

Use of Denosumab for Treatment of Osteoporosis at a Tertiary Referral Centre

An Evaluation According to the UK National Institute for Health and Care Excellence (NICE) Guidelines

S. Yahia, A.M. Roji, R. Ledda, C. Chilaka, K. Chokkalingam, P.J. Prinsloo, H. Divyateja
Nottingham University Hospitals NHS Trust, United Kingdom

INTRODUCTION

Denosumab is a human monoclonal antibody that blocks the interaction of RANKL with RANK inhibiting bone resorption¹, decreasing the risk of vertebral and non-vertebral fractures in osteoporotic post-menopausal women². It is an alternative treatment in patients unable to take oral bisphosphonates. However, it is costlier and has limited evidence in treating male osteoporosis. The UK National Institute of Health & Care Excellence (NICE) has produced guidance for use in osteoporosis. This audit was undertaken to evaluate the use of Denosumab at a tertiary referral centre.

AIMS / PURPOSE

To evaluate the use of Denosumab in the treatment of osteoporosis at Nottingham University Hospitals (NUH) NHS Trust according to the **NICE technology appraisal (TA) guidelines 204 – Denosumab for the prevention of osteoporotic fractures in post-menopausal women**.³

NICE TA204

Denosumab is recommended as a treatment option for **primary prevention** of osteoporotic fragility fractures only in postmenopausal women at increased risk of fractures:

- who are unable to comply with special instructions for alendronate and risedronate / etidronate or have an intolerance of, or a contraindication to, those treatments
- and
- who have a combination of T-score, age and independent risk factors for fracture as indicated below.

Table 1	Number of independent clinical risk factors* for fracture		
	0	1	2
Age (years)			
65 - 69	[a]	- 4.5	- 4.0
70 - 74	- 4.5	- 4.0	- 3.5
≤ 75	- 4.5	- 4.0	- 3.0

[a] Treatment with Denosumab is not recommended

*Independent clinical risk factors for fracture

- Parental history of hip fracture
- Alcohol intake of ≤ 4 units / day
- Rheumatoid arthritis

Denosumab is recommended as a treatment option for **secondary prevention** of osteoporotic fragility fractures only in postmenopausal women at increased risk of fractures:

- who are unable to comply with the special instructions for alendronate and risedronate / etidronate or have an intolerance of, or a contraindication to, those treatments.

