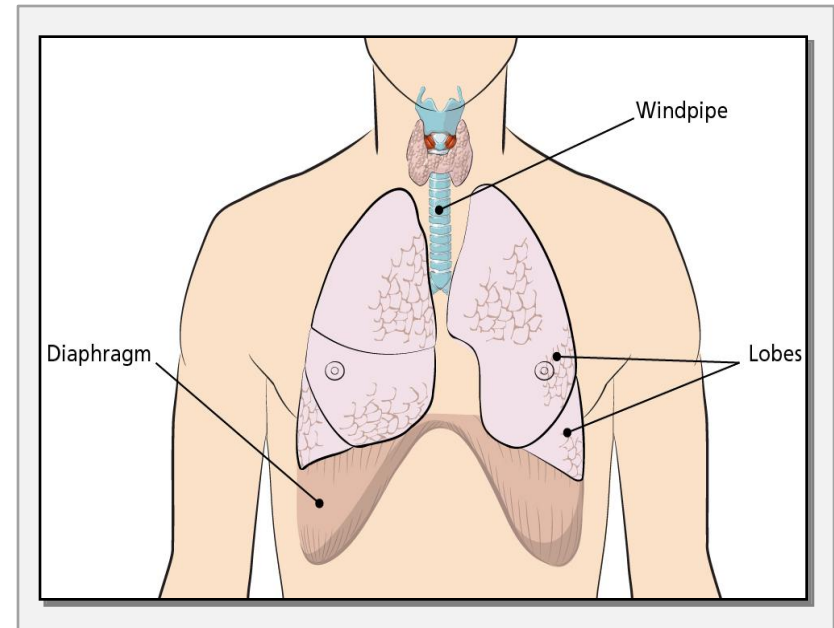


# Why We're Here

- The lungs
- What is lung cancer?
- How common is it?
- Risks & symptoms
- Diagnosis & treatment options

# What Are Lungs? What Do They Do?<sup>1</sup>

- Located in the chest
- Allow you to breathe
- Provide oxygen to the body
- Remove carbon dioxide from the body



# What Is Lung Cancer?<sup>1</sup>

- Starts with abnormal cells growing out of control
- Can start in the bronchus or lungs
- Can spread beyond the lungs into other tissues, organs, and bones

## **QUICK FACT:**

*Lung cancer is the most common cancer worldwide, with 1.2 million new cases every year.<sup>2</sup>*

1. <http://www.cancer.gov/cancertopics/wyntk/lung/page3>

2 World Health Organization “Global cancer rates could increase by 50% to 15 million by 2020,” [www.who.int/en/](http://www.who.int/en/).

# What Is Small Cell Lung Cancer (SCLC)?

- Difficult to treat because it's fast growing<sup>1</sup>
- Forms in the breathing tube or lung tissues<sup>1</sup>
- Spreads quickly and early<sup>1</sup>
- Makes up ~10%-15% of all lung cancers<sup>2</sup>
- Usually caused by smoking<sup>1</sup>

1. <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001180/>

2. <http://www.cancer.org/Cancer/LungCancer-Non-SmallCell/DetailedGuide/non-small-cell-lung-cancer-what-is-non-small-cell-lung-cancer>

# What Is Non-Small Cell Lung Cancer (NSCLC)?<sup>1</sup>

- NSCLC makes up ~ 85%-90% of all lung cancers diagnoses<sup>1</sup>
- There are 3 types of NSCLC:
  - Squamous cell carcinoma
    - 25%-30% of all lung cancers
    - Usually found in middle of lungs near bronchus
  - Adenocarcinoma
    - 40% of all lung cancers
    - Usually starts in mucus-producing glands of lung
  - Large cell carcinoma
    - 10%-15% of all lung cancers
    - Grows and spreads quickly

## QUICK FACT:

*Lung cancer is often not detectable until stage III due to lack of symptoms. Take charge of your health today by speaking with your doctor.*

# How Common Is It?<sup>1</sup>

Which one of the following cancers causes more deaths than lung cancer?

