

Medicines Optimisation Briefing

This briefing, unlike others in the series, focuses on prevention of illness rather than treatment; in this case, of Acute Kidney Injury (AKI). This is because if a patient has already developed AKI they are likely to be in hospital undergoing emergency treatment.

Patient experience

Can you explain to me how medicines that I take to protect my kidneys can harm them as well? I know it is important to drink lots of water but could I drink too much?

AKI affects one in six people admitted to hospital and is responsible for thousands of unnecessary deaths each year. Particular groups of patients are more susceptible to AKI, such as the elderly, smokers, those with chronic kidney disease (CKD), diabetes, obesity, low blood pressure, cardiac failure, existing hypertension or dehydration, a kidney transplant, or a family history of kidney disease. However, this advice applies to all people on certain medicines even if they are not in a high risk group (see below).

Steps you can take:

- Look for patients at high risk; the patient groups listed above and those on ACE inhibitors (ACEI), angiotensin II receptor blockers (ARBs), diuretics, metformin or non-steroidal anti-inflammatory drugs (NSAIDs)
- Advise patients to drink sufficient fluid to avoid feeling thirsty and to increase their fluid intake when exercising and during hot weather
- Advise patients to take care of their kidneys and report any symptoms of AKI to their GP or practice nurse. Symptoms include a reduction in urine output (even if they are drinking plenty of water), yellow or brown urine or feeling unwell for no obvious reason.

Evidence – is the medicine appropriate?

ACEI and ARBs are very effective in protecting the kidneys, but if patients become dehydrated they should be stopped for a short period of time. Other medicines, such as NSAIDs, should be avoided if the patient is susceptible to problems with their kidneys.

Steps you can take:

- Encourage patients to take ACEI, ARBs, diuretics and metformin on a regular basis but advise them that if they become dehydrated they should stop the medicine and seek medical advice. Symptoms of dehydration may include dizziness or lightheadedness, headache, tiredness, dry mouth, lips and eyes, and passing small amounts of urine infrequently (less than 3 or 4 times a day)
- If the patient develops diarrhoea, vomiting or both, they should be advised to stop taking their ACEI, ARBs, metformin or NSAID until they are clearly improving; then they should restart their medicines. If they are not improving within 24 hours then medical advice should be sought urgently. Patients taking diuretics should seek medical advice as the dose may need to be reduced
- Headaches may be caused by dehydration, in which case an NSAID should be avoided
- NSAID topical gels should also be avoided in dehydration.

However, all pharmacy professionals in contact with patients have a role in preventing the development of AKI. This briefing gives practical advice, developed from NICE guidance, on how to discuss this issue with their patients.

Safe and effective

ACEIs and ARBs are very effective in protecting the kidneys, but if patients become dehydrated they should be stopped for a short period of time. This is especially the case if patients are taking other potentially nephrotoxic medicines such as diuretics and NSAIDs. The dose of metformin may need to be reduced or stopped in renal impairment.

Steps you can take:

- Speak to patients about their medicines, particularly those that could cause problems in someone with kidney disease; this doesn't have to be an MUR or part of the NMS
- Explore why patients are buying NSAIDs and who they are for. For example, are they buying them for someone at home who is suffering from diarrhoea or vomiting?
- Think about combinations of medicines such as an ACEI or diuretics with an NSAID and the cumulative effect these may have on the kidneys
- If patients are taking an ACEI and ARB together check if this is appropriate
- Check patients taking metformin are having their renal function monitored.

Medicines optimisation as part of routine practice

Talk to patients about the importance of stopping medicines that could damage their kidneys when they are dehydrated. Use your regular contacts with these patients to explain to them the steps they need to take to protect their kidneys during periods of dehydration or during acute illness such as gastroenteritis.

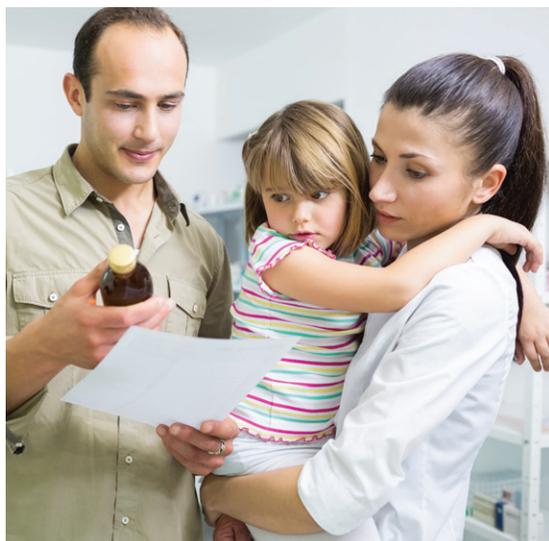
Steps you can take:

- Remind carers or family members about the importance of their role in ensuring patients are drinking plenty of fluids, particularly if the patient has neurological or cognitive impairment, or a disability that impedes them from doing that for themselves
- If you work in a hospital ensure patients have access to water (if appropriate)
- Ensure you are aware of and apply the sick day rules: Patients with risk factors should be warned of the possibility of developing AKI if they become acutely ill, especially with diarrhoea and vomiting. See accompanying article for further details.

