

Glucosamine/Chondroitin Arthritis Intervention Trial (GAIT)

This study is no longer recruiting patients.

Sponsored by

Department of Veterans Affairs
 Department of Veterans Affairs Cooperative Studies Program
 National Center for Complementary and Alternative Medicine (NCCAM)

Purpose

This study will determine whether glucosamine, chondroitin sulfate and/or the combination of glucosamine and chondroitin sulfate are more effective than placebo and whether the combination is more effective than glucosamine or chondroitin sulfate alone in the treatment of knee pain associated with osteoarthritis (OA) of the knee. These substances, marketed in the United States as nutritional supplements, have been widely touted by the lay press and by anecdotal personal experience as effective in treating OA. To date, however, only a few small studies have been published in the worldwide literature. The study proposed herein has been carefully constructed to definitively determine the efficacy of these agents.

Condition	Treatment or Intervention	Phase
Osteoarthritis	Drug: glucosamine Drug: chondroitin sulfate	<u>Phase III</u>

MedlinePlus related topics: [Osteoarthritis](#)

Study Type: Interventional

Study Design: Treatment, Randomized, Double-Blind, Placebo Control, Parallel Assignment, Efficacy Study

Further Study Details:

Expected Total Enrollment: 1588

Study start: April 2000; Study completion: November 2005

1. Primary Hypotheses

The primary analysis will be based on all patients with baseline and follow-up data, including those who withdraw from treatment. While it is not an intent to treat analysis, since patients with inadequate studies and certain other reasons will not be included, inclusion of all patients with baseline and follow-up data will reduce the degree to which differential effectiveness biases the treatment comparisons. A second analysis will be based on all patients who remain

on treatment.

Following the method by which the sample size target was derived, the analysis to address the primary hypotheses will involve 4 comparisons of change in joint space width from baseline to two-years as measured on the PAC computer using the t-test for independent samples at $\alpha=.0125$: 1) glucosamine vs. placebo, 2) chondroitin vs. placebo, 3) glucosamine + chondroitin vs. placebo and 4) celecoxib vs. placebo.

If the two analytic strategies reach different conclusions, we will examine differences between patients who remain on treatment and those who withdraw from treatment early with regard to changes in joint space.

2. Secondary Hypotheses

To determine whether the change in JSW for the combination of glucosamine + chondroitin differs from the change in JSW for glucosamine alone or chondroitin alone, 2 t-tests for independent samples will be done.

In addition, a two-way analysis of variance with interaction will be done to determine whether the effect of the combination differs from the additive effects of glucosamine and chondroitin alone. This analysis will include four of the five treatment arms (celecoxib excluded). Initially, the analysis will test whether the interaction term is significant ($p=.05$). If the interaction term is not significant, then the interaction term will be deleted from the model and only main effects will be tested.

Because patients will have baseline, one-year and two-year readings, a repeated measures analysis will be done. Since not all patients will have complete data, the mixed-model approach will be used in order to include as many patients in the analysis as possible. The dropout pattern will be tested to determine if there is informative censoring. If so, then additional terms will be added to the model to identify those with less than complete data in order to account for differences in response profiles between those with complete data and those without. The covariance structure will be examined to determine whether an unstructured covariance matrix or a patterned matrix is the most appropriate fit to the data. Fixed-effect terms will include treatment, time and treatment*time. Intercepts will be treated as a random effect.

To determine whether the manual measurement of JSW on plain radiographs is equally reproducible as computer generated measurements of digitalized radiographs the following analysis will be done. At baseline, the correlation between readers will be calculated for each method (manual, digital) and the correlations will be statistically tested for equality. This will also be done at one and two years.

To determine whether the two methods are equally sensitive to detecting change in JSW, the change from baseline to two years (averaging the two readers) will be calculated for each patient using measurements for each method. Then the variance of the change for each method will be statistically tested for equality.

To evaluate long-term efficacy of the treatments, the two-year treatment response rate (defined as a 20% reduction from baseline in the WOMAC pain score) will be calculated. Paralleling the main study protocol, Fisher's exact test will be used to compare each active

treatment arm to placebo. Time to achievement of treatment response will be evaluated using Kaplan-Meier life table estimates and comparison of treatment groups will use the log-rank test.

Mixed-model analysis of variance using generalized estimating equations will be used to compare the % of treatment responders over time across treatment groups. Treatment of missing data will follow that discussed previously for the mixed-model analysis of change in JSW.

Safety will be evaluated by comparing the percentage of people withdrawing from study medications due to adverse events during the two-year follow-up period using Fisher's exact test. Time to withdrawal due to an adverse event will be evaluated using Kaplan-Meier life table estimates and comparison of treatment groups will use the log-rank test.

Main Manuscript:

Eligibility

Ages Eligible for Study: 40 Years and above, Genders Eligible for Study: Both

Criteria

40 years of age or older and have suffered osteoarthritis for at least six months

Location Information

Alabama

University of Alabama at Birmingham, Birmingham, Alabama, 35294-7201, United States

California

Cedars-Sinai Medical Center, Los Angeles, California, 90048, United States

University of California San Francisco, San Francisco, California, 94110, United States

Indiana

Indiana University School of Medicine, Indianapolis, Indiana, 46202-5103, United States

Kansas

Arthritis Research and Clinical Centers, Wichita, Kansas, 67214, United States

Nebraska

University of Nebraska Medical Center, Omaha, Nebraska, 68198-3025, United States

New York

Hospital for Joint Diseases, New York, New York, 10003, United States

Ohio

Case Western Reserve University, Beachwood, Ohio, 44122, United States

Pennsylvania

University of Pennsylvania, Philadelphia, Pennsylvania, 19104, United States

University of Pittsburgh, Pittsburgh, Pennsylvania, 15213, United States

Texas

Arthritis Consultation Center, Dallas, Texas, 75231-4496, United States

Utah

University of Utah, Salt Lake City, Utah, 84132, United States

Washington

Virginia Mason Research Center, Seattle, Washington, 98101, United States

More Information

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