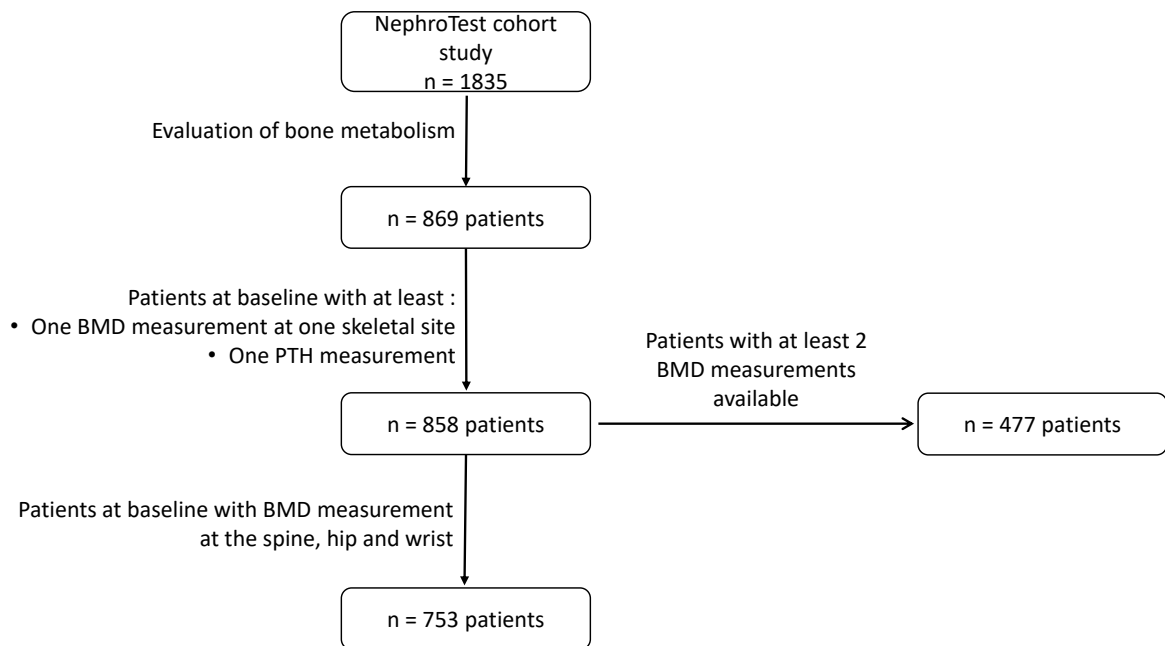


## Supplementary Figure 1



Supplementary Table S1

**Supplemental table S1: Estimated adjusted effects of variables on mean total hip BMD at baseline and BMD change over 4.3 years follow-up (n=753 patients, 1166 visits)**

| Variable                                  | Estimated effect | 95% CI             | p value  |
|---|------------------|--------------------|----------|
| <b>Mean difference of BMD at baseline</b> |                  |                    |          |
| Age at baseline (yrs)                     | -0.0025          | -0.0033 to -0.0017 | < 0.0001 |
| Gender                                    |                  |                    |          |
| Men                                       | <i>Ref.</i>      |                    | < 0.0001 |
| Premenopausal women at baseline           | -0.0819          | -0.1206 to -0.0434 |          |
| Post-menopausal women                     | -0.1283          | -0.1539 to -0.1027 |          |
| BMI at baseline (kg/m <sup>2</sup> )      |                  |                    |          |
| <25                                       | <i>Ref.</i>      |                    | < 0.0001 |
| ≥25                                       | 0.1265           | 0.1057 to 0.1478   |          |
| Ethnicity                                 |                  |                    |          |
| No african origin                         | <i>Ref.</i>      |                    | < 0.0001 |
| african origin                            | 0.0714           | -0.0430 to 0.1004  |          |
| Tobacco use at baseline                   |                  |                    |          |
| Never smoking                             | <i>Ref.</i>      |                    | 0.249    |
| Former smoker                             | -0.0074          | -0.0315 to 0.0161  |          |
| Current smoker                            | -0.0266          | -0.0583 to 0.0041  |          |
| CKD stages at baseline                    |                  |                    |          |
| 1-2                                       | <i>Ref.</i>      |                    | 0.102    |
| 3a  | -0.0175          | -0.0492 to 0.0135  |          |
| 3b  | -0.0295          | -0.0611 to 0.0014  |          |
| 4-5                                       | -0.0433          | -0.0787 to -0.0087 |          |
| log(PTH) at baseline                      | -0.0266          | -0.0445 to -0.0090 | < 0.01   |
| <b>Mean BMD change</b>                    |                  |                    |          |
| Time (yrs)                                | 0.0003           | -0.0092 to 0.0100  | 0.968    |
| BMI at baseline (kg/m <sup>2</sup> )      |                  |                    |          |
| <25                                       | <i>Ref.</i>      |                    | 0.244    |
| ≥25                                       | 0.0016           | -0.0010 to 0.0042  |          |
| CKD stages at baseline                    |                  |                    |          |
| 1-2                                       | <i>Ref.</i>      |                    | 0.526    |
| 3a  | -0.0003          | -0.0050 to 0.0044  |          |
| 3b  | -0.0023          | -0.0069 to 0.0023  |          |
| 4-5                                       | -0.0026          | -0.0077 to 0.0024  |          |
| log(PTH) at baseline                      | -0.0009          | -0.0034 to 0.0015  | 0.464    |