(A) Colon (B) Breast (C) Prostate (D) None

**Answer: D. Lung cancer is the most common cause of cancer related deaths in the US.**

**QUICK FACT: More than 221,000 new cases of lung cancer have been diagnosed so far in 2011**

# NSCLC Risk Factors

- Smoking tobacco<sup>1</sup>
  - 85-90% of lung cancer deaths are a result of smoking
- Secondhand smoke<sup>2</sup>
- Personal or family history of lung cancer<sup>2,3</sup>
- Age<sup>2,3</sup>
- Radiation therapy to the lungs<sup>3</sup>
- Other risk factors:
  - Radon<sup>2,3</sup>
  - Asbestos<sup>2,3</sup>
  - Arsenic<sup>2</sup>
  - Air pollution<sup>2,3</sup>

**MYTH:** *Only those who smoke tobacco will get lung cancer.*

**FACT:** *Secondhand smoke causes 3,000 lung cancer deaths each year.<sup>2</sup>*

1. <http://www.cancer.org/Cancer/LungCancer-Non-SmallCell/DetailedGuide/non-small-cell-lung-cancer-what-causes>

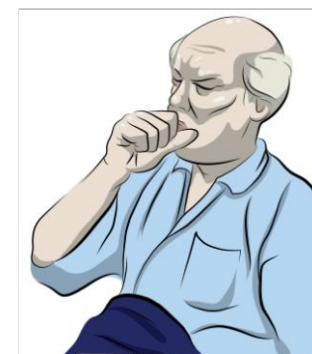
2. <http://www.cancer.org/Cancer/LungCancer-Non-SmallCell/DetailedGuide/non-small-cell-lung-cancer-risk-factors>

3. <http://www.cancer.gov/cancertopics/wyntk/lung/page4>

# NSCLC - Common Symptoms<sup>1</sup>

- Constant cough
- Trouble breathing
- Shortness of breath
- Continuous chest pain
- Coughing up blood
- Hoarse voice
- Frequent lung infections
- Always feeling tired
- Unexplained weight loss

**QUICK FACT:** *Lung cancer is often present without symptoms.*





# How Is NSCLC Diagnosed?



- **Imaging Tests:**
  - Chest X-ray<sup>1,2,3</sup>
  - CT scan<sup>1,2,3</sup>
  - MRI scan<sup>2,3</sup>
  - PET scan<sup>2,3</sup>
  - Bone scan (less common)<sup>2,3</sup>
- **Non-Imaging Tests:**
  - Sputum cytology<sup>1,2</sup>
  - Biopsy<sup>2,3</sup>
  - Blood tests<sup>1,2</sup>
  - Pulmonary function tests<sup>2</sup>

# How Are Stages Defined?

## Stage I

- Isolated to the lungs<sup>1</sup>
- 45-49% survival rate<sup>2</sup>

## Stage II

- Spread to nearby lymph nodes & bronchus/pleura<sup>1</sup>
- ~30% survival rate<sup>2</sup>

## Stage III

- Spread to nearby organs<sup>1</sup>
- ~5-14% survival rate<sup>2</sup>

## Stage IV

- Spread to other body parts<sup>1</sup>
- 1% survival rate<sup>2</sup>

1. <http://www.cancer.gov/cancertopics/wyntk/lung/page8>

2. <http://www.cancer.org/Cancer/LungCancer-Non-SmallCell/DetailedGuide/non-small-cell-lung-cancer-survival-rates>

# Questions To Ask Your Doctor

- What are my options?
- What treatment is best for me?
- How do I keep myself healthy during/after treatment?
- Are there dietary restrictions I should follow?
- What can I expect after treatment?



# NSCLC Treatment Options

	Surgery	Radiation	Chemotherapy	Targeted therapy
<b>What it means</b>	Removal of: <ul style="list-style-type: none"> <li>• Partial lobe<sup>1,2,3</sup></li> <li>• Whole lobe<sup>1,2,3</sup></li> <li>• Whole lung<sup>1,2,3</sup></li> </ul>	Kills cancer cells <sup>1,3,4</sup>	Shrinks tumors and/or kills cancer cells <sup>1,3,5</sup>	Targets protein that helps new blood vessels form, or targets protein that signals new cells to grow <sup>6</sup>
<b>How it's done</b>	<ul style="list-style-type: none"> <li>• Minimally invasive robotic-assisted surgery<sup>2</sup></li> <li>• VATS surgery</li> <li>• Open surgery<sup>2</sup></li> </ul>	External or internal high-energy rays <sup>1,3,4</sup>	Drug treatment through an IV <sup>1,3,5</sup>	Drug treatment taken orally or through an IV <sup>6</sup>

