# Diabetes and acute kidney injury

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The Diabetes UK Professional Conference is always something to look forward to, as it inspires and motivates us to try a little harder and to deliver even better-quality diabetes care. Sadly, last year the meeting was cancelled due to the first wave of COVID-19, and this year the meeting is organised in a virtual format over two weeks, with key sessions twice each day. As I write this on day 3 of the conference, we have already begun capturing important messages to share, so look out for our Diabetes UK conference update in the next issue.

## Acute kidney injury

Acute kidney injury (AKI) is a common complication in people with diabetes. Having been reminded of the important role we in primary care play in preventing and identifying it, I wanted to immediately share key messages from Andrew Frankel's presentation, which concluded the joint Diabetes UK, ABCD, Renal Association and Kidney Research UK symposium on *Managing Renal Disease and Diabetes.*

AKI has been the preferred term for acute renal failure since 2004 and is a clinical syndrome of sudden renal impairment that is associated with adverse prognosis (KDIGO AKI Work Group, 2012). It is defined by a rise of ≥26.5 µmol/L in serum creatinine within 48 hours **or** ≥1.5-fold rise in serum creatinine compared to baseline which is known or presumed to have occurred within the preceding 7 days, **or** urine output is <0.5 mL/kg/h for 6 hours (although the latter is impossible to measure in primary care). Globally, using the KDIGO diagnostic criteria above, AKI occurs in 1 in 5 hospital in-patients (Susantitaphong et al, 2013). Risk factors for AKI include increasing age, infections, chronic kidney disease (CKD), ischaemic heart disease (IHD), heart failure (HF) and diabetes. Diabetes appears to be an independent risk factor for AKI and, in those with diabetes, advancing age, IHD, HF, sepsis, CKD and treatment with RAAS inhibitors all increase risk of AKI.

Dr Frankel reminds us that, during the COVID-19 pandemic, having CKD increased the likelihood of hospital admission and poorer outcomes, and in those on dialysis who develop COVID-19 the mortality rate has been around 20%. In those suffering from COVID-19, the infection can be complicated by AKI, resulting in poorer outcomes. CKD stage 3b or higher, diabetes, HF, previous history of AKI, use of NSAIDs or ACE inhibitors/ARBs, or treatment with diuretics during admission are all risk factors for AKI in those suffering from COVID-19. During the first wave of the pandemic, 27% of intensive care unit (ICU) patients with COVID-19 required renal replacement therapy, although this reduced to only 14% of ICU patients with COVID-19 during the second wave, possibly due to less aggressive use of diuretics.

If we can predict when AKI may occur, then we have a greater likelihood of preventing it. Dr Frankel encouraged clinicians to be mindful when using volume-depleting agents (GLP-1 receptor agonists, SGLT2 inhibitors and diuretics), drugs affecting perfusion (ACE inhibitors/ARBs and NSAIDs) or iodine-containing contrast for radiological investigations. However, when looking at the cardiovascular outcome trials with the SGLT2 inhibitors, the number of adverse renal events were less in the treated versus the control groups, so it may be that these drugs are protective against AKI rather than increasing the risk, but this remains to be proven. In the Q&A session, Dr Frankel clarified that although we need to encourage those taking GLP-1 RAs to maintain their fluid intake, GLP-1 RAs are useful drugs in those with CKD due to their protective effects on cardiovascular disease, which is more common in those with CKD. GLP-1 RAs do not need to be paused as part of sick-day rules.

Dr Frankel reminded us of our responsibility to deliver robust sick-day guidance, since this is important in reducing AKI. He stressed that we need to help people understand **which** drugs to pause, **when** to omit them (when unwell with fever, sweats or shaking, or vomiting/diarrhoea), and to carefully **safety net** so that people know when to restart (in 24–48 hours, if able to eat and drink normally) and, if not

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*"During the COVID-19 pandemic, having chronic kidney disease increased the likelihood of hospital admission and poorer outcomes."*

improving in 24–48 hours, to seek medical advice. Cardiologists may have a higher threshold for stopping drugs, if they are being used for HF. People who have their drugs delivered in a dosette box should be advised to seek medical advice if unwell, so that guidance on which tablet(s) to omit can be explained.

It can be time-consuming and challenging to ensure sick-day guidance is safely implemented in those using dosette boxes, as many of us have discovered during the pandemic. Dosette box users may be exactly the people who are most at risk of AKI, and liaison with our pharmacists is often required to ensure safety. Some proactive action now may make it easier when guidance is needed. For example, is it clear from our prescribing systems who receives their medication in a dosette box? When initiating SADMAN drugs and providing/reminding about sick-day guidance, do we ask about and record dosette box use? And, if the person is using a dosette box, do we always remember to stress the importance of seeking our advice immediately if they become unwell with fever, sweats, shaking, diarrhoea or vomiting, so we can guide them on which tablets to omit, since they are unlikely to know which medication(s) to pause without our help?

Some of the things that can go wrong when we provide sick-day guidance were highlighted by Dr Frankel. Glycaemic control, HF or blood pressure may deteriorate, even with temporary cessation in medication. People may misinterpret the advice and pause treatment unnecessarily or fail to restart when they recover, or they may perceive the medication to be dangerous or responsible for causing their nausea, vomiting or fever and therefore decline to take it again (with or without telling us). They may also fail to seek medical advice if they are unwell and do not recover promptly.

