The main finding of the study is that Denosumab is the most common initial treatment for osteoporosis and is more effective as a standalone therapy than Alendronate, reducing the need for additional medications.

Exploring Drug Utilization Patterns in Osteoporosis Therapy

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BACKGROUND

Osteoporosis is a disease characterized by low bone mass, deterioration of bone tissue, and disruption of bone microarchitecture. It results in reduced bone strength and an increased risk of fractures. Medications for osteoporosis, such as bisphosphonates, denosumab, teriparatide, and selective estrogen receptor modulators (SERMs), have demonstrated established efficacy in mitigating fracture risk.

OBJECTIVE

To investigate the utilization patterns of osteoporosis medications among patients in Taiwan to better understand the real-world effectiveness and challenges of osteoporosis therapy in the Taiwanese population.

RESULTS

From 2008 to 2020, there were a total of 10,694 osteoporosis cases. The most common treatment pathway began with denosumab, accounting for 38.20% of cases. Alendronate, another bisphosphonate, was the second most common initial treatment, used in 26.53% of cases. Only 5.3% of patients initially treated with denosumab required additional medications, either rhPTH or other bisphosphonate drugs—a better rate than the 39.20% of patients initially treated with Alendronate who needed further medication.

PATHWAYS ANALYSIS FOR [OSTEO]- DRUGPATHWAYS

VISUALIZATION | TABULAR

LEGEND

Target Cohort
[Osteo] Osteoporosis

- Target cohort count : 10,694
- Persons with pathways count : 10,694
- Persons with pathways count : 100.0%

Event Cohorts

- [Osteo] Bisphophonate - Zoledronic
- [Osteo] denosumab
- [Osteo] Bisphophonate - Pamidronic
- [Osteo] Bisphophonate - Clodronic
- [Osteo]
- [Osteo] Bisphophonate
- [Osteo] Bisphophonate
- [Osteo] Bisphophonate
- [Osteo]

SUNBRUST SPOT

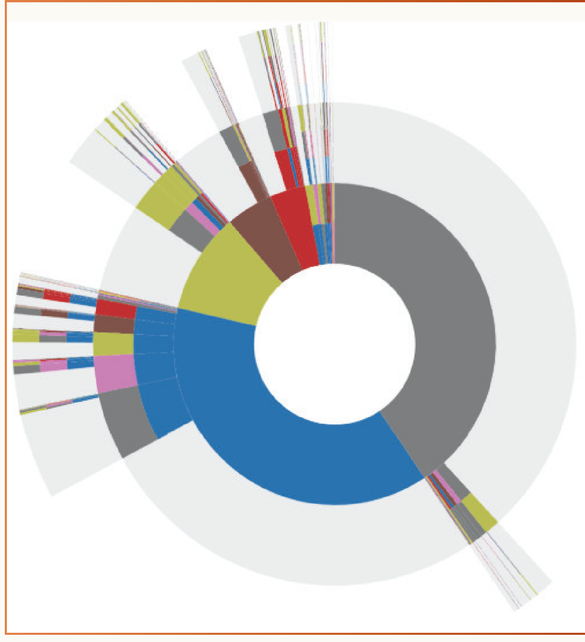

Figure 1. Osteoporosis Drug Pathways

SCAN ME

METHODS

- The data were collected from Taipei Medical University Clinical Research Database (TMUCRD) from three affiliate hospitals in Taiwan: Taipei Medical University Hospital, Wanfang Hospital, and Shuang Ho Hospital.
- The data were mapped to the Observational Medical Outcome Partnership (OMOP) Common Data Model (CDM). We used the OHDSI ATLAS platform to create cohort definitions that included the first use of osteoporosis drug therapy from 2008 to 2020.
- The concept set for the cohort event was formulated based on the category of medications used in the treatment of osteoporosis, encompassing Bisphosphonate drugs (Zoledronic, Pamidronic, Clodronic, Ibandronic, Alendronate, Etidronate), Selective Estrogen Receptor Modulators (SERMs), rhPTH, and Denosumab
- We employed cohort pathways to generate sunburst graphs, facilitating the visualization of the treatment pathway.

CONCLUSIONS

Denosumab is the most prevalent initial treatment pathway, demonstrating its prominent role in managing the condition. Additionally, patients beginning treatment with Denosumab have a lower likelihood of requiring subsequent medications compared to those starting with Alendronate. This suggests that denosumab could be more effective as a standalone treatment in the management of osteoporosis, potentially leading to a simplified treatment regimen and reduced need for additional pharmacological interventions.

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