Making the Case for Assessing and Treating Tobacco Dependence in Cancer Patients

ND Cancer Coalition – Annual Meeting
May 16, 2023

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Disclosures

- None

Objectives

- Review the morbidity and mortality of cancer in the United States
- Verbalize the different opportunities where cessation counseling can take place
- Review the National Comprehensive Cancer Network (NCCN) Guidelines for Smoking Cessation
- Cite barriers to offering smoking cessation to cancer patients


Quality Care through NCCN Guidelines
82
Total NCCN Guidelines
3
New NCCN Guidelines published in 2021:
• Histiocytic Neoplasms
• Malignant Peritoneal Mesothelioma
• Wilms Tumor (Nephroblastoma)
60
NCCN Guidelines Panels
>1,700
NCCN Guideline Panels Members
>40,000
Hours NCCN Guidelines Panelists contributed
>1.5 million
Registered users of NCCN Guidelines
>4.2 million
Unique visitors to NCCN.org

NCCN Member Institutions

NCCN is a not-for-profit alliance of 32 leading cancer centers devoted to patient care, research, and education. NCCN is dedicated to improving and facilitating quality, effective, equitable, and accessible cancer care so all patients can live better lives.

Penn Medicine Abramson Cancer Center

Case Western Reserve University Comprehensive Cancer Center | University Hospitals Seidman Cancer Center | Cleveland Clinic

City of Hope

Dana-Farber Cancer Institute | Massachusetts General Hospital Cancer Center

Duke Cancer Institute

Fox Chase Cancer Center | Temple Health

NCCN National Comprehensive Cancer Network®

NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®)

