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# Immunotherapy Combination Is Better than Chemotherapy for Non-Small Cell Lung Cancer

By Julie Grisham, **Monday, April 16, 2018**



Medical oncologist Matthew Hellmann is studying immunotherapy combinations for lung cancer.

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## Summary

Combining the immunotherapy drugs ipilimumab and nivolumab results in better outcomes in people whose tumors have a lot of mutations.

A treatment that combines two specific immunotherapy drugs has already had success in some people with advanced [melanoma](#) and [kidney cancer](#). A phase III study has now shown that the same combination was also effective for people with [lung cancer](#). The international research team that conducted the trial was led by Memorial Sloan Kettering medical oncologist [Matthew Hellmann](#). The findings are being presented at the [2018 American Association for Cancer Research \(AACR\) annual meeting](#). They are being published online in the *New England Journal of Medicine* as well.

The clinical trial was called CheckMate -227. It looked at combining nivolumab (Opdivo<sup>®</sup>) and ipilimumab (Yervoy<sup>®</sup>) to treat people with advanced non-small cell lung cancer, the most common type of lung cancer. The analysis being presented focused on people with a molecular marker indicating that there were many mutations in their tumors. Previous studies from MSK have suggested that tumors with many mutations are likely to respond to immunotherapy. After a minimum follow-up of nearly a year, those whose tumors had many mutations who received the immunotherapy combination were 42% less likely to have their cancer progress compared with those in the control group, who got standard-of-care chemotherapy.



## IMMUNOTHERAPY: HOW IT WORKS

VIDEO | 01:20

The immune system can help fight cancer.

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“This trial had two important findings,” says Dr. Hellmann, who is a member of the [Parker Institute for Cancer Immunotherapy](#) at MSK. “First, it showed us that the combination of these immunotherapies together control lung cancer better than chemotherapy. Second, it showed that molecular markers are effective in helping to predict which people will benefit from immunotherapy.

“The results of this study highlight the importance of molecular profiling to identify the best treatment options for each patient,” he adds. “We are already doing this type of testing routinely for people with lung cancer, for example, with [MSK-IMPACT™](#).”

## Leading the Way in Clinical Trials

Ipilimumab and nivolumab are both in the class of drugs called [immune checkpoint inhibitors](#). These drugs help control cancer by taking the brakes off the immune system. This allows the white blood cells called T cells to attack tumors. MSK physician-scientist [Jedd Wolchok led the clinical research](#) that resulted in the approval of ipilimumab in 2011 by the US Food and Drug Administration for the treatment of advanced melanoma.

Dr. Wolchok also [led the pivotal clinical trial](#) that resulted in FDA approval for the combination of ipilimumab and nivolumab in melanoma in 2015. Because that combination has worked well for melanoma, researchers decided to evaluate it for other cancers as well, including non-small cell lung cancer. Nivolumab on its own is already approved for this type of lung cancer, as well as for a number of other cancers.

## Importance of Mutational Burden

Despite the striking success of checkpoint inhibitors at stopping cancer growth and even eliminating tumors in some people, [these drugs don't work for everyone](#). Research at MSK has focused on why that's the case and looked for ways to predict beforehand who is most likely to benefit.

One important discovery that's been made in many types of cancer is that tumors with a greater number of mutations tend to respond better to checkpoint inhibitor drugs than those with fewer mutations. This characteristic is called a high tumor mutation burden (TMB). In a [related study](#), published online April 12, 2018, in the journal *Cancer Cell*, Dr. Hellmann and colleagues at MSK and elsewhere focused on

the role of TMB in people with non-small cell lung cancer who were treated with nivolumab plus ipilimumab. The goal of study was to examine was to link the molecular features of the tumors to the patients' outcomes after treatment with nivolumab plus ipilimumab in a phase I trial called CheckMate-012.

Based on their analysis, the researchers found that a high TMB was a good way to predict the effectiveness of combination immunotherapy in people with non-small cell lung cancer. The findings were used to guide the testing that was later done in the CheckMate -227 trial. TMB is already part of the results obtained from the MSK-IMPACT test.