BMD: bone mineral density; CKD: chronic kidney disease; BMI: body mass index; PTH: parathyroid hormone; CI: confidence interval

The factor center has been included as random effect

Supplementary table S2

**Supplemental table S2: Estimated adjusted effects of variables on mean spine BMD at baseline and BMD change over 4.3 years follow-up (n=753 patients, 1166 visits)**

| Variable                                  | Estimated effect | 95% CI                    | p value            |
|---|------------------|---------------------------|--------------------|
| <b>Mean difference of BMD at baseline</b> |                  |                           |                    |
| Age at baseline (yrs)                     | -0.0003          | -0.0012 to -0.0007        | 0.554              |
| Gender                                    |                  |                           |                    |
| Men                                       | <i>Ref.</i>      |                           | <b>&lt; 0.0001</b> |
| Premenopausal women at baseline           | 0.0055           | -0.0398 to -0.0508        |                    |
| Post-menopausal women                     | <b>-0.1164</b>   | <b>-0.1464 to -0.0865</b> |                    |
| BMI at baseline (kg/m <sup>2</sup> )      |                  |                           |                    |
| <25                                       | <i>Ref.</i>      |                           | <b>&lt; 0.0001</b> |
| ≥25                                       | <b>0.0914</b>    | <b>0.0669 to 0.1162</b>   |                    |
| Ethnicity                                 |                  |                           |                    |
| No african origin                         | <i>Ref.</i>      |                           | 0.080              |
| african origin                            | 0.0303           | -0.0033 to 0.0640         |                    |
| Tobacco use at baseline                   |                  |                           |                    |
| Never smoking                             | <i>Ref.</i>      |                           | 0.688              |
| Former smoker                             | -0.0001          | -0.0281 to 0.0277         |                    |
| Current smoker                            | -0.0155          | -0.0522 to 0.0209         |                    |
| CKD stages at baseline                    |                  |                           |                    |
| 1-2                                       | <i>Ref.</i>      |                           | 0.104              |
| 3a  | <b>0.0438</b>    | <b>0.0070 to 0.0804</b>   |                    |
| 3b  | 0.0151           | -0.0216 to 0.0515         |                    |
| 4-5                                       | 0.0165           | -0.0246 to 0.0573         |                    |
| log(PTH) at baseline                      | <b>-0.0295</b>   | <b>-0.0504 to -0.0089</b> | <b>&lt; 0.01</b>   |
| <b>Mean BMD change</b>                    |                  |                           |                    |
| Time (yrs)                                | 0.0014           | -0.0110 to 0.0139         | 0.686              |
| BMI at baseline (kg/m <sup>2</sup> )      |                  |                           |                    |
| <25                                       | <i>Ref.</i>      |                           | 0.088              |
| ≥25                                       | 0.0031           | -0.0004 to 0.0065         |                    |
| CKD stages at baseline                    |                  |                           |                    |
| 1-2                                       | <i>Ref.</i>      |                           | 0.062              |
| 3a  | -0.0007          | -0.0068 to 0.0053         |                    |
| 3b  | 0.0029           | -0.0031 to 0.0089         |                    |
| 4-5                                       | -0.0034          | -0.0100 to 0.0032         |                    |
| log(PTH) at baseline                      | -0.0002          | -0.0034 to 0.0030         | 0.924              |