Smoking Cessation

Version 2.2022 — August 30, 2022

NCCN.org

Continue

Cancer Prevalence in the United States

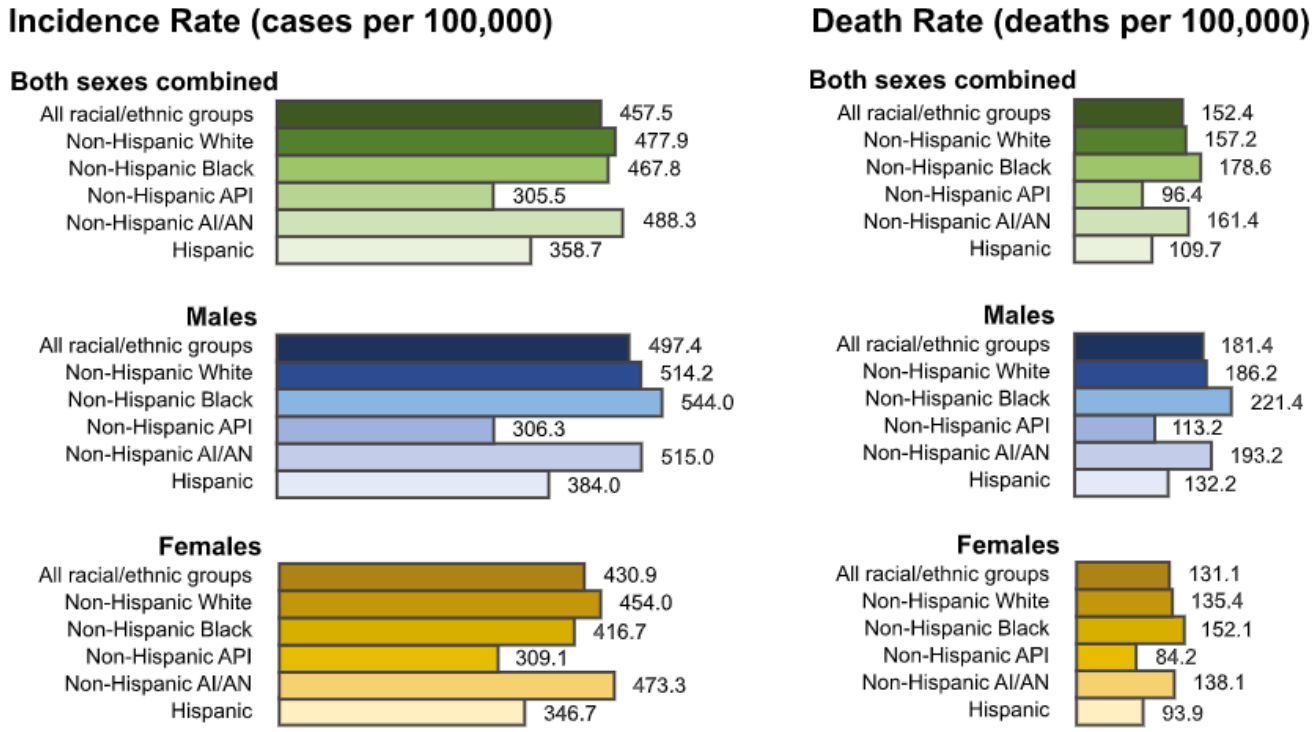
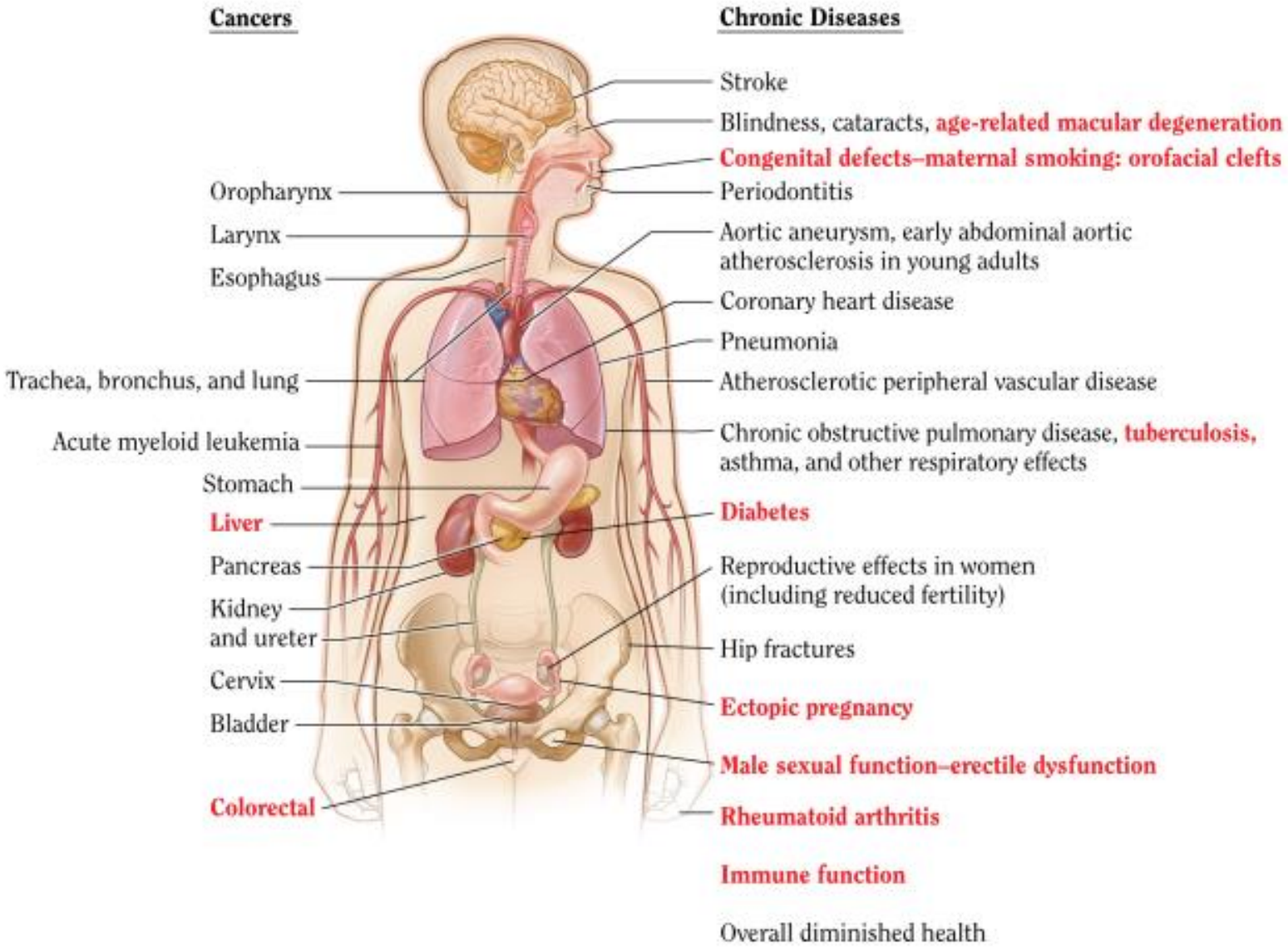