Primary care teams also have a key role in guiding and monitoring people post discharge and during AKI recovery. Dr Frankel signposted the Royal College of General Practitioners' AKI Toolkit (open-access download from www.rcgp.org.uk/aki), which includes a post-discharge care algorithm (available at bit.ly/3axBem2) and Top Ten Tips document (bit.ly/2PjGceO). As well as educating those with previous AKI about how to reduce their future increased risk of AKI, other important primary care roles include coding AKI; optimising diabetes and other medication dosages based on the post-AKI renal function; ensuring that drugs that were paused are restarted, if and when appropriate; and ongoing monitoring of both renal function and albumin-to-creatinine ratio (ACR) at intervals recommended on discharge or based on current eGFR.

Delegates attending the kidney disease symposium were encouraged by other speakers to view the newly updated joint ABCD and Renal Association clinical practice guidelines for management of adults with diabetic kidney disease. The guidelines are contained in three documents:

- Management of glycaemia: bit.ly/3tKHjmt
- Management of lipids: bit.ly/3vbILie
- Management of hypertension and renin–angiotensin–aldosterone system blockade: bit.ly/3vdd5Jd

Each is designed to be pragmatic and for primary care use, but they contain some different targets and recommendations compared to NICE guidelines, so we need to decide which to follow and avoid them complicating or confusing us.

So, what have I done differently as a result of watching Andrew's talk? Well, I have revisited the RCGP's AKI Toolkit, including the newer sections mentioned above that I had not used previously, and will share with colleagues and compare with our current practice. I will read the ABCD and Renal Association guidelines and share relevant messages in our conference report. A search for the code "AKI" on our electronic system will help us identify how well we have coded people post discharge, and will highlight particularly vulnerable people with and without diabetes who may benefit from review, allowing us to ensure they have had recent blood tests, despite COVID-19 restrictions. I will review how we code dosette box use and whether this is consistent, and do a mini-review of people I have recently shared sick-day guidance with to ensure they understand to contact us if they become unwell. And, importantly, I will include dosette box checks in my discussion of sick-day guidance both within my clinical practice and in talks and

training going forward. A wonderful opportunity for reflection and changes to practice from a single conference session.

## In this issue

As we slowly emerge from the second wave of the pandemic, and we again assess the impact of COVID-19 on people with diabetes and other chronic diseases, Lesley Mills highlights the importance of collaborating and adapting as she reviews how diabetes services have changed during the pandemic.

A group of primary and secondary care experts, working with the NHS Confederation's PCN Network, have published *Best Practice in the Delivery of Diabetes Care in the Primary Care Network Framework* on the Primary Care Diabetes Society (PCDS) website (www.pcdsociety.org). In this issue of the Journal, Nicola Milne and colleagues share key recommendations from the document in "How to deliver best practice in diabetes care across Primary Care Networks", while Naresh Kanumilli comments on the likely impact for diabetes care delivery across Primary Care Networks.

Jane Diggle has updated her "How to diagnose and treat hypertension in people with diabetes" in line with NICE's 2019 guideline on hypertension in adults, as part of our rolling programme to keep our How-to guides current. Also updated, and published in our "early view" section a few weeks ago, Alia Gilani's "How to manage diabetes during Ramadan" provides us with invaluable information to help guide people with diabetes in deciding whether to fast, and to optimise medication and manage hypoglycaemia and hyperglycaemia as they cope with the very long hours of fasting required again this year.

David Morris, in our popular case study series, tests our knowledge again with a selection of cases on diagnosis of diabetes. Lesley Hordon's At-a-glance factsheet raises awareness of diabetic Charcot arthropathy and the importance of early diagnosis and prompt management.

In *Diabetes Distilled*, Kevin Fernando and I report that cancer is now the leading cause of diabetes-related death, share the STEP trial programme results, explore heart failure outcomes in those initiating SGLT2 inhibitors, and discuss the relationships between different glucose-lowering therapies and risk of COVID-19 mortality.

Finally, our 2020 National Conference of the PCDS report highlights the key messages delivered. This will be of interest to those who were unable to attend and, for delegates who did, will act as a reminder of their learning for inclusion in appraisal folders. The PCDS conferences for 2021 are already upon us, with our virtual 12th Welsh Conference of the PCDS just weeks away on 13 May (https://live.diabetesonthenet.com).

In our next issue, look out for more highlights from the 2021 Diabetes UK Professional Conference and the first of our new At-a-glance factsheets on Lifestyle Medicine. In the meantime, I hope you enjoy the freedom to meet again with friends and family after this very long lockdown, and that you can manage some well-deserved downtime. ■

Kidney Disease: Improving Global Outcomes (KDIGO) AKI Work Group (2012) KDIGO clinical practice guideline for acute kidney injury. *Kidney Int Suppl* **2**: 1–138

Susantitaphong P, Cruz DN, Cerda J et al (2013) World incidence of AKI: a meta-analysis. *Clin J Am Soc Nephrol* **8**: 1482–93

***"Dosette box users may be exactly the people who are most at risk of acute kidney injury, and liaison with our pharmacists is often required to ensure safety."***