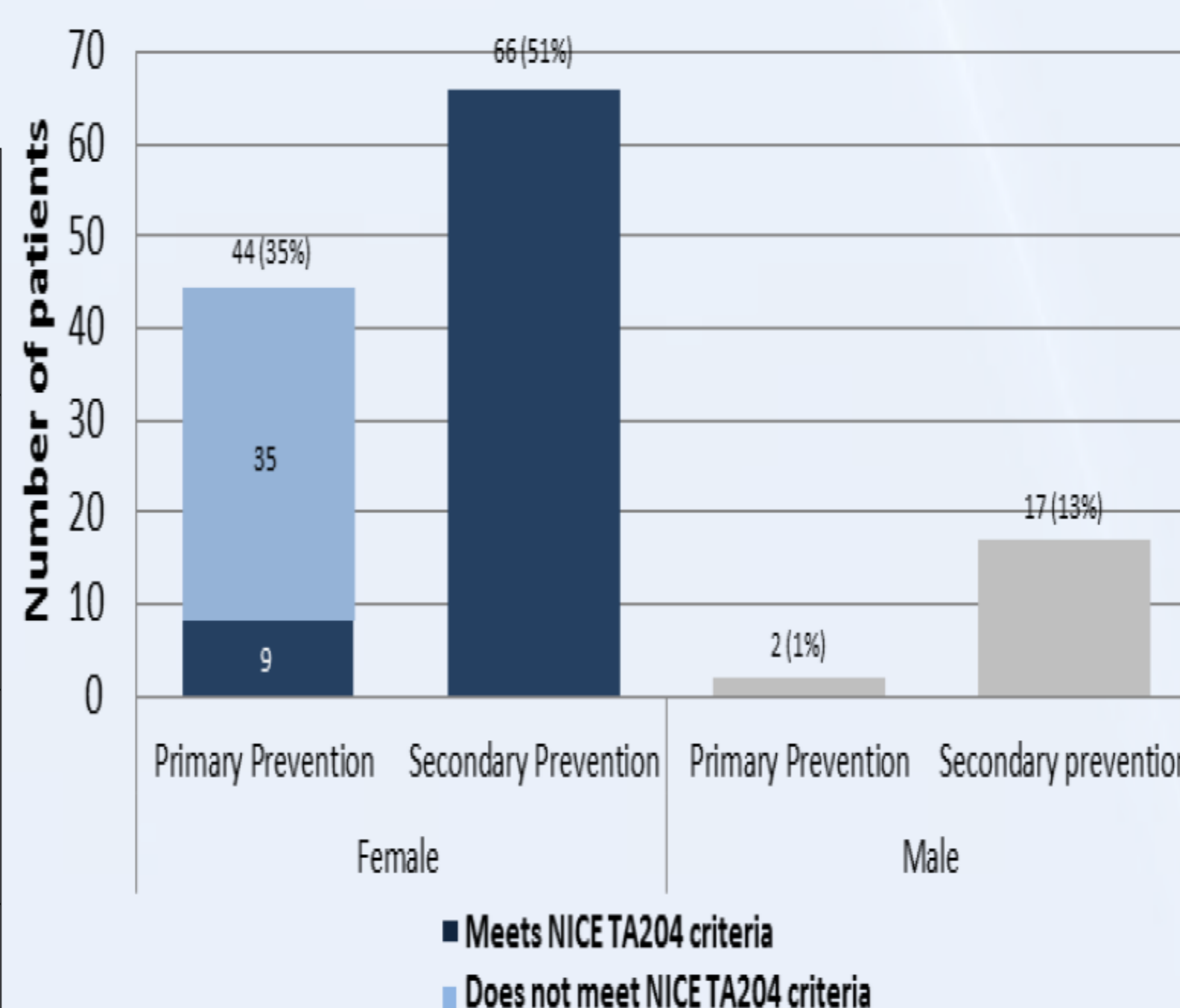
METHODS

A retrospective audit of records of all patients prescribed Denosumab during the period October 2011 until March 2015. Prescription data for Denosumab was obtained from the trust pharmacy and clinic databases. Correlating patient information was obtained from electronic hospital records. Patients who received Denosumab for other conditions besides from osteoporosis were excluded.