FIGURE 2 Age-standardized, delay-adjusted overall cancer incidence rates (2014–2018) and age-standardized overall cancer death rates (2015–2019) are illustrated for all cancer sites combined, all ages, by sex and racial/ethnic group. Racial/ethnic groups are mutually exclusive. Data for non-Hispanic AI/AN individuals are restricted to counties with Indian Health Service Purchased/Referred Care Delivery Areas. AI/AN indicates American Indian/Alaska Native; API, Asian/Pacific Islander

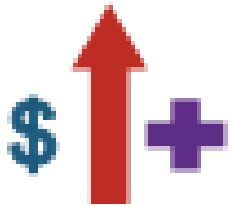
Cronin K.A., Scott S., et al. Annual Report to the Nation on the Status of Cancer, Part 1: National Cancer Statistics. Cancer 2022; 128:4251-4284.

Health Consequences of Smoking



Source: USDHHS 2004, 2006, 2012.
Note: The condition in **red** is a new disease that has been causally linked to smoking in this report.

Continuing to smoke after cancer diagnosis: Economic burden

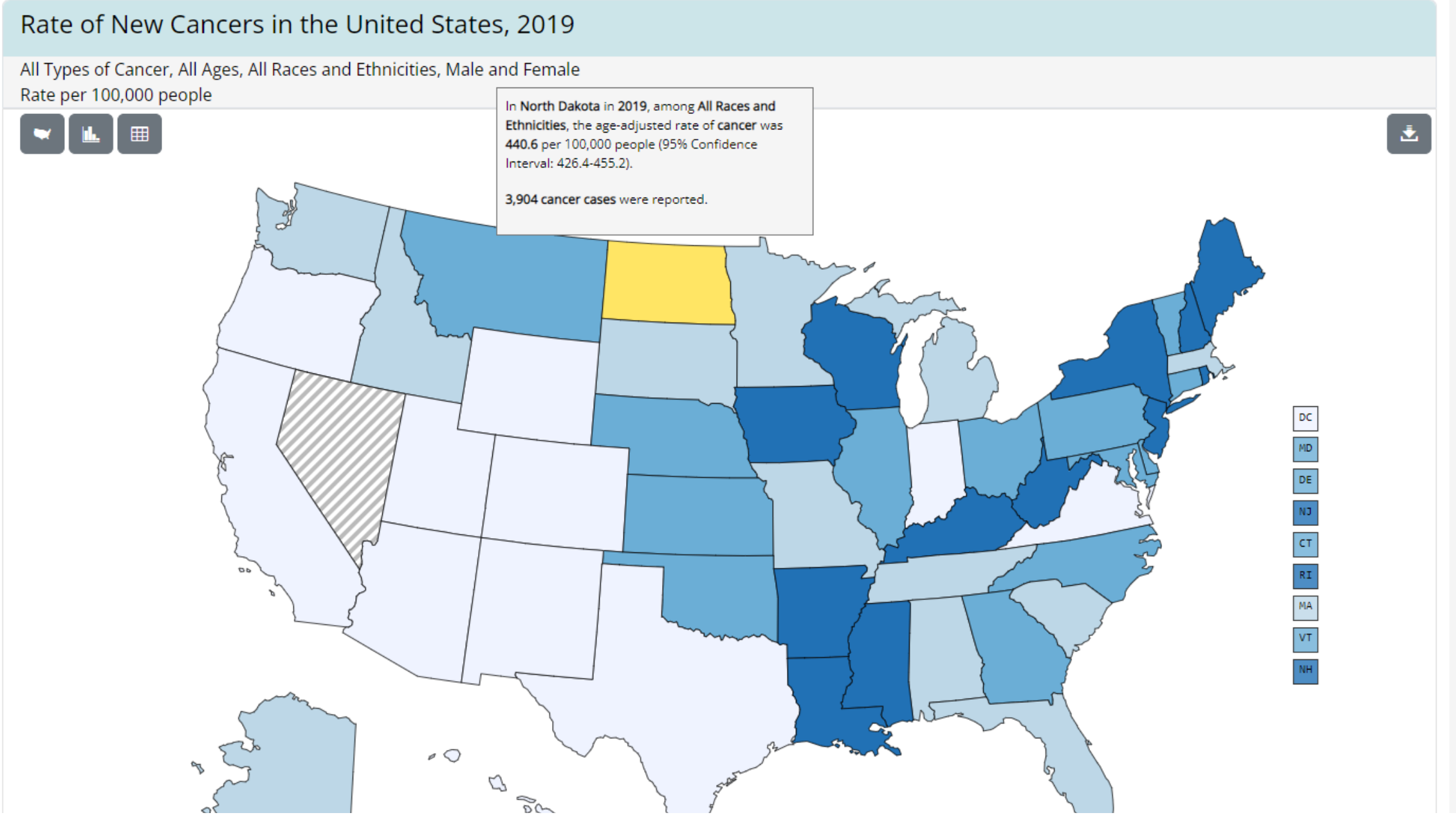


- 12.2% of adults ever diagnosed were current smokers
- $3.4 billion in added cancer treatment costs in the United States due to patients' continue smoking after a cancer diagnosis

National Health Interview Survey, 2020.

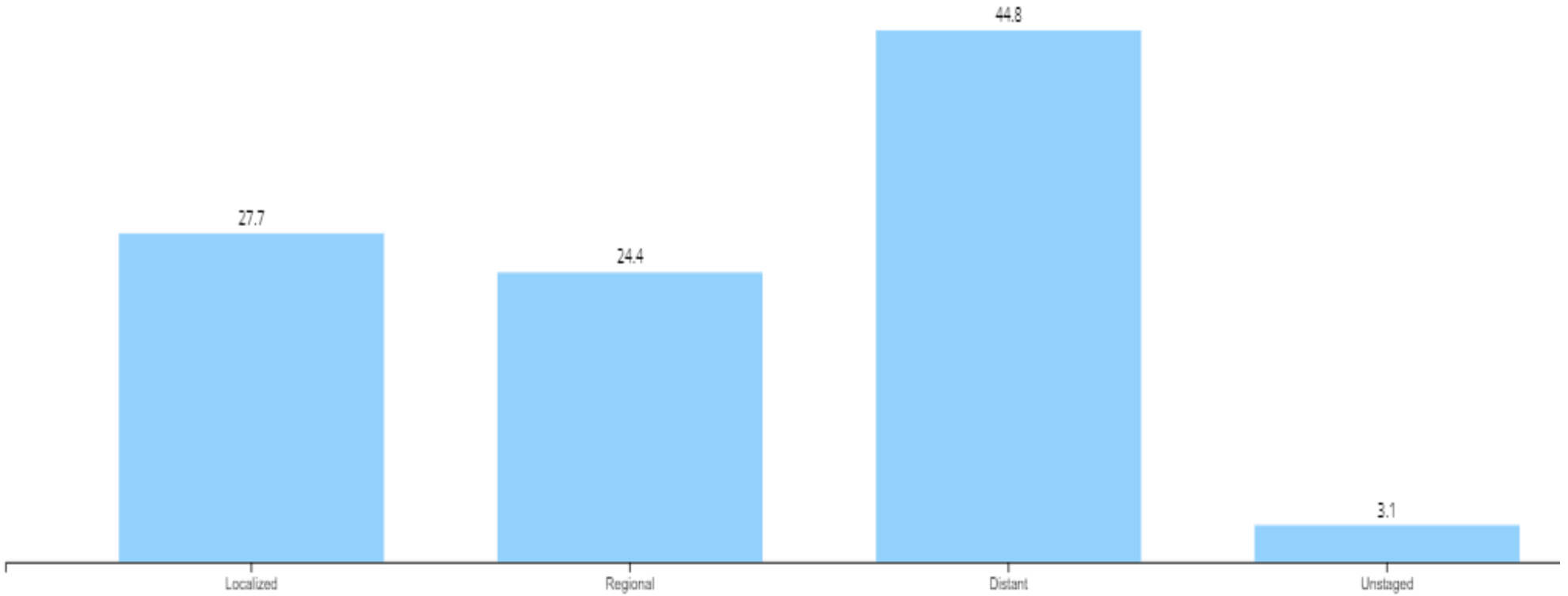
U.S. Dept of Health & Human Services National Institutes of Health (NIH) National Cancer Institute (NCI) Tobacco control Monograph Series 23 Treating Smoking in Cancer Patients: An Essential Component of Cancer Care Executive Summary. June 2022.

