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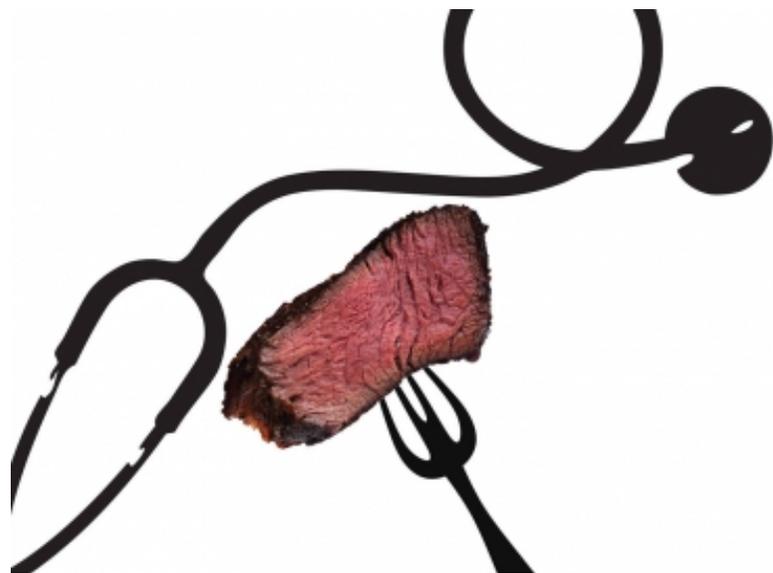
The deadly truth about red meat

Eating red meat could put you on the fast track to an early grave, writes **Balvinder Sandhu**

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It's said that one man's meat is another's poison, but these days it seems increasingly that meat is every man's poison. Stacks of research studies suggest eating red - especially processed - meat increases one's risk of dying from heart disease or cancer. But is it as bad as it's made out to be?

Earlier this year, a study by the Harvard School of Public Health that tracked more than 121,000 people for up to 28 years found that red meat consumption is associated with an increased overall risk of mortality, including from cancer and cardiovascular complications.

One daily serving of unprocessed red meat (about the size of a deck of cards) was associated with a 13 per cent increased risk of mortality, and one daily serving of processed red meat (one hot dog or two slices of bacon) was associated with a 20 per cent increased risk.

"This study provides clear evidence that regular consumption of red meat, especially processed meat, contributes substantially to premature death," says the study's senior author, Frank Hu, a professor of nutrition and epidemiology.

The World Cancer Research Fund (WCRF) defines red meat as beef, pork, lamb and goat, says Charmain Tan, a registered dietitian with Seventeen Nutrition Consultants. "Processed meat is meat preserved by smoking, curing or salting, or by the addition of preservatives. Examples include ham, bacon, pastrami and salami, hot dogs and some sausages."

The main problem with red meat is its very high fat content. Dr Kathy Lee Lai-fun, consultant cardiologist at Cardiac Health Heart Centre in Central, says red meat usually has more fat than white meat - particularly saturated fats, which increase bad cholesterol (or LDL) and is no good for the heart.

"So, indirectly, it may increase coronary heart disease, meaning blockage in the heart vessels," says Lee. "It could also block off the artery going to the brain, which could cause a stroke. It's not healthy for the vessels or the heart because of its fat content."

Lee notes there has been a lot of data to suggest red meat may increase the

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risk of cancer, especially cancer of the duct, such as colorectal and stomach. Other studies suggest a link - albeit weaker - between red meat consumption and cancer in other organs such as the lungs.

Research presented last month at an American Association for Cancer Research conference found that two components of red meat - dietary protein and dietary iron - may combine to form powerful carcinogens called N-nitroso compounds, which increase the risk of bladder cancer. Further, some people with a reduced ability to reverse the effects of these compounds because of a genetic variation were found to be at a particularly high risk.

Dietary protein is made up of amino acids, which can be naturally metabolised into biogenic amines, explains the study's lead researcher, Chelsea Catsburg, from the University of Southern California's Keck School of Medicine. The processing and storage of meat increases amine concentrations. These amines, in the presence of nitrites, generate nitrosamines, which have carcinogenic properties.

In addition, heme iron found in red meat has been shown to increase the formation of nitrosamines from amines.

Catsburg's findings further support recommendations by the WCRF to limit red meat intake and avoid processed meats to reduce risk of stomach and bowel cancer.

"There is no amount of processed meat that can be confidently shown not to increase the risk," says Tan. "It is suggested that the heme iron in red meat damages gut wall membrane, and preservatives which are widely used in processed meats such as bacon, ham, sausages, smoked and preserved meats are found to be cancer-inducing."

How meat is prepared, seasoned and cooked also contribute to its detrimental effects. "Red meats cooked with an open flame and high cooking temperature - such as frying, grilling and barbecuing - generates carcinogens called heterocyclic amines and polycyclic aromatic hydrocarbons on the surface," explains Janice Chong, a dietitian with Raffles Hospital in Singapore. "These chemicals can damage DNA and promote cancer."

