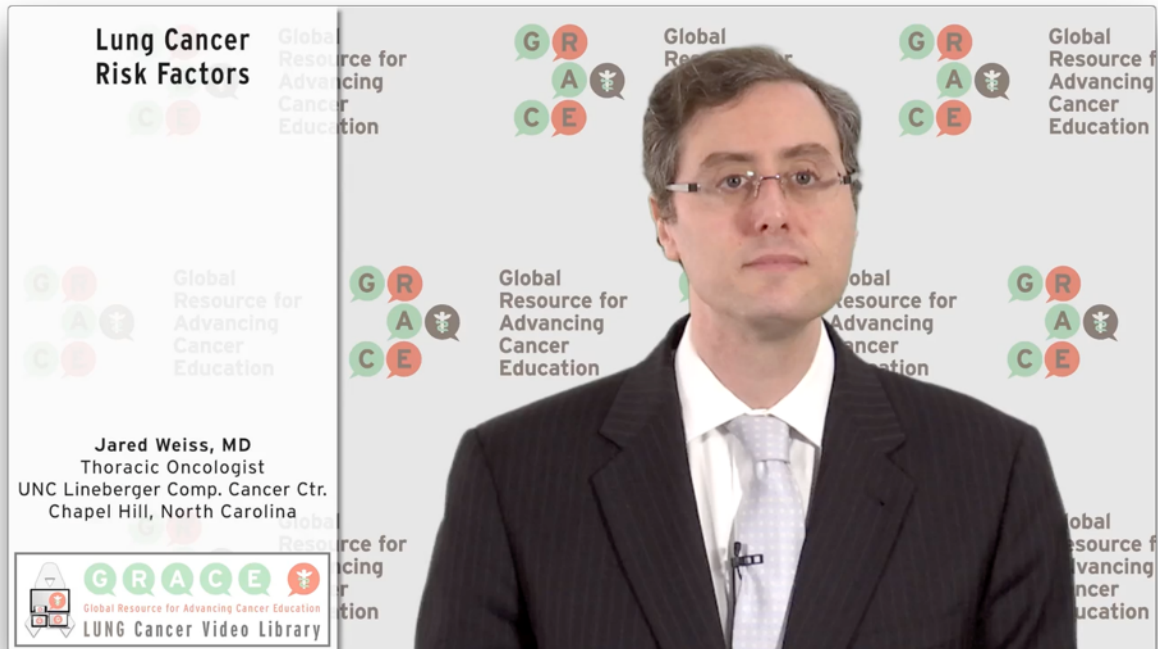




Lung Cancer Risk Factors



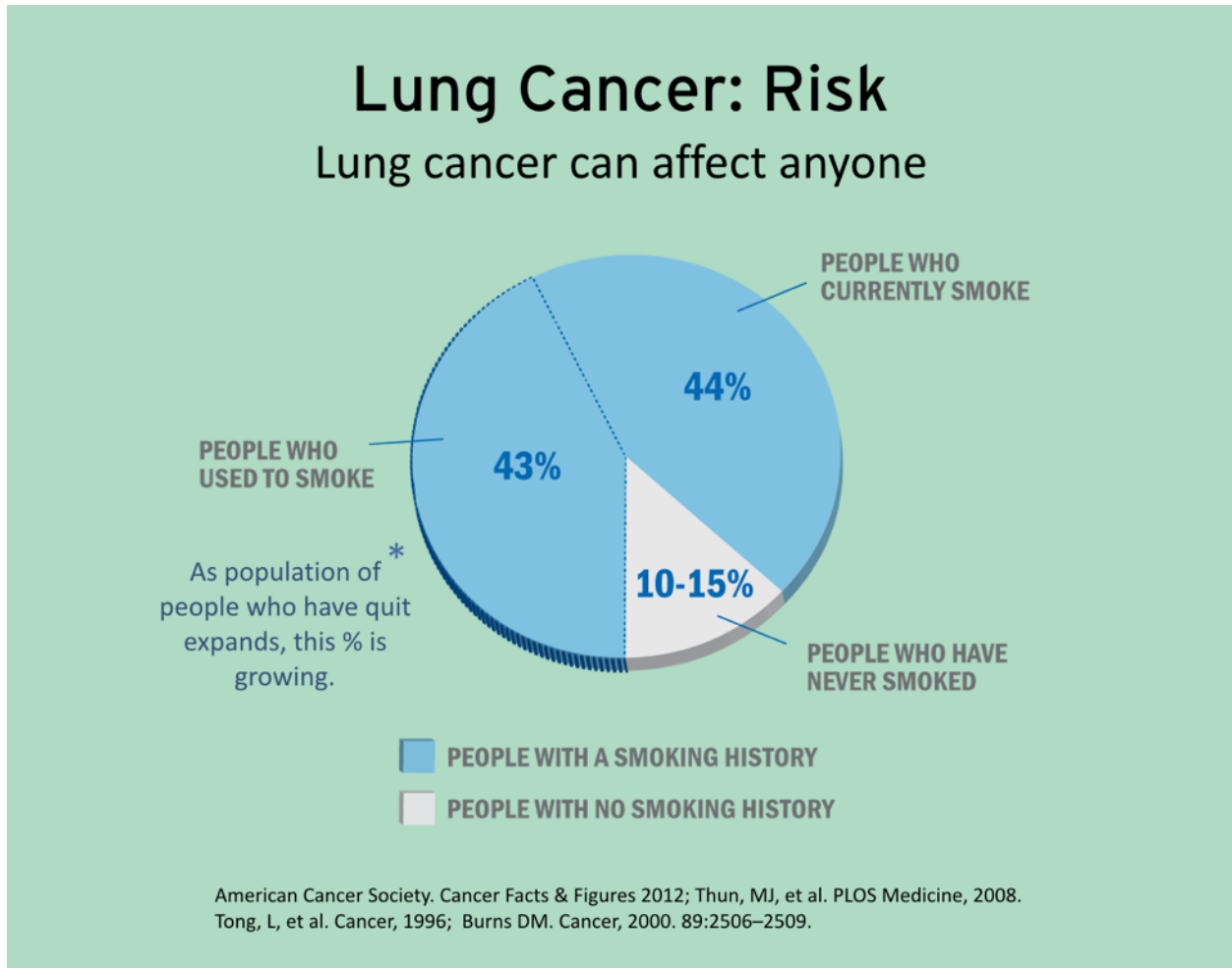
TRANSCRIPT & FIGURES

I'm going to speak to you today about lung cancer risk factors.

Lung Cancer Risk Factors

- Smoking
- Smoking
- Smoking
- Other
 - Asbestos