Warren GW, Cartmell KB, Garrett-Mayer E, Salloum RG, Cummings KM. Attributable failure of first-line cancer treatment and incremental costs associated with smoking by patients with cancer. JAMA Netw Open. 2019;2(4):e191703. doi: 10.1001/jamanetworkopen.2019.1703.



Source - U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on 2021 submission data (1999-2019): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; https://www.cdc.gov/cancer/dataviz, released in November 2022.

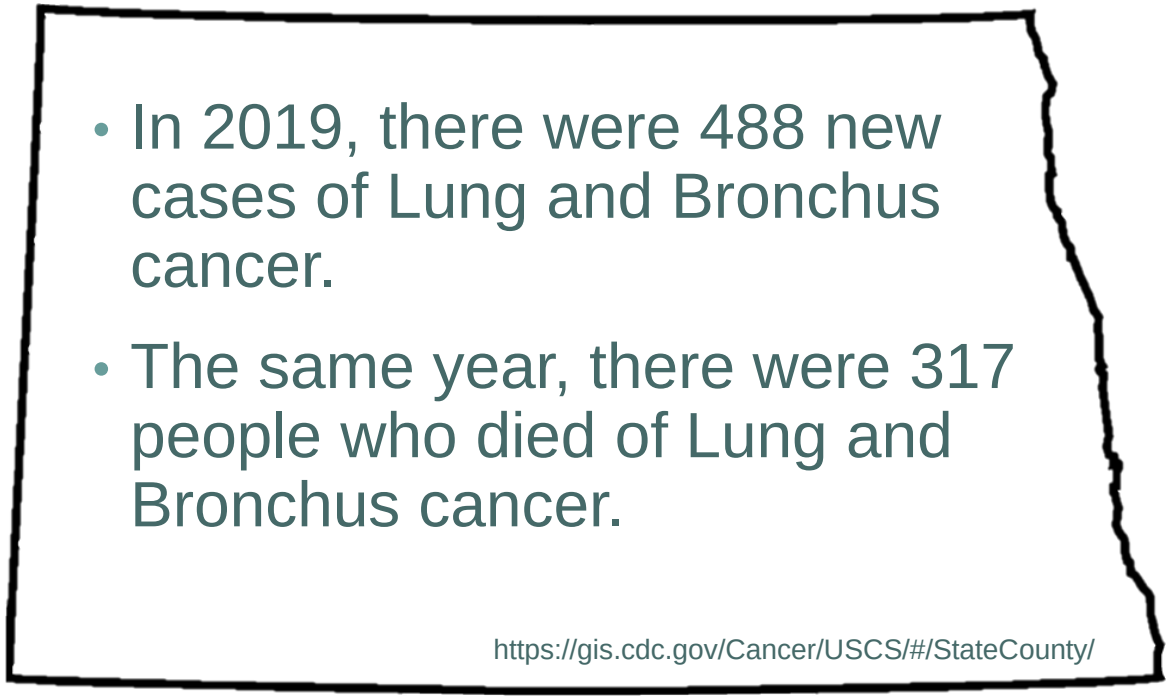
Stage Distribution (%) of New Cancer Cases, All Ages, All Races and Ethnicities, Both Sexes
Lung and Bronchus, North Dakota, 2015-2019



Source - U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on 2021 submission data (1999-2019): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; https://www.cdc.gov/cancer/dataviz, released in November 2022.