*BMD: bone mineral density; CKD: chronic kidney disease; BMI: body mass index; PTH: parathyroid hormone; CI: confidence interval*  
*The factor center has been included as random effect*

### Supplementary table S3

**Supplemental table S3: Estimated adjusted effects of variables on mean femoral neck BMD at baseline including PTH classes and BMD change over 4.3 years follow-up (n=753 patients, 1166 visits)**

| Variable                                  | Estimated effect | 95% CI                    | p value            |
|---|------------------|---------------------------|--------------------|
| <b>Mean difference of BMD at baseline</b> |                  |                           |                    |
| Age at baseline (yrs)                     | <b>-0.0036</b>   | <b>-0.0044 to -0.0029</b> | <b>&lt; 0.0001</b> |
| Gender                                    |                  |                           |                    |
| Men                                       | <i>Ref.</i>      |                           | <b>&lt; 0.0001</b> |
| Premenopausal women at baseline           | <b>-0.0453</b>   | <b>-0.0806 to -0.0101</b> |                    |
| Post-menopausal women                     | <b>-0.0851</b>   | <b>-0.1085 to -0.0617</b> |                    |
| BMI at baseline (kg/m <sup>2</sup> )      |                  |                           |                    |
| <25                                       | <i>Ref.</i>      |                           | <b>&lt; 0.0001</b> |
| ≥25                                       | <b>0.0891</b>    | <b>0.0699 to 0.1084</b>   |                    |
| Ethnicity                                 |                  |                           |                    |
| No african origin                         | <i>Ref.</i>      |                           | <b>&lt; 0.0001</b> |
| african origin                            | <b>0.0719</b>    | <b>0.0458 to 0.0981</b>   |                    |
| Tobacco use at baseline                   |                  |                           |                    |
| Never smoking                             | <i>Ref.</i>      |                           | 0.074              |
| Former smoker                             | -0.0045          | -0.0263 to 0.0171         |                    |
| Current smoker                            | <b>-0.0331</b>   | <b>-0.0617 to -0.0048</b> |                    |
| CKD stages at baseline                    |                  |                           |                    |
| 1-2                                       | <i>Ref.</i>      |                           | <b>&lt; 0.001</b>  |
| 3a  | -0.0198          | -0.0484 to 0.0087         |                    |
| 3b  | <b>-0.0363</b>   | <b>-0.0647 to -0.0082</b> |                    |
| 4-5                                       | <b>-0.0642</b>   | <b>-0.0958 to -0.0326</b> |                    |
| PTH at baseline (pg/ml)                   |                  |                           |                    |
| [0-65]                                    | <i>Ref.</i>      |                           | 0.131              |
| ]65-129]                                  | -0.0146          | -0.0368 to 0.0075         |                    |
| ]129-325]                                 | -0.0324          | -0.0651 to 0.0002         |                    |
| <b>Mean BMD change</b>                    |                  |                           |                    |
| Time (yrs)                                | -0.0041          | -0.0085 to 0.0004         | 0.070              |
| BMI at baseline (kg/m <sup>2</sup> )      |                  |                           |                    |
| <25                                       | <i>Ref.</i>      |                           | <b>&lt;0.05</b>    |
| ≥25                                       | <b>0.0032</b>    | <b>0.0003 to 0.0060</b>   |                    |
| CKD stages at baseline                    |                  |                           |                    |
| 1-2                                       | <i>Ref.</i>      |                           | 0.094              |
| 3a  | -0.0016          | -0.0067 to 0.0034         |                    |
| 3b  | -0.0047          | -0.0097 to 0.0002         |                    |
| 4-5                                       | -0.0005          | -0.0061 to 0.0049         |                    |
| PTH at baseline (pg/ml)                   |                  |                           |                    |
| [0-65]                                    | <i>Ref.</i>      |                           | 0.957              |
| ]65-129]                                  | -0.0003          | -0.0036 to 0.0030         |                    |
| >129                                      | -0.0008          | -0.0069 to 0.0052         |                    |