 - Radon
 - Cooking and other fumes
 - Prior radiation
 - Other lung disease
 - Dietary factors
 - Endocrine factors
 - Oncogenic viruses
- Genetics

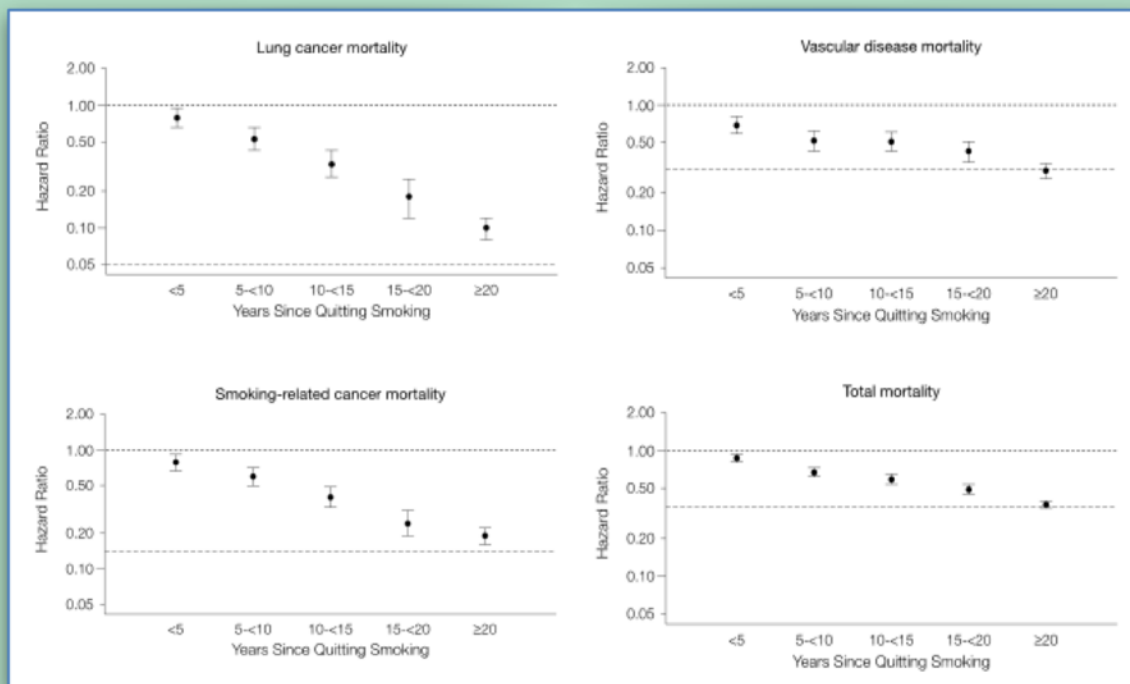
Of course we cannot ignore that smoking is the dominant risk factor for lung cancer.



