

Should I Take Prophylactic Cranial Irradiation (PCI) or Not?

A decision aid to discuss options with your doctor

This decision aid is for you if:

- Your doctor says you have small cell lung cancer that is only within your chest
- You have had some shrinkage of your tumor with chemotherapy and chest radiation treatment

What is Prophylactic Cranial Irradiation, often referred to as PCI?

- PCI is outpatient treatment in a radiation center with 10 treatments, each taking less than 30 minutes
- PCI is painless

What are your options?

- No PCI
- PCI - Prophylactic Cranial Irradiation

Three things to take into account. Which one do you want to know about first?

- Mortality
- Metastases to the brain
- Memory

MORTALITY

Blocks of 100 persons show a 'best estimate' of what happens to 100 people with small cell lung cancer who have PCI or no PCI. The shaded areas show the number of people affected. There is no way to know in advance if you will be one of the affected.

If 100 people have PCI, 5 more people (shown in medium grey) will be alive at 3 years.

**No PCI - 15 alive
85 not alive**



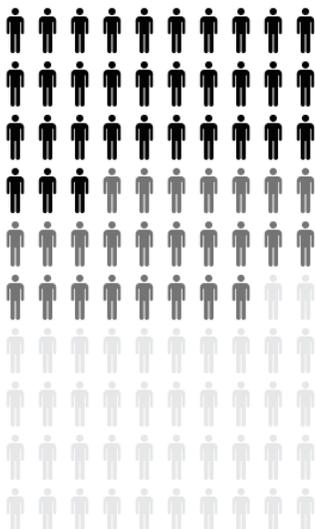
**PCI - 20 alive
80 not alive**



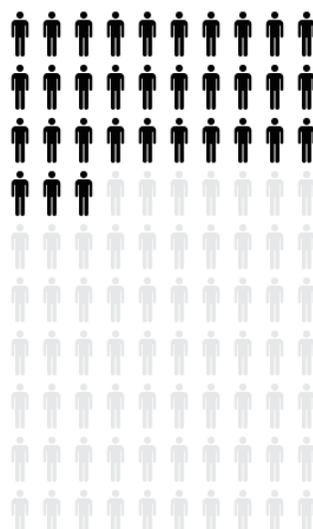
METASTASES

If 100 people have PCI, 25 fewer people (shown in medium grey) will develop brain metastases

**No PCI - 58 get brain metastases
42 avoid this**



**PCI - 33 get brain metastases
67 avoid this**



MEMORY (If age 60 years or less)

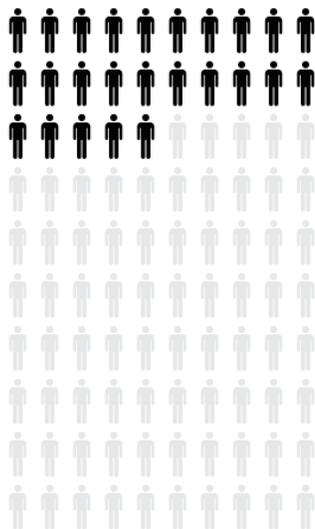
If 100 people age 60 years or less have PCI, 25 more people (shown in medium grey) will have some mild memory problems a few months later, likely due to the PCI treatment.

An example of a memory problem after PCI is more need to make a grocery list rather than just trying to remember everything.

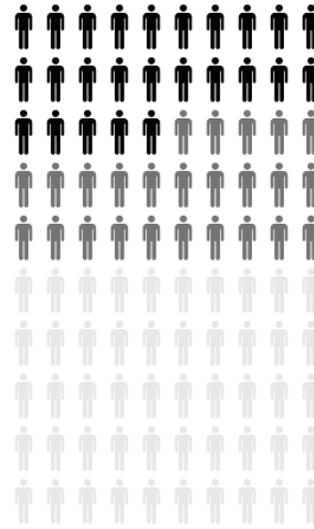
These mild memory issues are permanent.

However, even patients who do not have PCI may also develop memory issues, some due to the brain metastases that can develop and others due to getting older.

No PCI - 25 get some memory problems
75 avoid this



PCI 50 get some memory problems
50 avoid this



In addition to the permanent mild memory problems, there are other mild temporary harms from PCI. You may experience one or more of these.

- Fatigue in 30 of 100 people. It starts during PCI and usually lasts for a few weeks.
- Headache in 24 of 100 people, usually mild.
- Nausea in 23 of 100 people, usually mild, and often occurs at the same time as headaches.
- Complete hair loss on scalp in 100 of 100 people. It usually occurs by the end of PCI or within a week of finishing PCI. The hair comes back a few months later but sometimes thinner than it was before.

