

Practical

Validity of RCTs: Identify the bias

In each of the following scenarios, try to recognize the most likely type of bias that might affect the results; discuss your ideas in small groups.

Scenario 1: Some patients with COVID-19 are randomly assigned to be given hydroxychloroquine (HCQ). Because the treating physician considers patients on HCQ to already have a cure for COVID-19, the treating clinician is worried about the patients who don't receive HCQ and orders a chest CT every time upon respiratory deterioration.

Results of the trial show that HCQ additionally protects against pulmonary embolism.

Scenario 2: Some patients with COVID-19 are randomly given HCQ for comparison with placebo. Patients who experience side effects and stop taking HCQ, as well as patients who are transferred to an ICU are excluded from analysis, leading to a loss of 35% of patients.

An analysis of the remaining 65% of patients suggested better outcomes with HCQ.

Scenario 3: Some patients with COVID-19 are randomly assigned to be given HCQ. Although ICU beds are rare and restricted, the study physician is well-connected with the head of ICU, and manages to organize a ventilator bed at least for all of his HCQ intervention patients who require one.

Later published results show a significant increase of 28-day survival in patients treated with HCQ, confirming the validity of this cure.

Scenario 4: A young internist is convinced that HCQ cures COVID-19 and conducts a trial in which she treats the young patients she desperately wants to help with HCQ, while the rest receive a placebo to serve as the control group.

Results suggest that mortality under treatment is much lower compared to placebo.