Case studies

Four year old Emily was unwell with a temperature and vomiting for a few days. Her fluid intake was reduced and her parents noticed that she was passing less urine than usual.

She was given ibuprofen three times a day in order to control her temperature. Over the next couple of days, Emily became increasingly lethargic and then stopped passing urine. Her parents took her to hospital where she was admitted and given various tests. Her blood test results suggested renal failure. A kidney biopsy was performed and the findings were consistent with AKI that was most likely due to a combination of dehydration and ibuprofen (a biopsy is not always required to make a diagnosis of AKI). Emily required peritoneal dialysis for a week and then made a gradual recovery. She is now well and her renal function has returned to normal. Her parents have been advised not to give her non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen in future.



Mr B is a 72 year old man with Type 2 diabetes, COPD & stage 3 CKD. He is on multiple medicines including repeat prescriptions for an ACE Inhibitor and Ibuprofen (NSAID).

Mr B experienced an episode of gastroenteritis and without a GP assessment this led to an unplanned hospital admission. The episode of illness was complicated by AKI requiring a period of intensive care. The hospital discharge summary included AKI but this was not then coded in GP records. The recommendation was that the ACE Inhibitor was to be suspended, but there was no mention of NSAIDs. Neither drugs were suspended by the primary care team and his renal function was not rechecked post-discharge. Mr B had further GP appointments and was treated for exacerbations of COPD. There was no temporary cessation of medicines during these episodes of acute illness. Mr B's case was discussed at a weekly clinical meeting with a medicines management pharmacist and this led to the development of a register for patients who have experienced an episode of AKI, along with e-alerts to ensure patients have a medication review and their renal function rechecked post discharge.



Lifestyle messages

- Stay hydrated – drink one litre of fluid per day (unless otherwise advised)
- Ensure urine is straw coloured (pale yellow) and if it is consistently dark then seek advice
- Reduce or avoid alcohol consumption
- Advise patients about the benefits of healthy eating and weight loss
- Encourage patients to stay active.

Where's the evidence?

- National Institute for Health and Care Excellence. Clinical guideline 169: Acute kidney injury: prevention, detection and management of acute kidney injury up to the point of renal replacement therapy. 2013 www.nice.org.uk
- National Institute for Health and care Excellence: Acute Kidney Injury Quality Standard. Dec 2014 www.nice.org.uk/guidance/QS76

Signposting patients

- British Kidney Patient Association www.britishkidney-pa.co.uk
- Kidney Patient guide www.kidneypatientguide.org.uk
- MHRA – side effects should be reported by both patients and pharmacists using the yellow card system <https://yellowcard.mhra.gov.uk>
- National Kidney Federation www.kidney.org.uk
- NHS Choices www.nhs.uk
- Think Kidneys www.thinkkidneys.nhs.uk

Where can I learn more about this?

NICE AKI elearning tool elearning.nice.org.uk (open access but login required)
 NICE AKI Quality Standard www.nice.org.uk/guidance/qs76
 UK Renal Pharmacy Group AKI Medication Optimisation toolkit www.renalpharmacy.org.uk
 Renal Association www.renal.org
 Think Kidneys www.thinkkidneys.nhs.uk
 Clinical pharmacist articles www.pharmaceutical-journal.com
 CPPE learning programmes www.cppe.ac.uk
 Consultation skills website www.consultationskillsforpharmacy.com
 Regional and Local Medicines Information (MI) centres MHRA.
 Combination use of medicines from different classes of renin-angiotensin system blocking agents www.mhra.gov.uk/Safetyinformation/DrugSafetyUpdate/CON426905
 An interim report on the sick day rules cards being used in NHS Highlands <http://margaretmccartney.com/wp-content/uploads/2014/10/NHSH-interim-evaluation-medicine-sick-day-rules.pdf>

Acknowledgement to Think Kidneys for these case studies: <http://www.thinkkidneys.nhs.uk/case-studies/>
 You can make a difference by supporting your patients – don't assume someone else has already done your job for you.



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