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Additional Acknowledgements

**Supplemental Table 1.** Summary of screening categorization for participants ineligible to participate in the trial.

<b>Consort Diagram Category</b>	<b>Reason</b>	<b>Number</b>
1945 did not meet eligibility criteria	• Patients without CKD stages 3b and 4 (eGFR between 14 and 45ml/min/1.73m <sup>2</sup> )	527
	• Urinary albumin/creatinine ratio not >10mg/mmol	97
	• Serum phosphate not >1.00mmol/L	704
	• Age less than 18 years	6
	• Unable to give informed consent	27
	• Patients with a history of psychological illness or condition which interferes with their ability to understand or comply with the requirements of the study	90
	• Kidney transplantation	39
	• Recent (within 1 month) hospitalisation or cardiovascular event	18
	• Pregnancy or breast feeding	1
	• Medical conditions that impact on phosphate metabolism (apart from CKD), eg. primary hyperparathyroidism or hypoparathyroidism; previous subtotal parathyroidectomy; gastrointestinal malabsorption disorders such as Crohn's disease, ulcerative colitis, coeliac disease or severe liver dysfunction	53
	• Malnutrition, defined as serum albumin <30g/L	10
	• Atrial fibrillation as documented on ECG performed at screening	45
	• Unable to obtain a pulse wave velocity	7
	• Unknown	321
814 other reasons	• Eligible but not approached for consent (various reasons)	426
	• Insufficient information	388

**Abbreviations:** CKD, chronic kidney disease; ECG, electrocardiogram; eGFR, estimated glomerular filtration rate

Supplemental Table 2. Medications at baseline for study participants, by treatment group.

<b>Medications</b>	<b>Total (n=278)</b>	<b>Placebo (N=140)</b>	<b>Lanthanum (N=138)</b>
ACE inhibitors	92 (33.1%)	47 (33.6%)	45 (32.6%)
ARB	119 (42.8%)	58 (41.4%)	61 (44.2%)
Beta blockers	99 (35.6%)	53 (37.9%)	46 (33.3%)
Diuretics	52 (18.7%)	24 (17.1%)	28 (20.3%)
Calcium channel blockers	141 (50.7%)	64 (45.7%)	77 (55.8%)
Spironolactone	24 (8.6%)	13 (9.3%)	11 (8.0%)
Statin	202 (72.7%)	101 (72.1%)	101 (73.2%)
Calcitriol	25 (9.0%)	13 (9.3%)	12 (8.7%)
Cholecalciferol	63 (22.7%)	36 (25.7%)	27 (19.6%)
Calcium carbonate	15 (5.4%)	6 (4.3%)	9 (6.5%)

**Abbreviations:** ACE, angiotensin-converting enzyme; ARB, angiotensin II receptor blocker

Results are presented as number (percentage)

Supplemental Table 3. Summary of missing data on primary and main secondary outcome variables

<b>Outcome variable</b>	<b>No data</b>	<b>Baseline but no follow-up measures</b>	<b>No baseline but at least one follow-up measure§</b>	<b>Total participants with missing data</b>
<i>PWV (rated)</i>	6	24	14	44
<i>Agatston score</i>	25	50	14	89
<i>Serum phosphate</i>	4	12	1	17
<i>Serum calcium</i>	4	13	2	19
<i>Serum calcium-phosphate product</i>	4	13	2	19
<i>PTH</i>	33	19	9	61
<i>cFGF-23</i>	27	27	19	73
<i>iFGF-23</i>	24	17	29	70
<i>cFGF-23/ iFGF-23 ratio</i>	29	28	29	86
<i>Urinary phosphate excretion</i>	15	27	20	62
<i>eGFR</i>	4	12	0	16
<i>Creatinine clearance</i>	14	31	26	71
<i>Urine phosphate/creatinine ratio</i>	21	26	52	99

§ As specified in the statistical analysis plan, mean imputation of missing baseline data permitted inclusion of these participants in the analysis.

Supplemental Table 4. On-treatment and compliance-adjusted comparisons of lanthanum and placebo groups at week 96 for intermediate cardiovascular parameters and biochemical parameters.

Outcome variable	On-treatment		Compliance-adjusted	
	Difference [95% CI] <sup>#</sup>	P	Difference [95% CI] <sup>#</sup>	P
		value		value
<b>PWV (m/s)</b>	+0.63 [-0.33, 1.59]	0.20	+0.59 [-0.32, 1.51]	0.20
<b>Agatston score</b>	+203 [-207, 612]	0.33	+176 [-195, 547]	0.35
<b>Serum phosphate (mmol/L)</b>	-0.09[-0.13, -0.01]	0.03	-0.03 [-0.11, -0.05]	0.41
<b>cFGF-23 (RU/mL)*</b>	-0.09 [-0.31, 0.12]	0.39	-0.03 [-0.24, 0.17]	0.74
<b>iFGF-23 (pg/mL)*</b>	-0.20 [-0.46, 0.06]	0.13	-0.08 [-0.33, 0.16]	0.51
<b>PTH (pmol/L)</b>	-0.10 [-0.29, 0.08]	0.27	0.01 (-0.16, 0.18]	0.91
<b>Urinary phosphate excretion (mmol/24hrs)</b>	1.62 [-4.88, 1.63]	0.33	-1.17 [-4.21, 1.87]	0.45

\*Log transformed

<sup>#</sup>Lanthanum relative to placebo

Variables in the models include treatment group, visit, treatment group x visit interaction, baseline variable

**Abbreviations:** cFGF-23, c-terminal fibroblast growth factor 23; iFGF-23, intact fibroblast growth factor 23; PWV, pulse wave velocity

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