Osteoporosis-Related Trials in the ClinicalTrials.gov Dataset

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BACKGROUND

- In 1997, Congress mandated the creation of the ClinicalTrials.gov registry to assist people with serious illnesses in gaining access to trials[1]
- In 2004, the International Committee of Medical Journal Editors (ICMJE) announced a policy, which took effect in 2005, of requiring registration of clinical trials as a prerequisite for publication[2]
- In 2007, the FDA mandated registration of all new clinical trials evaluating drugs, biologics, or devices into the ClinicalTrials.gov registry[3]
- Through a collaboration between the FDA and Duke University through the Clinical Trials Transformation Initiative (CTTI), the goal of this project is to characterize the clinical trials enrolling patients with osteopenia or osteoporosis in the ClinicalTrials.gov dataset.

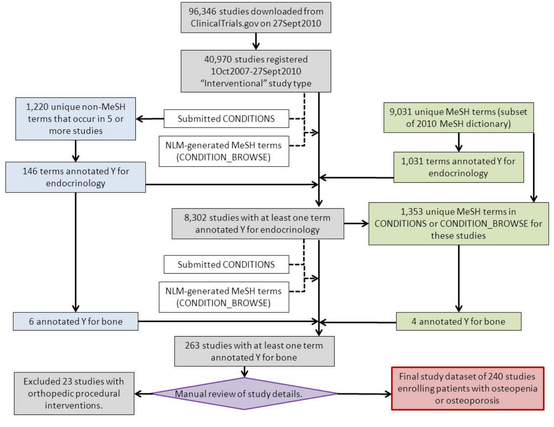
METHODS

- A dataset of 96,346 studies was downloaded from ClinicalTrials.gov on September 27, 2010 in XML format and a database for the Aggregate Analysis of ClinicalTrials.gov (AACT) was created to facilitate analysis[4]
- Analysis was restricted to 40,970 interventional trials registered 10/1/2007-9/27/2010, corresponding to the FDA enactment of mandatory registration in 2007.
- The following process was used to create the Osteoporosis dataset. (figure 1)
  - MeSH condition terms were identified from selected disease nodes of the 2010 MeSH thesaurus.
  - Non-MeSH condition terms (free-text) which appeared in five or more interventional studies registered after September 2007 were also identified.
  - MeSH and non-MeSH terms were reviewed by Endocrinology Specialists at Duke University and annotated for their relevance to Endocrinology.
  - Disease terms were further classified to identify those terms relevant to osteoporosis or osteopenia.
  - Trials with at least one relevant disease condition term were extracted and were manually reviewed by the authors and those pertaining to orthopedic procedural interventions were excluded.

RESULTS

- 240 (0.6%) of the 40,970 interventional trials registered 10/1/2007-9/27/2010-were osteoporosis-related
- Most osteoporosis trials occurred in a single facility (66%)
- The majority of trials registered at least one facility in North America (56.0%), Europe (33.5%), Eastern Asia (13.5%), or South America (7.0%) (figure 6b)
- 92% of trials evaluated endpoints of safety, efficacy or both.
- 88% of trials targeted research participants ≥ 18 years.
- 20% of trials excluded those > 65 years and 33% of trials excluded those > 75 years.
- 57% restricted enrollment to women, and 4% to men.

Figure 1. Flow diagram illustrating the creation of the Osteoporosis trials dataset.



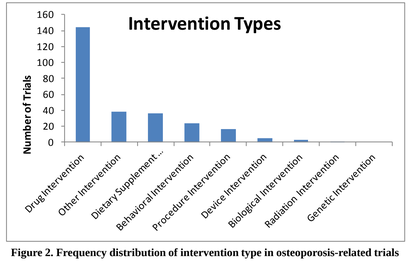


Figure 2. Frequency distribution of intervention type in osteoporosis-related trials

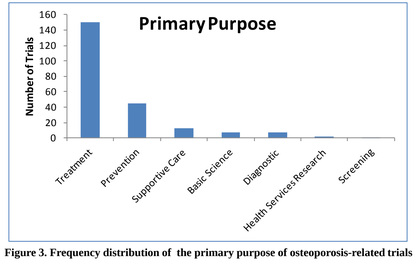


Figure 3. Frequency distribution of the primary purpose of osteoporosis-related trials

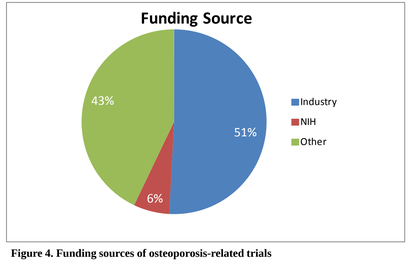


Figure 4. Funding sources of osteoporosis-related trials

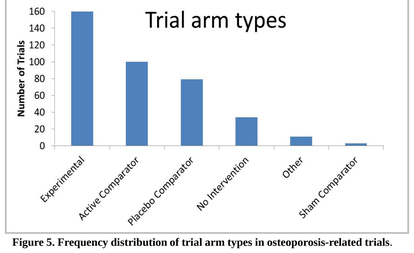


Figure 5. Frequency distribution of trial arm types in osteoporosis-related trials.

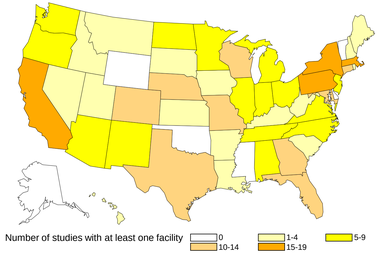


Figure 6a. Distribution of osteoporosis-related trials by US state

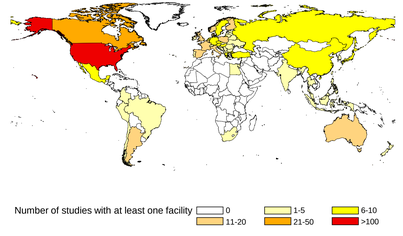


Figure 6b. Distribution of osteoporosis-related trials by country

CONCLUSIONS

- The majority of osteoporosis-related trials registered between October 2007 and September 2010 examine the efficacy and safety of drug treatment and fewer trials examine prevention or non-drug interventions.
- Less than 50% of osteoporosis-related trials contain an active-comparator arm.
- Few trials are specifically studying osteoporosis in men or adults >75 years.
- Distribution of trials within the USA appears to reflect population and Academic Health Center density whereas the worldwide distribution appears to reflect prevalence of disease.
- Recently registered osteoporosis trials may not sufficiently address osteoporosis prevention and treatment in at risk populations.

LIMITATIONS

- Trials of interventions that are not required to be registered in ClinicalTrials.gov may be under represented in the dataset.
- Those entering responses in the ClinicalTrials.gov website are likely to vary in their interpretation of the data fields leading to heterogeneous responses
- The data submitted to the ClinicalTrials.gov registration database were not independently verified in this analysis.

REFERENCES

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3. Food and Drug Administration Amendments Act of 2007: Public Law 110-85. US Food and Drug Administration.
4. Tasneem A, Aberle L, Ananth H, Chakraborty S, Chiswell K, McCourt BJ, Pietrobon R. The database for aggregate analysis of ClinicalTrials.gov (AACT) and subsequent regrouping by clinical specialty. PLoS One. 2012;7(3)

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