Cancer Diagnosis
Lung Cancer

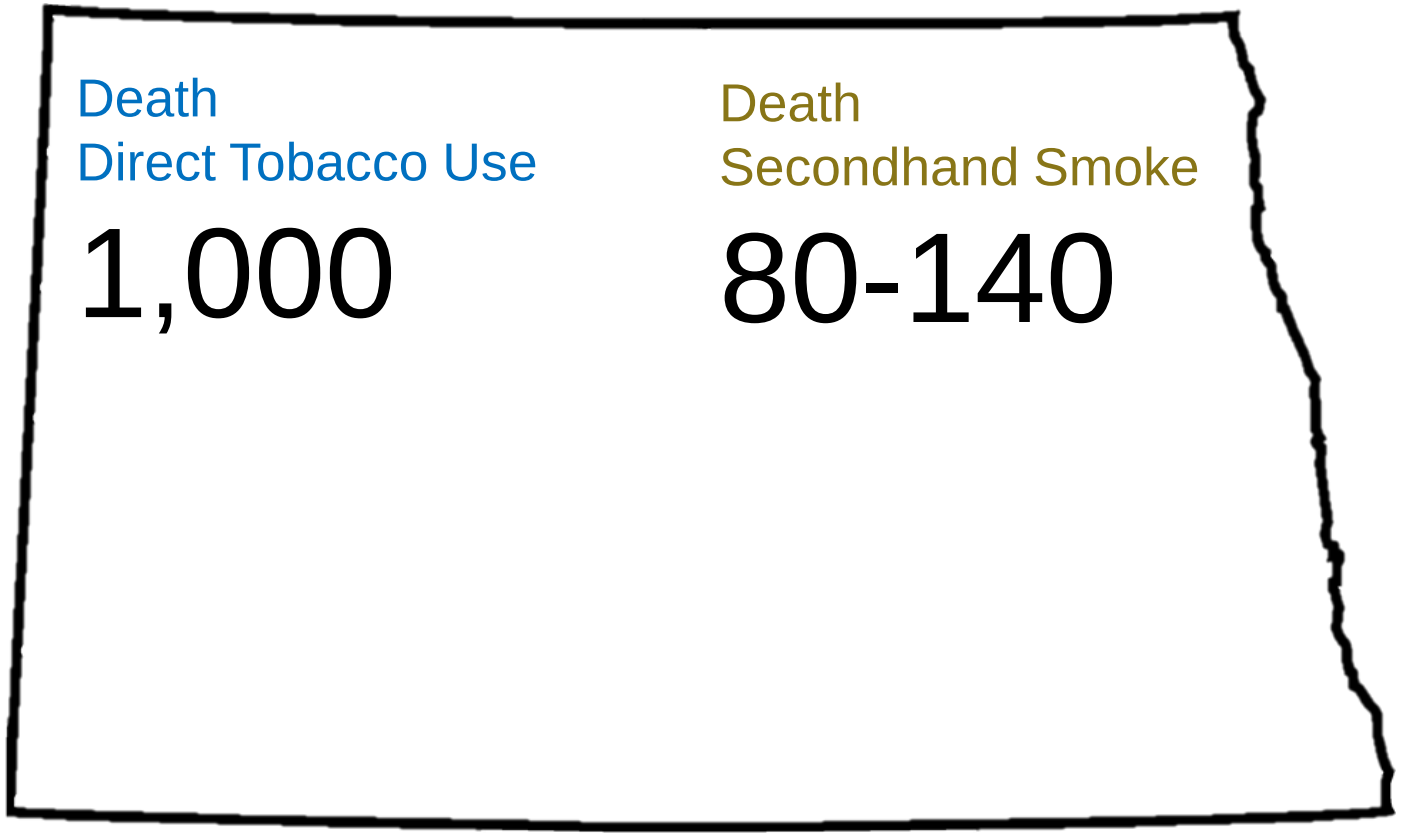
- Leading cause of cancer death in both men and women, nationally and in North Dakota.
- 90% of Lung cancer is smoking related
- Survival time of those who quit smoking is 9 months more that those who continue to smoke through treatment and beyond.