*BMD: bone mineral density; CKD: chronic kidney disease; BMI: body mass index; PTH: parathyroid hormone ; CI:confidence interval  
The factor center has been included as random effect*

## Supplementary table S4

**Supplemental Table S4: annualized BMD changes at the skeletal sites**

| Variable for femoral neck analysis                     | Estimated effect | 95% CI                  | p value |
|--|------------------|-------------------------|---------|
| BMI at baseline (kg/m <sup>2</sup> )                   |                  |                         |         |
| <25  | <i>Ref.</i>      |                         | 0.149   |
| ≥25  | 0.0033           | -0.0012 to 0.0079       |         |
| CKD stages at baseline                                 |                  |                         |         |
| 1-2  | <i>Ref.</i>      |                         | 0.621   |
| 3a   | -0.0036          | -0.0110 to 0.0038       |         |
| 3b   | -0.0037          | -0.0111 to 0.0038       |         |
| 4-5  | -0.0009          | -0.0092 to 0.0074       |         |
| log(PTH) at baseline                                   | 0.0005           | -0.0033 to 0.0044       | 0.788   |
| Treatment interfering with PTH metabolism <sup>a</sup> |                  |                         |         |
| No treatment   | <i>Ref.</i>      |                         | <0.05   |
| with treatment   | <b>0.0055</b>    | <b>0.0001 to 0.0109</b> |         |
| Center (hospital)                                      |                  |                         |         |
| 0  | <i>Ref.</i>      |                         | 0.208   |
| 1  | -0.0030          | -0.0077 to 0.0017       |         |

| Variable for the total hip analysis  | Estimated effect | 95% CI            | p value |
|--------------------------------------|------------------|-------------------|---------|
| BMI at baseline (kg/m <sup>2</sup> ) |                  |                   |         |
| <25                                  | <i>Ref.</i>      |                   | 0.327   |
| ≥25                                  | 0.0019           | -0.0019 to 0.0056 |         |
| CKD stages at baseline               |                  |                   |         |
| 1-2                                  | <i>Ref.</i>      |                   | 0.680   |
| 3a                                   | -0.0005          | -0.0066 to 0.0056 |         |
| 3b                                   | -0.0009          | -0.0071 to 0.0052 |         |
| 4-5                                  | -0.0034          | -0.0101 to 0.0033 |         |
| log(PTH) at baseline                 | -0.0004          | -0.0036 to 0.0028 | 0.798   |
| Center (hospital)                    |                  |                   |         |
| 0                                    | <i>Ref.</i>      |                   | 0.516   |
| 1                                    | -0.0013          | -0.0052 to 0.0026 |         |

| Variable for the lumbar spine analysis | Estimated effect | 95% CI            | p value |
|--|------------------|-------------------|---------|
| BMI at baseline (kg/m <sup>2</sup> )   |                  |                   |         |
| <25                                    | <i>Ref.</i>      |                   | 0.198   |
| ≥25                                    | 0.0029           | -0.0015 to 0.0074 |         |
| CKD stages at baseline                 |                  |                   |         |
| 1-2                                    | <i>Ref.</i>      |                   | 0.112   |
| 3a                                     | 0.0008           | -0.0064 to 0.0081 |         |
| 3b                                     | 0.0042           | -0.0031 to 0.0115 |         |
| 4-5                                    | -0.0032          | -0.0112 to 0.0048 |         |
| log(PTH) at baseline                   | 0.0012           | -0.0026 to 0.0049 | 0.531   |
| Center (hospital)                      |                  |                   |         |
| 0                                      | <i>Ref.</i>      |                   | 0.866   |
| 1                                      | -0.0004          | -0.0050 to 0.0043 |         |