1. <http://www.cancer.gov/cancertopics/wyntk/lung/page9#1> 2. <http://www.cancer.org/Cancer/LungCancer-Non-SmallCell/DetailedGuide/non-small-cell-lung-cancer-treating-surgery> 3. <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0004462/> 4. <http://www.cancer.org/Cancer/LungCancer/LungCancer-Non-SmallCell/DetailedGuide/non-small-cell-lung-cancer-treating-radiation-therapy> 5. <http://www.cancer.org/Cancer/LungCancer-Non-SmallCell/DetailedGuide/non-small-cell-lung-cancer-treating-chemotherapy> 6. <http://www.cancer.org/Cancer/LungCancer-Non-SmallCell/DetailedGuide/non-small-cell-lung-cancer-treating-targeted-therapies>

# About Radiation Therapy<sup>1</sup>

- When is it used?
  - As main treatment option or coupled with surgery and/or chemotherapy
- What types of radiation are available?
  - External radiation treatments:
    - 5 days/week for 4-7 weeks
    - Most common form of radiation treatment for curing the cancer
  - Internal radiation treatments:
    - Given to reduce size of existing tumors and relieve symptoms
    - Generally not given as primary treatment
- What are the side effects?
  - Fatigue
  - Nausea
  - Vomiting

# About Chemotherapy<sup>1</sup>

- When is it used?
  - To shrink tumor prior to surgery
  - To kill left over cancer cells after surgery
  - To act as main form of treatment, sometimes along with radiation therapy and/or surgery
- How is it done?
  - 4-6 cycles of treatment (each cycle is usually 3-4 weeks)
  - Injected into bloodstream
  - Used to shrink tumors
- What are the side affects?
  - Hair loss
  - Mouth sores
  - Loss of appetite
  - Nausea
  - Higher risk of infection

1. <http://www.cancer.org/Cancer/LungCancer-Non-SmallCell/DetailedGuide/non-small-cell-lung-cancer-treating-chemotherapy>

# Lung Cancer Surgery<sup>1</sup>

- ***Pneumonectomy*** - full removal of the lung
- ***Lobectomy*** - full removal of a lobe
- ***Wedge resection*** - partial removal of a lobe

**MYTH:** *All lung surgeries require a large incision and spreading the ribs.*

**FACT:** *Minimally invasive robotic-assisted surgery uses small incisions without spreading the ribs.*

# Minimally Invasive Robotic-Assisted Surgery for Lung Cancer

## *da Vinci*<sup>®</sup> Surgery Potential Patient Benefits

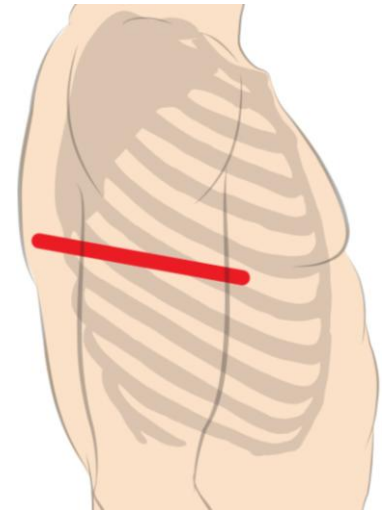
Less pain due to an approach using ports only<sup>1</sup>

Less blood loss<sup>1\*</sup>

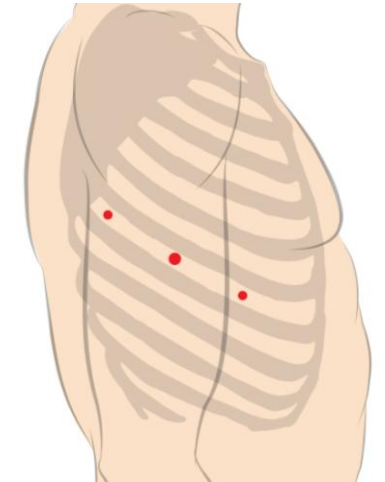
Shorter hospital stay<sup>1\*</sup>

Low conversion rate to open surgery<sup>2,3</sup>

Low complication rates<sup>1,2</sup>



Open surgical incision



*da Vinci*<sup>®</sup> Surgical Incision

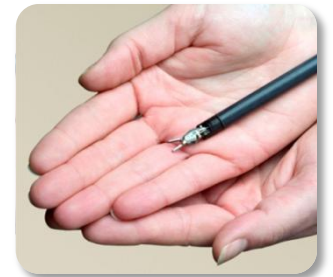
*da Vinci*.Surgery

- Compared to open surgery.

