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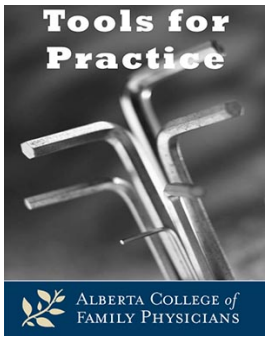
Reviewed: July 13, 2016
Evidence Updated: No new evidence
Bottom Line: No change
First Published: May 15, 2009



CRP = CV?: Should We React to C-Reactive Protein?

Clinical Question: Is high-sensitivity C-reactive protein (hs-CRP) useful in guiding the management cardiovascular (CV) disease primary prevention?

Bottom-line: hs-CRP is not useful at identifying patients at risk of a CV event or those who may benefit from primary prevention interventions.

Evidence:
JUPITER[1] is used by some to justify hs-CRP testing to guide intervention for primary prevention of CV disease:

- Randomized controlled trial (RCT) (~90,000 screened, 17,802 included) with LDL <3.4 mmol/L and hs-CRP ≥2 mg/L followed for median 1.9 years.
  - CV events: Rosuvastatin 1.6% vs. placebo 2.8%, Number Needed to Treat (NNT)=82.
  - All-cause mortality: Rosuvastatin 2.2% vs. placebo 2.8%, NNT=182.
  - Several limitations:[2]
    - Early study termination (which tends to exaggerate benefits[3]).
    - Poor generalizability due to strict eligibility criteria.
    - Sponsorship bias.
    - Incomplete outcome reporting.

No RCT exists where patients are randomized to hs-CRP testing or no testing to guide therapy initiation.

Context:

- Meta-analysis[4] of 52 prospective studies (246,669 patients) found that adding hs-CRP to traditional CV risk factors (i.e. Framingham calculator) did not better identify those at risk of CV events.
- JUPITER added virtually nothing to statin management in primary prevention:
  - Statins reduce CV events by relative ~25-30% across the population[5] (regardless of hs-CRP[6]), and absolute benefit depends on patient's individual CV risk.[5]

    - Mean CRP in JUPITER would change risk obtained from Framingham calculator by only ~1-3%, which has little/no effect on treatment benefits and therefore should not influence decisions.[7]
        - Example: Statin therapy reduces absolute risk by 4.5% (if baseline risk=18%) vs. 5.25% (if baseline risk=21%).
- hs-CRP varies widely from one measurement to the next,[8,9] meaning single measurements are insufficient for decision-making.
- Reductions in hs-CRP are not consistently predictive of improved outcomes.
    - Vitamin A, rosiglitazone and rofecoxib reduced hs-CRP, but worsen clinical outcomes.[7]
- Updated Canadian dyslipidemia guidelines no longer recommend routine use of hs-CRP to stratify patients, including those at "intermediate" risk.[10]

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