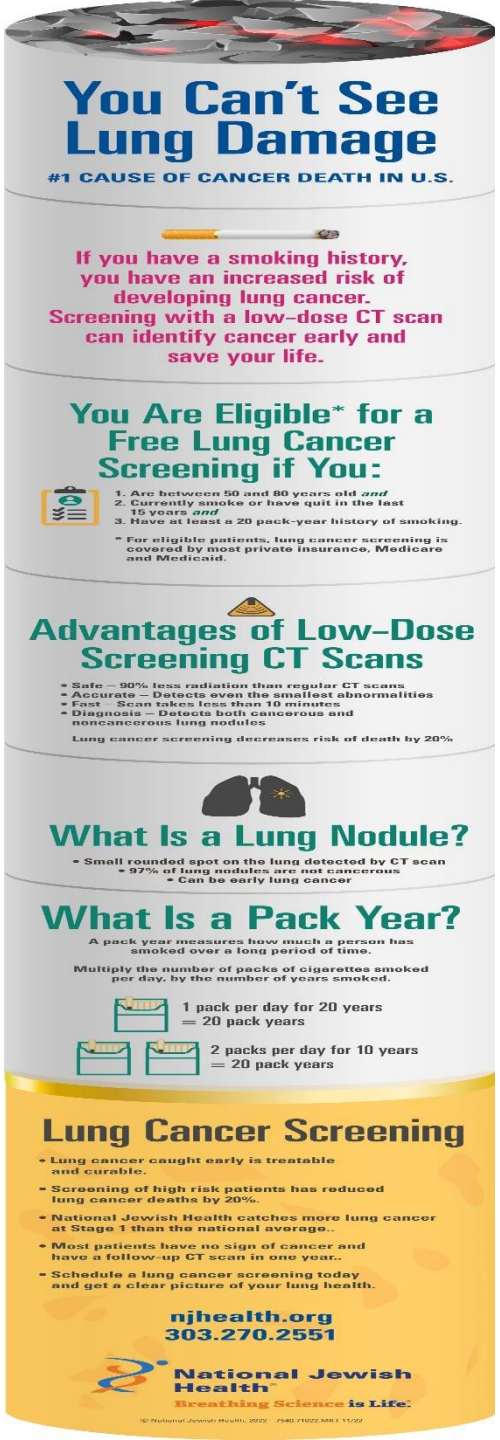
- In 2019, there were 488 new cases of Lung and Bronchus cancer.
- The same year, there were 317 people who died of Lung and Bronchus cancer.

https://gis.cdc.gov/Cancer/USCS/#/StateCounty/

Tobacco Use #s - 2021



1. North Dakota estimate of smoking-attributable deaths: CDC, Best Practices for Comprehensive Tobacco Control Programs – 2014. This is the annual average from 20-05-2009, is among adults aged 35 years and older, and does not include burn or secondhand smoke deaths.



Opportunity for Smoking Intervention

Cancer Screening

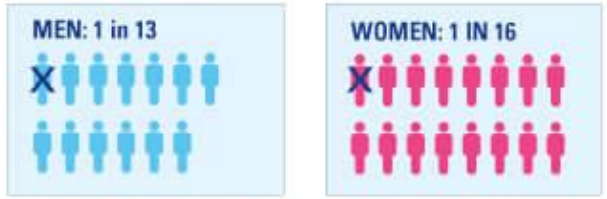
Lung Cancer

https://www.nationaljewish.org/conditions/health-information/health-infographics/lung-cancer-at-a-glance