Eighty-five percent or so of our patients have smoked at some point in their lives. However we cannot ignore as well that 15% of so of our patients have never smoked, and about 45% have long since quit.

What to do with this data? In my opinion, we need to really focus on smoking cessation.

Smoking Cessation: Earlier is Better, but it's worth quitting any time

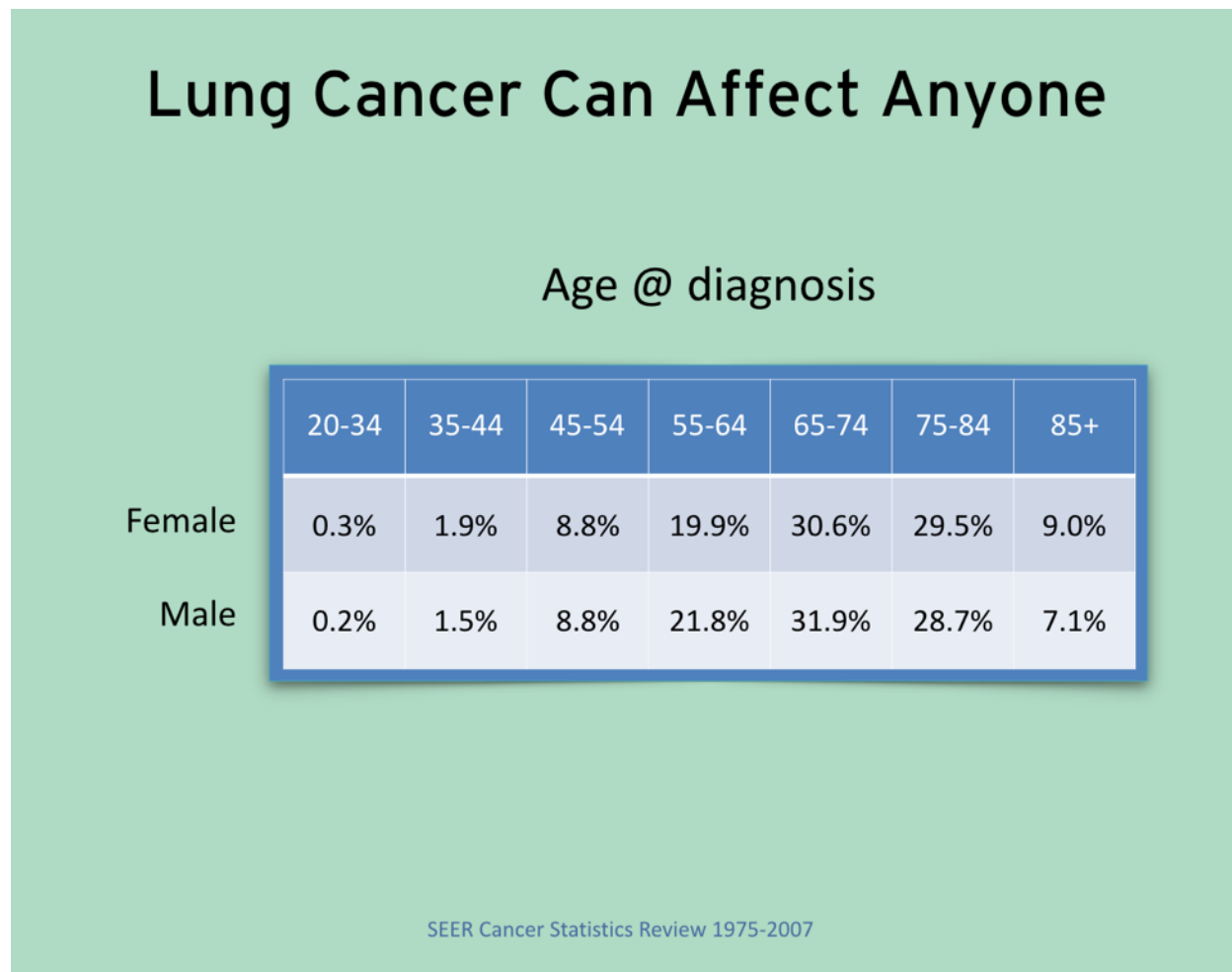


JAMA, Vol. 299, Issue 17: 2046, 2008

So at top left you see that smoking cessation at any time is worthwhile. Immediately upon quitting smoking, the lung cancer risk falls. This risk falls over time. Stated another way: it's worth quitting cigarettes at any time point, but the sooner the better.

