# Minutes of the Population-Level Estimation Workgroup

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Present: Kenneth Man, Jenna Reps, Nicole Pratt, Martijn Schuemie, Rae Woong Park, Students in South Korea

Martijn presented slides by Patrick Ryan and Jill Hardin on “Answering the question: ‘What questions to answer?’”. Patrick and Jill argue that only few drug-outcome pairs have been researched (of all possible combinations) and we need to somehow prioritize what the interesting questions are to focus on. Two (complementary) approaches are discussed: relying on clinical expertise to identify important questions, or using the data to identify topics of interest.

For the first approach, Patrick and Jill take the list of 100 priority questions recently identified by the Institute of Medicine as a starting point. After careful evaluation, 35 questions are deemed answerable using the observational data we already have available.

For the second approach, a list of heuristics is defined to empirically identify drug-outcome pairs of interest. Indications (diseases which are sought to treat) of interest are those with at least 2 (prevalent) treatments. For each treatment the self-controlled cohort method is used to identify diseases that appear more frequently after initiation of treatment than before.

The workgroup reviews the list of drug-outcome pairs generated by the second approach. In general it seems that for (almost) all pairs the outcome appears be part of the underlying disease (the indication) for which the drug is prescribed. An example is ciprofloxacin and prostate cancer, where the drug will be used to treat infections that will later turn out to be caused by the cancer. Another example is follitropin beta which is used to treat infertility, hence its association with (complications during) childbirth. An odd case that needs investigating is progesterone and pregnancy complications, since for women on contraceptives it would seem unlikely for them to get pregnant.

Rae suggested we look at the LEOPARD algorithm for removing potential reverse causalities.