIs/angiotensin-receptor blockers (ARBs), diuretics, and NSAIDs.[9] An appropriate assessment of sepsis and volume depletion should be undertaken including questions on fluid intake and output, with a physical examination carried out in the context of a patient's clinical history.[14] Acknowledging that no individual physical finding is 'sufficiently' sensitive and specific, helpful measures of volume status to consider include: moistness of mucous membranes and axillae, skin turgor, capillary refill time, jugular venous pressure, changes in weight, and postural changes in pulse and blood pressure.[14] Although blood testing of electrolytes and renal function is ideal to determine the extent of AKI, hospital admission is likely to be made on clinical grounds. As highlighted in quality standards set by NICE, medication review in conjunction with assessment of volume status and renal function are all important aspects of care for people with CKD who become acutely unwell.[15]

Third, there is a necessity to develop an evidence base concerning the AKI consensus statement, which recommends the temporary cessation of medicines including ACEIs/ARBs, diuretics and NSAIDs during acute illness.[9] This needs to be tailored to people's level of health literacy and may provide an opportunity to support more meaningful and less disruptive dialogue around the diagnosis of CKD.[16,17] A whole systems approach is required to implement this change in practice. Learning from evidence around sick day rules for people with diabetes,[18] information in the form of self-management plans may be a mechanism to support people's capacity to better manage acute illness in the community.[19] Integrating e-alerts into GP software systems are also likely to be necessary to support temporary cessation of medication. Enhancing the role of community pharmacy in supporting patient safety in older people and those with multimorbidity may be warranted.

In summary, AKI is recognised as being associated with increased healthcare utilisation and poor health outcomes. With emerging evidence that a significant proportion of cases may be avoidable, there is a growing need to invest in the implementation and evaluation of strategies designed to improve the prevention and management of AKI in primary care. Developing an evidence base around AKI in the community has potentially important implications for the commissioning of services and may provide an opportunity to help address existing health inequalities, and improve the delivery of care for older people and those living with multiple conditions. It is paramount that AKI is not viewed as solely in the realm of nephrologists but rather it is of relevance for health professionals across all care settings and of particular importance to the generalist in primary care.

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