This study is a "met-analysis." There is current debate in the literature whether articulating antibiotic spacers or static spacers are superior. Antibioitc spacers in general are used when a total knee replacement becomes infected. That total knee is removed and an antibiotic spacer is placed to help eradicate the infection and provide some function while it is in place.  That spacer is then removed when the infection is clear and a new total knee is reimplanted. In general, articulating spacers are thought to provide better function, have decreased bone loss during their use, and fewer reimplant problems. However, it is also thought they cannot be used in as complex cases as static spacers.  We hypothesize that articulating spacers provide better outcome measures, improved ROM, equal infection eradication rates, fewer reimplant problems, and decreased bone loss compared to static spacers. Based on that hypothesis, I reviewed the literature and determined there were 47 studies suitable for our met-analysis.  I used the data from each study to compile the excel sheets.  The studies I included either looked at specifically articulating spacers, specifically static spacers, and a few studies comparing the two. I generated one excel sheet titled articulating spacer and one titled static spacer.

From these two excel sheets we want to generate demographic data such average age, BMI, total number of men/women, number of knees, average time of spacer, number of complex patients, and mean time of follow up etc..  Also from these excel sheets we looked at outcome scores such as KSS, WOMAC, HSS, and oxford scores (some studies didn't have outcome scores). We want to know the average pre-op knee score, the average post-op knee score for the articulating and the static group. Then we want to know if one group had a statistically significant better outcome score. For range of motion we looked at the pre-op range of motion, interim ROM, and post op ROM. We want to know the average pre-op ROM, interim ROM, and post ROM for the articulating and static group. Then we want to know if there is a significant difference between the two.

Continuing, for complications we want to know the total number for each group, determine a percentage of complications for each group and then if that was significant. There is also a column listed as "compl complications," which we want to know the number for each group and if there is significance.

We also looked reimplantation problems for which there are several types such "snip," vy, gatroc, and TTO. These are listed in two columns. We want to know the total number of reimplant problems. Then the total number of each type of reimplant problem. Then compare (articulating vs. static) groups to see if there is significance.

For reinfection %, we want to know the average for each group and if there is significance between groups. There is also a compl. reinfection which is listed as the number of patients not a percentage. Therefore this number of complex reinfection would be divided by the total number of complex patients for that study to determine the complex reinfection percentage. Then we want to know the average complex reinfection percentage for each group and if there is significance between groups.

For the column "developed bone loss during spacer," only some studies looked at this the available data is listed in the excel sheet.  We want to know the total number of patients that developed bone loss and what percentage of patients developed bone loss in each group.  Only the studies that looked at this would be included in the calculation. For example, in the articulating group there were only 10 patients total who developed bone loss. There were 11 studies in the articulating group that looked at this. The total number of articulating spacers of those 11 studies is tallied from the column "# of articulating".  Then the percentage percentage can be calculated (10/number of articulating from those 11 studies) We want the same thing for the static group and then determine if there is significance.

For the column "pre-existing bone," this is very similar to what we want for the "developed bone loss during spacer." We want the total number of patients who had pre-existing bone loss in each group. Then calculate the % of patients who had pre-existing bone loss using only the studies that looked at this. Then we want to see if there is significance between the articulating and static groups.  That pretty much it for the articulating and static excel sheets

For the excel sheet titled "pre-existing bone loss." This is a subanalysis of patients who recieved  either an articulating (mobile spacer) or a static spacer and what type of pre-existing bone loss they had. They were only 5 total studies that looked at this. The classification system used for bone loss is known as the (AORI) of which there is type I, II, and III. These studies recorded the AORI score for the tibia and for the femur which are listed in the excel sheet.  On this excel sheet the first four studies (#10, 17, 20, 25) are articulating group studies only. Study 44 has both articulating spacers and static spacers. For the first four studies we want to know the total number of each type of bone loss for the four groups. We then want to calculate what percentage of each type of bone loss we had. For example, in column C there is (1+28+11+17=57) so 57 patients with articulating spacers who had AORI I tibial bone loss.  We then refer back to the articulating excel sheet for those four studies (10,17,20,25) to determine the total number of articulating spacers in those four studies. Then calculate the percentage of AORI I tibial bone loss for the articulating group.  We need the same calculating for the AORI II, III tibia and femur etc. Study 44 once again is the only one that looked at pre-existing bone loss for static spacers and is listed in columns J,K, L, M, N, O. We then want to compare the articulating bone loss to the static and see if there is a significant difference between groups.

For the excel sheet titled "Bone loss" this is a subanalysis of patients who received either articulating or a static spacer and developed bone loss while the spacer was implanted. There were only 3 studies that looked at this. These studies simply reported if bone existed on the tibia or femur or combined tibia and femur. One study also quantified the bone loss in mm.   For calculations we want to know the number of patients that developed tibia bone loss, femur bone loss, or combined bone loss in the static and articulating groups. We then want the percentage of patients that developed bone loss by referring back to the static or articulating excel sheet to see the total number of spacers in that study. We then want to know if there is a significant difference between the articulating and static groups and bone loss. For example, in column C there is (10+7+10=27) or 27 patients in the static group who had tibia bone loss. The total number of static spacers for these three studies from the "Static group" excel sheet is (20+7+25=52) 52 patients who received static spacers in these three studies. So 27/52=51.9% in the static group had tibial bone loss. We want the same calculation for the other columns.  Then we want to know if there is a statistically significant difference between the static and articulating groups.

I realize that some of the above may be a little confusing. Please don't hesitate to email or call me at 404-916-5303.  Take a look at it and give me an idea what it would cost to have the data analyzed and then we can proceed. Thanks! I also attached two excel files with the headings relabeled to make things less confusing.