Supplementary Online Content

Timal RJ, Kooiman J, Sijpkens YWJ, et al. Effect of no prehydration vs sodium bicarbonate prehydration prior to contrast-enhanced computed tomography in the prevention of postcontrast acute kidney injury in adults with chronic kidney disease: the Kompas randomized clinical trial. *JAMA Intern Med*. Published online February 17, 2020. doi:10.1001/jamainternmed.2019.7428

This supplementary material has been provided by the authors to give readers additional information about their work.

eMethods.

Type of contrast agents used

Type of non-ionic, isotonic contrast agent was used according to clinical practice of the participating hospitals and included pre-warmed iobitridol 300- or 350 mgI/ml (Xenetix; Guerbet, Aulnay-sous-Bois, France), iodixanol 270- or 320 mgI/ml (Visipaque; GE Healthcare, Chalfort St. Giles, United Kingdom), iohexol 300 mgI/ml (Omnipaque; GE Healthcare, Chalfont St. Giles, United Kingdom), or iopromide 370 mgI/ml (Ultravist; Bayer Healthcare, Berlin, Germany).

Economic evaluation

To explore whether omission of sodium bicarbonate prehydration results in healthcare savings, costs were estimated from a hospital perspective, with a two-month time horizon, and at the price level of 2019. Direct hydration costs for bicarbonate hydration were estimated to be €121, based on market price of infusion fluid, hourly wages for nursing and specialist care, and costs of one laboratory serum creatinine measurement. Costs for hospital (re)admissions (including duration of hospitalisation), specialists outpatient visits, telephone consultations and emergency department visits were estimated. Visits for study purposes only were excluded from analysis. Healthcare was valued according to standard prices described in the Dutch guidelines for health-economic evaluations.[16] Cost-effectiveness acceptability curves were plotted to relate the difference in costs to the difference in PC-AKI incidence (according to intention-to-treat, with multiple imputation for missing values on the occurrence of PC-AKI and one-sided unequal-variance *t*-tests). Cost-effectiveness acceptability curves depict the probability that withholding prehydration is cost-effective compared to prehydration treatment, depending on the willingness to pay to prevent one case of PC-AKI.

eResults.

Mean relative change in eGFR

The mean relative change in eGFR 2-5 days after contrast administration as compared to baseline was -2.1% (SD 10.9%) in the no prehydration group as compared with -2.7% (SD 11.2%) in the prehydration group (mean difference 0.6%; 95% confidence interval [CI], -1.3 to +2.6%; P < 0.0001 for non-inferiority, using 10% as the equivalence margin).

The mean relative change in eGFR 7-14 days after contrast administration as compared to baseline was -1.9% (SD 14.9%) in the no prehydration group as compared with -1.9% (SD 15.0%) in the prehydration group (mean difference 0.1%; 95% confidence interval [CI], -2.5 to +2.7%; P<0.0001 for non-inferiority, using 10% as the equivalence margin).

Cost-effectiveness analysis

Considering that no significant differences in primary and secondary outcomes between the two treatment arms were found, omitting management with one hour prehydration with sodium bicarbonate would result in healthcare costs savings of €121 per treatment. The estimated hospital costs in the 2 months following randomization for both randomization groups are depicted in Supplement eTable 3. The hospital costs during this period were €1243 in the non-hydration group and €1315 in de hydration group, *p*=0.801. Whether prophylactic measures to prevent PC-AKI are considered cost-effective depends on the amount society is willing to pay to prevent 1 adverse event. The probability that no prophylactic therapy is cost-effective compared with sodium bicarbonate hydration prior to CE-CT is shown in Supplemental eFigure 1. Omitting prehydration is more likely to be cost-effective than prehydration for a willingness to pay (WTP) up to € 6,000 per prevented case of PC-AKI and are in favour of sodium bicarbonate hydration for WTP above € 10,000 per prevented case of PC-AKI.

Protocol violations, n (%)[a]	**No prehydration N = 262**	**Prehydration N = 261**	**Total N = 523**
Ineligible for inclusion	1 (0.4)	1 (0.4)	2 (0.4)
CT cancelled	4 (1.5)	3 (1.1)	7 (1.3)
CT without contrast	7 (2.7)	3 (1.1)	10 (1.9)
Wrong hydration protocol	2 (0.8)	2 (0.8)	4 (0.8)
No baseline creatinine	10 (3.8)	6 (2.3)	16 (3.1)
No creatinine 2 – 5 days	11 (4.2)	7 (2.7)	18 (3.4)
Total	14 (5.3)	9 (3.4)	23 (4.4)