**“This drug combination shows that some people can be spared treatment with chemotherapy.”**



**Matthew D. Hellmann**  
medical oncologist

## A New Treatment Option for Non-Small Cell Lung Cancer

In CheckMate -227, among people whose tumors had a high TMB, the response rate was much better for those who got immunotherapy rather than chemotherapy. After getting the combination, 45% had their tumors shrink compared with 27% of those who got chemotherapy. And responses were distinctly durable with immunotherapy, where 68% were still responding to the immunotherapy combination one year after treatment started compared with only one-quarter of those who got chemotherapy.

The researchers say that immunotherapy is an important addition to the roster of treatment options for people with advanced non-small cell lung cancer. “This drug combination shows that some people can be spared treatment with chemotherapy,” Dr. Hellmann says. “And if a person stops responding to immunotherapy, they can still be given chemotherapy for additional benefit.”

Funding information: This study was funded by Bristol-Myers Squibb and Ono Pharmaceutical.

## Comments

Commenting is disabled for this blog post.

Santina Tadduni

Apr 16, 2018 • 9:31 PM

Could this be tried on small cell lung cancer

Memorial Sloan Kettering

Apr 17, 2018 • 5:33 PM

Dear Santina, according to Dr. Hellmann, nivolumab with or without ipilimumab can be considered for patients with small cell lung cancer if chemotherapy is not initially successful. Thank you for your comment.

Amy Miller

Apr 20, 2018 • 7:33 AM

My mom 76, diagnosed 6 months ago .has stage IV lung cancer Mets to bone. She started carboplatin, Alimta, keytruda but still progressed. Then Gemzar 2 cycles and it still spread on spine. Then radiation on lung and spine. Weakened her and 1dose Taxol put her in hospital for a week UTI and bronchitis. Now getting pain medicine right. And home to NY....are there other options?

Memorial Sloan Kettering

Apr 20, 2018 • 3:45 PM

Dear Amy, we're sorry to hear about your mom. If she would like to come to MSK for a consultation, she can call **800-525-2225** or go to <https://www.mskcc.org/experience/become-patient/appointment> for more information. Thank you for your comment and best wishes to both of you.

Richard Cowan

May 7, 2018 • 10:57 AM

A problem with immunotherapy drugs is that we don't know when to stop taking it. Is there a current study at MSK reviewing every patient who has taken Opdivo and other similar classes of drugs and compared to when they stopped and how fast the cancer came back?

Memorial Sloan Kettering

May 7, 2018 • 2:17 PM

Dear Richard, this is something that MSK is looking at. We continue to follow many of the patients we have treated over the years. Thank you for your comment.

Gary Goldsmith

Jun 10, 2018 • 9:51 AM

My fiance Pam has NSCLC with mets to brain and tongue She was tested to she if she was a candidate for keytruda test showed her to be 99% responsive but after 3 treatments the tumor in lung, 2 in brain and 1 on brain stem were unresponsive and her tongue was now more than 80% cover with cancer. She was switched to opdivo before receiving her second opdivo treatment the tongue was clear of caancer, blew away the doctors at Penn medicine..While she did have radiation to brain it appears that the 2 tumors are gone and they think that they are looking at scare tissue where tumor was on brain stem.The tumor in lung is 1\4 the sizeof orginal things were going incredibly well until mar 25 when she almost bled out in our bed. The tumor in lung is against the main vein and they think radiation weakened the wall of that vein and the tumor had been pressing on it regressed away from the vein putting her in hospital for 2 weeks 5 of them days in ICU. Then this week chest scan was positive but a new mass in brain was discovered onmri this week. I am a firm believer in immune therapy actually insisting on it when she was first diagnosed and they were setting her up for chemotherapy.I lworried the optivo is no longer effective and would really like to see her get car t-cell therapy is there any trials at MSK

Memorial Sloan Kettering

Jun 11, 2018 • 9:20 AM

Dear Gary, we're very sorry to hear about this. If your fiancee would like to come to MSK for an evaluation and to learn about the treatments that we have available, the number to call is [800-525-2225](tel:800-525-2225). You can go to <https://www.mskcc.org/experience/become-patient/appointment> for more information. Thank you for your comment, and best wishes to both of you.

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