MEMORY (If age more than 60 years)

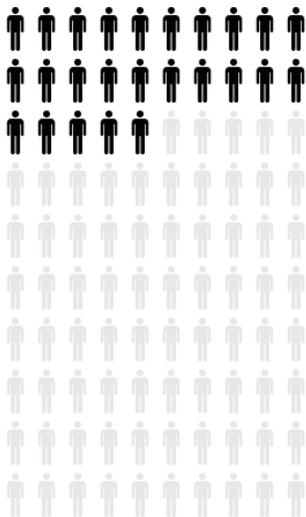
If 100 people more than 60 years old have PCI, 55 more people (shown in medium grey) will have mild memory problems a few months later, likely due to the PCI treatment.

An example of a memory problem that could happen after PCI is more of a need to make a grocery list rather than just trying to remember everything.

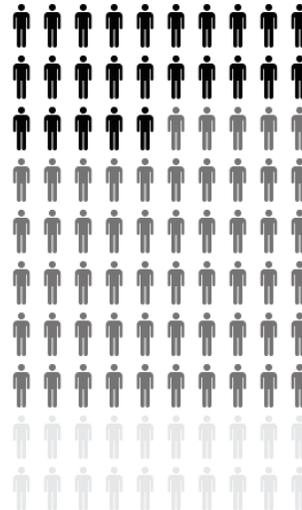
These memory issues are permanent.

However, even patients who do not have PCI may also develop memory issues, some due to the brain metastases that can develop and others due to getting older.

No PCI - 25 get some memory problems
75 avoid this



PCI - 80 get some memory problems
20 avoid this



In addition to the permanent mild memory problems, there are other mild temporary harms from PCI. You may experience one or more of these.

- Fatigue in 30 of 100 people. It starts during PCI and usually lasts for a few weeks.
- Headache in 24 of 100 people, usually mild.
- Nausea in 23 of 100 people, usually mild, and often occurs at the same time as headaches.
- Complete hair loss on scalp in 100 of 100 people. It usually occurs by the end of PCI or within a week of finishing PCI. The hair comes back a few months later but sometimes thinner than it was before.

What matters most to you?

Common reasons to choose each option are listed below. Check ✓ how much each reason matters to you on a scale from 0 to 5.

'0' means it is not important to you

'5' means it is very important to you

Reasons to choose PCI

	Not Important			Very Important		
How important is it to you to not get brain metastases?	①	②	③	④	⑤	
How important is it to you to live longer?	①	②	③	④	⑤	

Reasons to choose not to have PCI

	Not Important			Very Important		
How important is it to you to keep all your memory and concentration?	①	②	③	④	⑤	
How important is it to you to not lose your hair temporarily?	①	②	③	④	⑤	

What other health factors may affect your choice?

Check ✓ any that apply and discuss your concerns with your Healthcare Provider.

- Difficulty with lying flat for 15 to 30 minutes
- Fatigue
- Claustrophobia
- None of these apply to me

What other factors may affect your choice?

Check ✓ any that apply and discuss your concerns with your Healthcare Provider.

- Financial concerns
- Transportation problems
- None of these apply to me

What else do you need to prepare for decision making?

Find out how well the decision aid helped you learn the key facts.

Check ✓ the best answer:

	No PCI	PCI	Both Same	Don't Know
Which option has the highest chance of preventing brain metastases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Which option has the lowest chance of causing mild memory or concentration problems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Which option do you prefer?

Check only one.

- No PCI
- PCI
- I don't know

This information is not intended to replace the advice of a healthcare provider.

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References

Aupérin A, Arriagada R, Pignon JP, et al. Prophylactic cranial irradiation for patients with small-cell lung cancer in complete remission. Prophylactic Cranial Irradiation Overview Collaborative Group. *N Engl J Med*. 1999 Aug 12;341(7):476-84.

Le Pécoux C, Dunant A, Senan S, et al; Prophylactic Cranial Irradiation (PCI) Collaborative Group. Standard-dose versus higher-dose prophylactic cranial irradiation (PCI) in patients with limited-stage small-cell lung cancer in complete remission after chemotherapy and thoracic radiotherapy (PCI 99-01, EORTC 22003-08004, RTOG 0212, and IFCT 99-01): a randomised clinical trial. *Lancet Oncol*. 2009 May;10(5):467-74.

Le Pécoux C, Laplanche A, Faivre-Finn C, et al; Prophylactic Cranial Irradiation (PCI) Collaborative Group. Clinical neurological outcome and quality of life among patients with limited small-cell cancer treated with two different doses of prophylactic cranial irradiation in the intergroup phase III trial (PCI99-01, EORTC 22003-08004, RTOG 0212 and IFCT 99-01). *Ann Oncol*. 2011 May;22(5):1154-63

Cranial irradiation for preventing brain metastases of small cell lung cancer in patients in complete remission. *Cochrane Database Syst Rev*. 2000;(4):CD002805.

Wolfson AH, Bae K, Komaki R, et al. Primary analysis of a phase II randomized trial Radiation Therapy Oncology Group (RTOG) 0212: impact of different total doses and schedules of prophylactic cranial irradiation on chronic neurotoxicity and quality of life for patients with limited-disease small-cell lung cancer. *Int J Radiat Oncol Biol Phys*. 2011 Sep 1;81(1):77-84.