151. ROUTINELY CHECKING VITAMIN D AND EGFR BEFORE ZOLEDRONATE IRRESPECTIVE OF PREVIOUS OSTEOPOROSIS TREATMENT IS IMPORTANT TO OPTIMIZE OUTCOMES: RESULTS FROM A QUALITY IMPROVEMENT PROJECT

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**Background:** Maintaining adequate calcium and vitamin D is necessary for optimizing outcomes with bisphosphonate treatment. When osteoporosis patients are unable to take oral bisphosphonates, annual i.v. zoledronate, the most effective bisphosphonate, is first-choice now in our department. However, we had several patients on quarterly i.v. ibandronate and pamidronate started previously. These patients were reviewed using a structured quality improvement process with involvement of a pharmacist with a view to switching them to zoledronate. The objective of this analysis was to find out if the quality improvement process was clinically effective in identifying patients needing pre-infusion attention regarding their calcium and vitamin D levels, and renal function.

**Methods:** Patients on i.v. ibandronate and pamidronate suitable for this analysis were identified from the department’s database. Case notes were reviewed by a senior rheumatology pharmacist and a consultant rheumatologist to confirm and agree appropriateness of indication and suitability for continuing i.v. bisphosphonate. Up to date renal and bone profile, and DXA were obtained and reviewed. Blood results were collated on a Microsoft Access 2000 database. Data were processed in Microsoft Excel 2000 to obtain descriptive statistics. Our Biochemistry laboratory ranges were used for interpreting adjusted calcium (normal 2.20–2.60 mmol/l) and PTH (normal 10–70 pg/ml), and to stratify total 25-hydroxy vitamin D levels (nmol/l) (≤25 = deficiency; 26–50 = insufficiency; 51–75 = adequate; =/>76–250 = optimal). Estimated GFR levels (ml/min) were stratified according to the Chronic Kidney Disease stage definitions (≤90 = 1; 60–89 = 2; 30–59 = 3; 15–29 = 4; <15 = 5).

**Results:** 74 patients were identified (67 women, 7 men; mean age 76.8 ± 10.6 years, range 49–95 years; 38 on pamidronate and 36 on ibandronate). 68 (92%) patients had adjusted calcium, serum creatinine and eGFR measured; 63 (85%) had vitamin D measured; and 55 (74%) had PTH measured pre-zoledronate. Mean ± s.e. of adjusted calcium was 2.45 ± 0.1 mmol/l (range 2.24–2.67); creatinine 88 ± 18 μmol/l (58–120); eGFR 69.6 ± 15.8 ml/min (58–139); vitamin D 58.4 ± 29.6 nmol/l (10–163); and PTH 51.5 ± 26.2 pg/ml (18–129). Vitamin D levels were in the deficiency range for 8 (12.7%); insufficiency in 21 (33.3%); adequate 21 (33.3%) and optimal 13 (20.6%). eGFR levels were normal in 13 (19.1%); CKD2 in 39 (57.4%); CKD3 in 16 (23.5%); and none in CKD4 or 5.

**Conclusion:** The quality improvement process involving a rheumatology pharmacist ensured a high proportion had adjusted calcium and eGFR measured before zoledronate. These patients were already on treatment for osteoporosis and were expected to have adequate calcium and vitamin D intake (dietary and/ or supplementation). However, of those measured, the process flagged up 46% with vitamin D insufficiency or deficiency for further attention. It also flagged up 23.5% in CKD3 for close monitoring. Therefore, to ensure optimal outcomes with treatment we recommend that all patients being considered for zoledronate have their renal and bone profile assessed irrespective of previous treatment status.

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