This effect on health is not just lung cancer. At the bottom left, you can see other cancer mortality declines because lung cancer is not the only smoking-related cancer. Cardiovascular disease competes with cancer for the leading cause for death in Americans – actually I think it edges it out, and you can

see that risk declines with quitting smoking. Again, the sooner the better, and for total mortality, shown at the bottom right, the same effect holds.



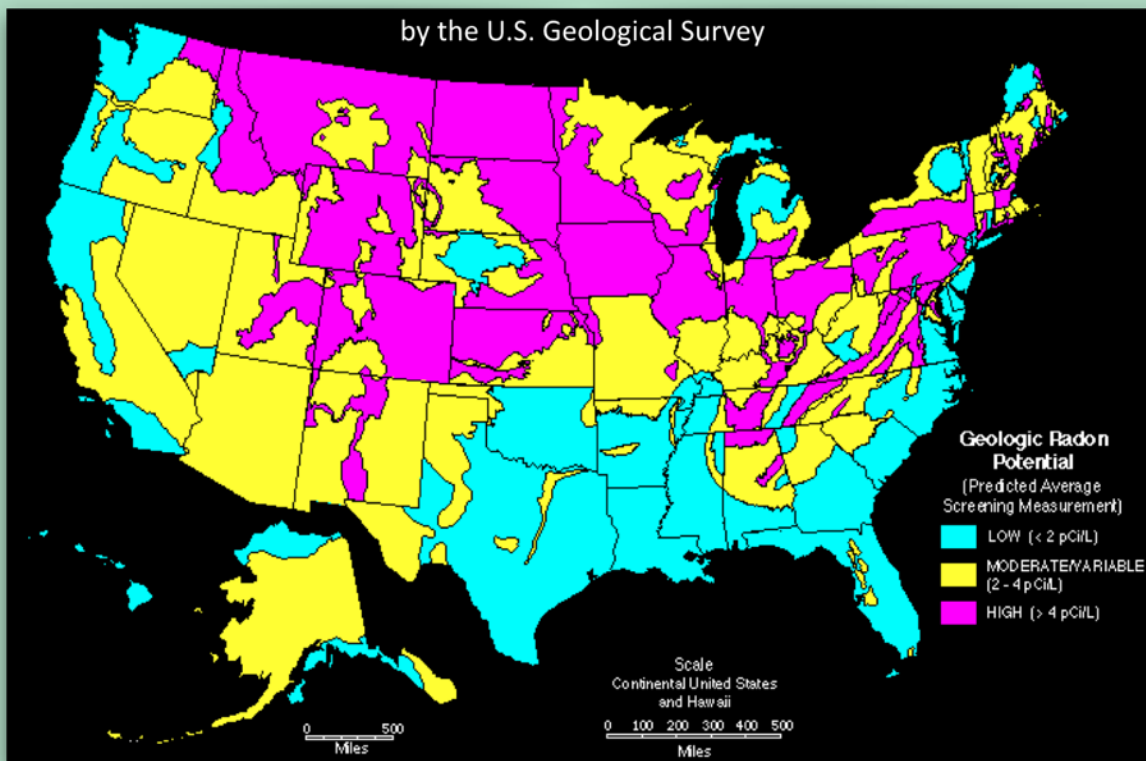
Lung cancer can affect anyone, regardless of age. On the far left of this table you can see that lung cancer can strike very young people – I've taken care of some of them. However you can also see in looking at the far right side of this curve that age is a legitimate risk factor. Our median age of presentation is about 71, and so this risk does go up with chronologic age.