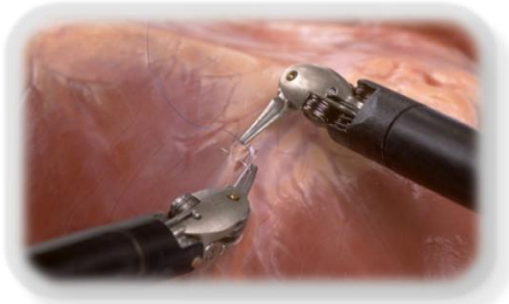
1 Cerfolio RJ, Bryant AS, et al. Initial consecutive experience of completely portal robotic pulmonary resection with 4 arms. J Thorac Cardiovasc Surg. 2011 Oct;142(4):740-6. Epub 2011 Aug 15. 2 Dylewski MR, Ohaeto AC, et al. Pulmonary resection using a total endoscopic robotic video-assisted approach. Semin Thorac Cardiovasc Surg. 2011 Spring;23(1):36-42. 3 Veronesi G, Galetta D, et al. Four-arm robotic lobectomy for the treatment of early-stage lung cancer. J Thorac Cardiovasc Surg, 2010;140(1):19-25.



# Surgery: *da Vinci*® Surgery



# da Vinci<sup>®</sup> Surgery



- Surgeon is immersed in a 3D-HD surgical field with up to 10x magnification
- Surgeon directs every move of the tiny instruments using console controls
- Robotic system scales and replicates surgeon's hand movements while minimizing hand tremors
- Allows surgeon to operate with increased dexterity & precision

# Surgical Risks

- All surgeries involve the risk of major complications. Before you decide on surgery, discuss all treatment options with your doctor. Understanding the risks of each treatment can help you make the best decision for your situation.
- While clinical studies support the effectiveness of the *da Vinci* Surgical System when used in minimally invasive surgery, individual results may vary. There are no guarantees of outcome.
- Surgery with the *da Vinci* Surgical System may not be appropriate for everyone; it may not be applicable to your condition. Always ask your doctor about all treatment options, as well as the risks and benefits. Only your doctor can determine whether *da Vinci* Surgery is appropriate for you.

# What Next?



- Take charge of your health
  - Quit smoking
  - Be educated
  - Talk to your doctor
- Have annual exams
- Get a second opinion



INTUITIVE  
SURGICAL<sup>®</sup>

*Taking surgical precision beyond the limits of the human hand™*

*While clinical studies support the effectiveness of the da Vinci Surgical System when used in minimally invasive surgery, individual results may vary. There are no guarantees of outcome. All surgeries involve the risk of major complications. Before you decide on surgery, discuss treatment options with your doctor. Understanding the risks of each treatment can help you make the best decision for your individual situation. Surgery with the da Vinci Surgical System may not be appropriate for every individual; it may not be applicable to your condition. Always ask your doctor about all treatment options, as well as their risks and benefits. Only your doctor can determine whether da Vinci Surgery is appropriate for your situation. The clinical information and opinions, including any inaccuracies expressed in this presentation by patients or doctors about da Vinci Surgery are not necessarily those of Intuitive Surgical, Inc. and should not be considered as substitute for medical advice provided by your doctor. All people pictured are models unless otherwise noted. © 2011 Intuitive Surgical. All rights reserved. Intuitive, Intuitive Surgical, da Vinci, da Vinci S, da Vinci Si, Single-Site, InSite, TilePro and EndoWrist are trademarks or registered trademarks of Intuitive Surgical. All other product names are trademarks or registered trademarks of their respective holders. PN 875127 Rev A 10/11*