| Variables for the radius analysis    | Estimated effect | 95% CI            | p value |
|--------------------------------------|------------------|-------------------|---------|
| BMI at baseline (kg/m <sup>2</sup> ) |                  |                   |         |
| <25                                  | <i>Ref.</i>      |                   | 0.657   |
| ≥25                                  | -0.0010          | -0.0053 to 0.0033 |         |
| CKD stages at baseline               |                  |                   |         |
| 1-2                                  | <i>Ref.</i>      |                   | 0.860   |
| 3a                                   | 0.0026           | -0.0044 to 0.0096 |         |
| 3b                                   | 0.0028           | -0.0043 to 0.0099 |         |
| 4-5                                  | 0.0017           | -0.0060 to 0.0094 |         |
| log(PTH) at baseline                 | 0.0014           | -0.0022 to 0.0050 | 0.447   |
| Center (hospital)                    |                  |                   |         |
| 0                                    | <i>Ref.</i>      |                   | 0.725   |
| 1                                    | -0.0008          | -0.0053 to 0.0037 |         |

BMD: bone mineral density; CKD: chronic kidney disease; BMI: body mass index; PTH: parathyroid hormone; CI: confidence interval  
Center : 0:Hologic, 1:Lunar

<sup>a</sup> : diuretic drugs, lithium or calcitriol

## Strobe document

### Modified STROBE Statement—checklist of items that should be included in reports of observational studies (Cohort/Cross-sectional and case-control studies)

|                              | Item No | Recommendation  |
|------------------------------|---------|---|
| <b>Title and abstract</b>    | 1       | (a) Page 1: longitudinal data in the title and in the abstract in the patients and in method sections<br><hr/><br>(b) done  |
| <b>Introduction</b>          |         |   |
| Background/rationale         | 2       | Done in the introduction page 5   |
| Objectives                   | 3       | In the abstract and at the end of the introduction (page 6)   |
| <b>Methods</b>               |         |   |
| Study design                 | 4       | Described in the methods page 6   |
| Setting                      | 5       | Described in the method page 7  |
| Participants                 | 6       | (a) <i>Cohort study</i> —Nephrotest Cohort as described also in the method page 13  |
| Variables                    | 7       | Described in the statistical method page 13   |
| Data sources/<br>measurement | 8*      | Described page 7 and 13   |
| Bias                         | 9       | Mentioned in the discussion   |
| Study size                   | 10      | All data available in the Nephrotest cohort (if applicable)   |
| Quantitative<br>variables    | 11      | Very detailed in the statistical method page 16   |
| Statistical methods          | 12      | (a) see the statistical method page 16<br><hr/><br>(b) see the statistical method page 16<br><hr/><br>(c) see the statistical method page 16<br><hr/><br>(d) <i>Cohort study</i> —If applicable, explain how loss to follow-up was addressed : see the statistical method page 16<br><hr/><br>(e) Describe any sensitivity analyses |
| <b>Results</b>               |         |   |
| Participants                 |         | (a) Done in the method and in the tables  |

|                   |     |   |
|-------------------|-----|---|
| Participants      | 13* | (a) Done in the method and in the tables<br><b>(c) Use of a flow diagram</b>  |
| Descriptive data  | 14* | (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders<br>Nephrotest cohort page 7<br><br>(b) Indicate number of participants with missing data for each variable of interest : <b>please see the statistical method page 16</b><br><br>(c) <i>Cohort study</i> —Summarise follow-up time (eg, average and total amount) <b>done in the methods</b> |
| Outcome data      | 15* | <i>Cohort study</i> —Report numbers of outcome events or summary measures over time : done in the tables  |
| Main results      | 16  | (a) Done  |
| Other analyses    | 17  | Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses <b>Done</b>  |
| <b>Discussion</b> |     |   |
| Key results       | 18  | Summarise key results with reference to study objectives : <b>done at the beginning of the manuscript and the key findings page 18</b>  |
| Limitations       | 19  | Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias. <b>Are at the discussion part page 12</b>   |
| Interpretation    | 20  | Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence <b>Done</b>  |
| Generalisability  | 21  | Discuss the generalisability (external validity) of the study results. <b>Suggestions of guidelines page 13</b>   |

\*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

**Note:** An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at [www.strobe-statement.org](http://www.strobe-statement.org).