Another study from the Keck School of Medicine, published online in August



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in the journal *Carcinogenesis*, provided important new evidence on how red meat and its cooking practices may increase prostate cancer risk.

Examining data from nearly 2,000 men, researchers found that those who ate more than 1½ servings of pan-fried red meat a week increased their risk of advanced prostate cancer by 30 per cent. Men who ate more than 2½ servings of red meat cooked at high temperatures were 40 per cent more likely to develop advanced prostate cancer.

Hamburgers - but not steak - were linked to an increased risk of prostate cancer. "We speculate that these findings are a result of different levels of carcinogen accumulation found in hamburgers, given that they can attain higher internal and external temperatures faster than steak," says lead researcher Mariana Stern.

It's not all bad news with red meat though; it does have some benefits. "Red meat is a good source of protein, vitamins and minerals, such as iron, zinc and B vitamins," says Tan. "Iron is essential to our immune function and red blood cell production. Zinc is needed for hair growth and sperm production."

There have even been a few studies in support of eating red meat - albeit in controlled and lean portions. Research published last year in the *American Journal of Clinical Nutrition* showed that as long as saturated fat levels in one's diet are controlled and lean beef portions kept in check - about 28 grams a day (uncooked) - beef can be part of a heart-healthy diet. Such a diet can lead to equal reductions in cholesterol and risk of heart disease as found with white meat and fish, the researchers say.

The WCRF advises people to have no more than 500 grams (cooked) red meat per week and avoid processed meats, says Tan.

"Slow down the cooking time with a low flame. Techniques such as braising, steaming, poaching, stewing and microwaving meats produce fewer carcinogenic chemicals," says Chong. "Cut off any charred portions of the meat and avoid processed meat, if possible."

Executive chef Gan Swee Lai, of Gordon Grill at Goodwood Park Hotel in Singapore, says the healthiest way to cook red meat would be sous vide - "a fillet or striploin is vacuum packed and then cooked in water at between 55 and 58 degrees Celsius. Lightly season with good sea salt and ground



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and 30 degrees Celsius. Lightly season with good sea salt and ground pepper before serving.

"Or you can blanch thin slices of meat in home-made vegetable broth - like a Japanese shabu shabu," adds Gan. "You can make a good broth with celery, carrots and onions."

To satiate your protein cravings, dietitians advise trying other sources. In the Harvard study, replacing one serving of total red meat with one serving of a healthy protein source was associated with a lower mortality risk: 7 per cent for fish, 14 per cent for poultry, 19 per cent for nuts, 10 per cent for legumes, 10 per cent for low-fat dairy products and 14 per cent for whole grains.

Says Lee: "There's really no need to take [red meat] and there's nothing in it that you can't absorb from other healthier sources. There are also fewer health problems for people who abstain from red meat."

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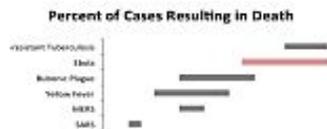
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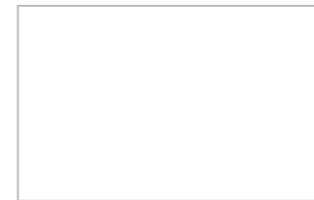


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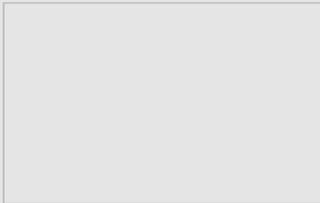
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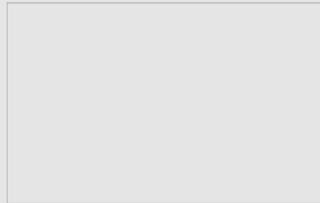
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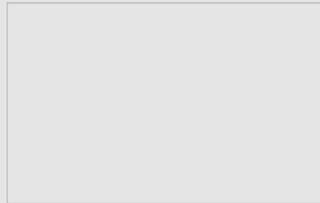
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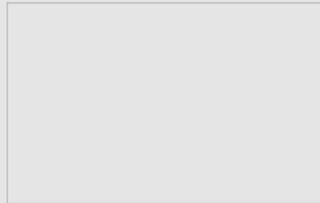
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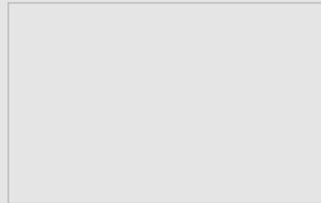
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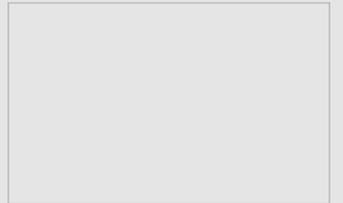
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