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There are other risk factors for lung cancer and we need to spend some time particularly on those that are preventable. Asbestos is an important risk factor. This risk varies by fiber type, it also varies by the nature of the exposure. It turns out that occupational exposure, working in a factory on asbestos is a much greater risk factor than environmental exposure, meaning like having asbestos in the walls of the building you live in or something like that. It's also worth noting that there's a strong interaction factor here with smoking. Asbestos is bad, smoking is bad – put them together and you have something truly deadly.

GENERALIZED GEOLOGIC RADON POTENTIAL OF THE UNITED STATES



Radon is another major risk factor and also important because it is preventable. This one has a great difference in incidence by geography, shown here, and it's important to talk about radon because you can do something about this risk.

Radon risk can be addressed

- ➡ Radon exposure in homes and businesses can be mitigated.
- ➡ Easy prevention message for family physicians.
- ➡ See www.epa.gov/radon for information on reputable radon detection and mitigation options.
- ➡ Radon test kits available for a small fee from
NC DHHS: (919) 571-4141 or
www.ncradon.org/purchasetestkit.htm

There are kits that can detect radon in your home, and if it's found it can be mitigated.

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Cooking fumes are a major risk factor, particularly in developing countries and this risk varies by the type of coal used. It turns out that bituminous coal (I didn't know that word before making this podcast) is the kind that makes a lot of smoke and this dramatically increases the lung cancer risk. In contrast, cleaner coals like anthracite coal seem to be a bit safer. European studies have shown that diesel exhaust contributes to lung cancer risk, but the relative risk increase is somewhat small.

The best data on radiation comes from Hodgkin's disease and breast cancer, where radiation to the lung roughly triples the risk of later lung cancer.

In terms of pulmonary diseases like COPD, it's a little hard to tease apart the component caused by smoking because smoking does cause both these diseases as well as lung cancer and the part caused by the actual pulmonary disease, but these pulmonary diseases are inflammatory and it makes common sense that they probably do increase the lung cancer risk a little bit.

Dietary factors are huge in the public consciousness. If you search the web, if you Google, you would think they were the only risk factor and that you can mitigate your lung cancer risk substantially by diet. In particular there was an idea out there that diets high in fruits and vegetables would lower the lung cancer risk. I wish this were true because this is the kind of diet that also prevents some other cancers and helps prevent cardiovascular morbidity and mortality, but the best data available points out that it's probably just not true. There's also a big idea out there that beta carotene supplementation might decrease the lung cancer risk. The best data out there on this shows that not only does it not help, but it might actually increase the lung cancer risk. Again, these may not be the findings that we were looking for, it may not be consistent with all of the stuff in the popular press, but we have to go where the actual data leads us.

There's real data out there that combined estrogen and progesterone hormones may increase the lung cancer risk a bit – for those more interested in this, Dr. West did an excellent post on this a few years ago that to my mind is still quite current.

The only other cancers that I treat other than lung cancer are cancers of the head and neck. In the tonsils and the base of the tongue, it is clear now that

the human papillomavirus, the same one that can cause genital warts, and its high risk forms cause cervical cancer, can also cause cancers of the tonsil and base of tongue. These viruses can also be found in the upper respiratory passages, so there was an idea that perhaps they're causing cancer there. It's an interesting idea, it's still undergoing further research, but to my mind the best available data on this don't convince me that it's actually true.

The final subject is genetics. We're talking here about heritable genetics, the kind that you receive from your parents and that you can potentially pass on to your children, not the molecular changes that we talk about so often on GRACE. This is actually a rather rare risk factor. Lung cancer is one of the least heritable of the cancers, and if you want more information on this, this will be the subject of another podcast.

I thank you for your attention.

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