# Analysing Bone Scan Data for the STAMPEDE Clinical Trial

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Background

The STAMPEDE trial is one of the largest clinical studies ever undertaken in prostate cancer with around 8000 men recruited to date. It is testing the additional of a range of therapies to the standard of care which at present is hormone therapy with or without radiotherapy for men who's cancer has not spread. So far we have tested 8 different strategies with 1 new approach in set up. Details about the trial are on www.stampedetrial.org.
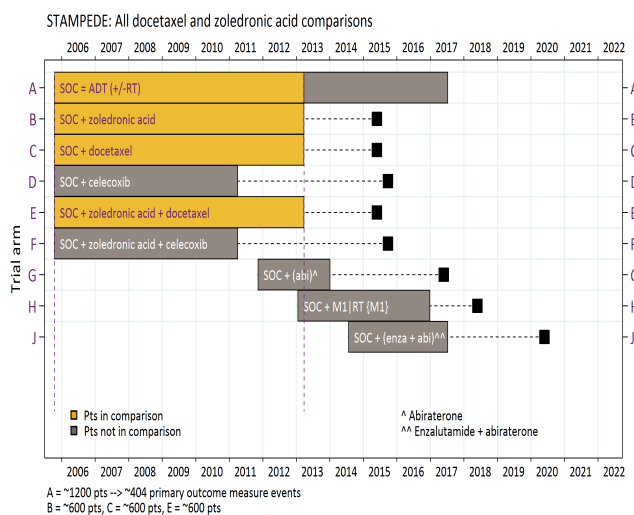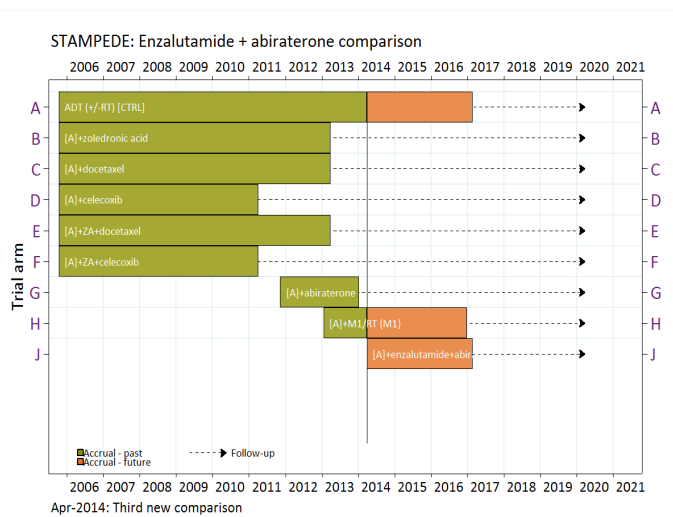
We have recently reported results from three comparisons evaluating the addition of docetaxel, zoledronic acid or both [1,2]. A separate trial CHAARTED reported results using docetaxel [3] and suggested that effects were largest in men with 3 or more bone secondaries. We currently only score bone scans as positive (with bone secondaries) or negative (no bone spread) in the STAMPEDE database.

Proposed project

This will be a pilot to assess a commercial software analysis tool for reading bone scans (scintigraphy), to assess the number and extent of bone tumour metastases, using the ~120 STAMPEDE patients from the Queen Elizabeth Hospital (QEH) Birmingham. These scores will be compared to 'ground truth' scores from scan assessment by a consultant radiologist. The raw imaging data will also be available, so we will be able to apply image processing and machine learning methods to see how well these perform. The goal will them be to compare the manual, commercial, and in-house modelled results with the STAMPEDE trial clinical outcomes, via the MRC Clinical Trials Unit team in London.

We will carry the pilot out at the Queen Elizabeth Hospital Birmingham and an honorary contract will be obtained to allow direct access to scans, records etc, working with QEH's informatics team.

Extension to PhD project

The obvious next step in this work is to extend it from the ~120 QEH STAMPEDE patients to a much larger cohort from the whole trial of 8000+ patients. This can form the basis of a very rich PhD, applying statistical modelling, machine learning, and image processing techniques to a unique, large-scale, clinically-relevant imaging data set.

References

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