eTable 1. Protocol violations

[a]Patients could have more than 1 protocol violation

CT indicates computed tomography

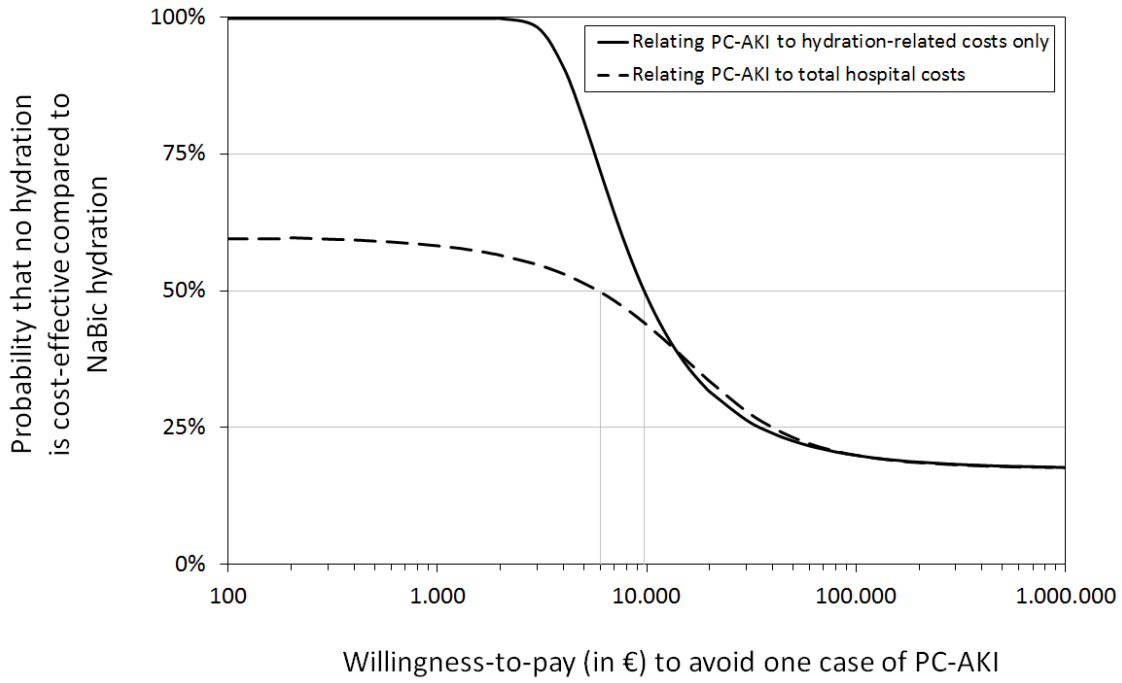
		No prehydration N = 262		Prehydration N = 261			
	Unit price[b] in €	Volume[a]	Costs[b] in €	Volume[a]	Costs[b] in €	Difference	*P*-value
Direct costs of hydration	121	0%	0	98%	119	119	0,000
Hospitalization due to hydration complications		0,00		0,00		0	n.a.
Other hospitalizations							
• Non-ICU	504	1.55	779	1.52	768	-11	0.961
• ICU	2133	0.06	122	0.04	90	-32	0.778
• Day care	292	0.19	55	0.21	62	7	0.626
Outpatient visits							
• Emergency department	274	0.13	35	0.11	29	-6	0.566
• Other outpatient visit	85	2.65	224	2.55	216	-8	0.565
• Telephone consultation	42	0.69	29	0.74	31	-2	0.517
Total hospital costs							
• Exclusive costs of hydration			1243		1196	-47	0.869
• Inclusive costs of hydration			1243		1315	72	0.801

eTable 2. Estimated hospital costs per patient between randomization and 2 months follow-up

[a] Volumes represent percentages of patients or mean number of procedures, hospital days or visits

[b] Prices and costs are at price level 2019

ICU intensive care unit, n.a. not applicable, € euro



eFigure. Cost-acceptability curve

Whether a treatment is cost-effective, depends on how much one is willing to pay (WTP, in euro's) to avoid one case of contrast-induced nephropathy (PC-AKI). This figure shows the probability that no hydration is cost-effective compared with one-hour hydration with sodium bicarbonate (NaBic) prior to intravenous contrast administration. The analysis is in favour of no hydration if that probability is higher than 50%. The solid and dashed lines represent the narrow cost perspective (hydration-related costs only) and the wider cost perspective (total hospital costs), respectively. Both analyses are in favour of no hydration for WTP up to €6,000 and are in favour of NaBic hydration for WTP above €10,000 per prevented case of PC-AKI.

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