RESULTS

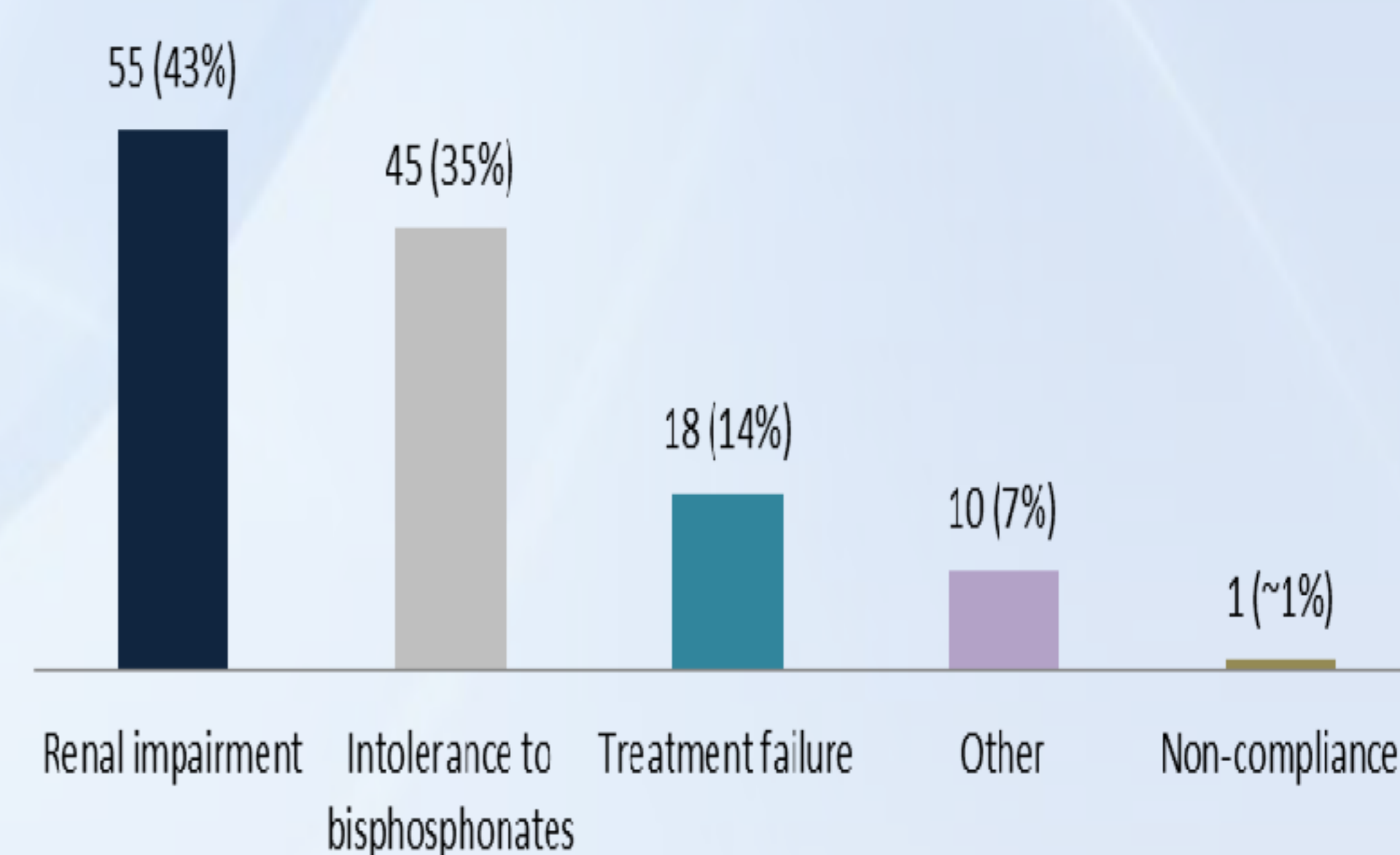
A total of 129 patients received Denosumab treatment during this period. 110 patients were female (mean age 77, range 23-95) whilst 19 patients were male (mean age 75, range 47-91). A total of 75 out of the 110 female patients met the NICE TA204 criteria (68%), the majority of them being treated for secondary prevention of osteoporotic fractures.

Patients treated for osteoporosis with Denosumab at NUH between Oct 2011 - Mar 2015



The majority of Denosumab use was in secondary prevention (75%, n = 83). The main indications for Denosumab use was renal impairment, bisphosphonate intolerance, followed by others (inc. treatment failure, non-compliance, etc).

Indications for switching to Denosumab treatment



DISCUSSION

The female patients who did not meet the NICE TA204 criteria were treated for primary prevention of osteoporotic fractures but failed to meet the combined T-score and risk factor criteria. However, all were high risk and had side-effects / contraindications to oral bisphosphonates. All the male patients were also high risk and had no other suitable alternative treatment. This was also seen in a similar audit previously⁴. Furthermore, only 5.4% (n = 7) patients treated at our centre developed new / further fragility fractures after at least 12 months on Denosumab. All patients were Vitamin D and calcium replete prior to initiation of treatment and all received supplementation during the course of treatment.

CONCLUSION

Denosumab is still used in only a minority of patients with osteoporosis, with 95% of patients still prescribed oral bisphosphonates in the first instance⁵. At our centre, it is only considered in osteoporotic post-menopausal women when oral bisphosphonates become unsuitable, and in osteoporotic men who have no suitable alternative treatment options.

REFERENCES

1. Boyle WJ et al. *Nature* 2003 423:337-342
2. Cummings SR et al. *NEJM* 361:756-765
3. National Institute of Health and Care Excellence (NICE) TA204 guidelines
4. Divyateja H et al. *European Geriatric Medicine* 4:181
5. Nottingham Primary Care Pharmacy Database

Nottingham University Hospitals
NHS Trust

