

Death by Meat

Written by Dr. Steven Novella
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[A recent study](#) which is getting a lot of press finds a correlation between the consumption of processed meat (bacon, hot dogs, sausage), and all-cause mortality. Like many such studies, however, the exact implications are tricky to work out.

This is an observational study, meaning that it is able to detect correlation only, and not establish causation. However, it should be pointed out that when correlations hold up over numerous types of observation they can be used as a legitimate way to infer probable causation. In other words, I do not dismiss correlational data out of hand. It is one type of evidence, and has to be put into context.

In this case, however, it is very problematic. The study found that people who eat large amounts of red meat and processed meat has a significantly higher rate of death (all cause mortality). However, the correlation with red meat did not hold up when corrected for measurement error, while the correlation with processed meats did. For completely, they also found no association with eating chicken.

The study also found, however, that people who ate large amounts of processed meats were also more likely to smoke and be overweight. The correlation with increased risk of death was still present even when these other factors were controlled for.

However - here is the big weakness of this kind of data. What these correlations show is that people who eat large amounts of processed meat also engaged in other unhealthy behaviors. They can control for such behaviors that they know about and which were reported, but not for all possible unhealthy behaviors. The study reports, for example:

"Men and women in the top categories of red or processed meat intake in general consumed fewer fruits and vegetables than those with low intake. They were more likely to be current smokers and less likely to have a university degree (Table 1). Men with high red meat consumption consumed more alcohol than men with a low consumption, which was not seen in women."

It seems likely, therefore, that processed meat eaters were subject to other health risks not

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accounted for in this study. There is no way to know how much of the apparent risk from eating processed meat is actually due to these other health risks.

The association was also only significant for the 160+grams per day category, when compared to the lowest category. Bacon is about [5-10g per slice](#) (depending on brand and cooking). That about a package of cooked bacon every single day (at least - remember, this is 160+ grams per day).

It is not difficult to believe that if you eat a package of bacon a day you are going to be unhealthy. This doesn't tell us much, however, about those who eat the occasional few slices of bacon, maybe a hot dog or sausage every couple of weeks.

These results are similar to [other studies looking at red meat](#) , which found increased mortality only for the highest consumption groups, those eating red meat every day.

Given the totality of research, it does seem likely that there is a small but real health risk from eating red and especially processed red meats. It is unclear if this risk is due to other associated behavior, or directly to the red meat. It may, for example, have more to do with eating fewer vegetables.

If we take this data at face value, a reasonable recommendation, for those interested in staying healthy, is to limit red and especially processed meats to moderate levels. Having a few servings of red meat a week does not seem to carry any significant health risk. Lean meats - poultry and fish - are fine. Also, eat plenty of vegetables, don't smoke, get enough sleep, and exercise regularly.

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