Lung Cancer

CAUSES MORE DEATHS THAN ANY OTHER CANCER

The Odds



Including both smokers & nonsmokers

New Cases
226,160 – greater than
Scottsdale, AZ population

Deaths
160,340 – greater than
Ft. Lauderdale, FL population

Data is estimated for the U.S. in 2012

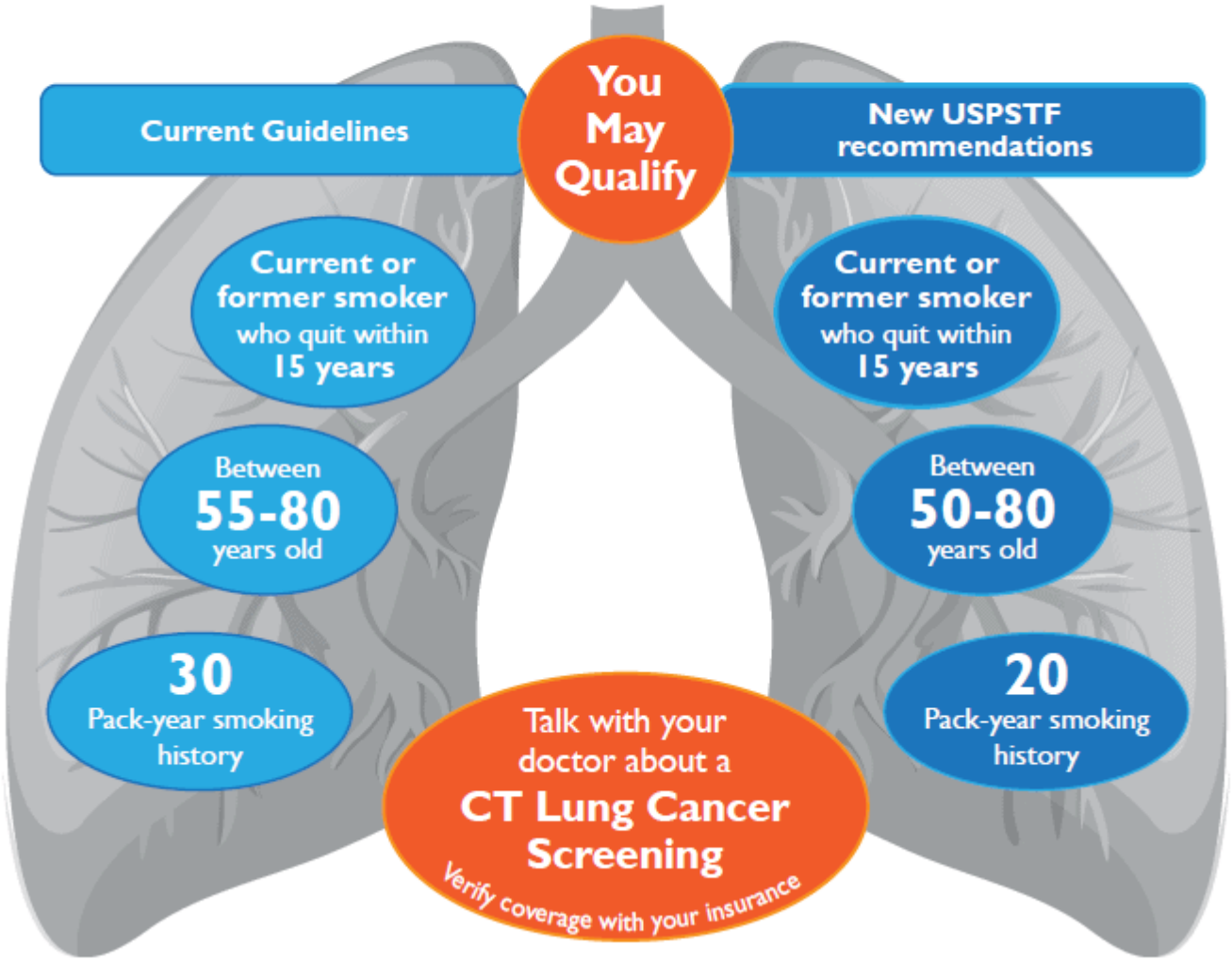
RISK FACTORS FOR LUNG CANCER

1. **SMOKING CIGARETTES** increases risk 20 times — 90%
2. **RADON** a radioactive gas found in soil
3. **ASBESTOS** a toxic chemical
4. **ENVIRONMENTAL TOBACCO EXPOSURE**
5. **GENETICS** in a first-degree relative
6. **OTHER LUNG DISEASES**
7. **PRIOR RADIATION** in the chest area

National Jewish Health®
Science Transforming Life®

njhealth.org
1.877.CALL NJH (877.225.5654)

CT Lung Cancer Screening



United States Preventative Services Task Force
March 2021

Clinician Summary of USPSTF Recommendation

Screening for Lung Cancer

March 2021

What does the USPSTF recommend?

B Grade

Adults aged 50 to 80 years who have a 20 pack-year smoking history and currently smoke or have quit within the past 15 years:

- **Screen** for lung cancer with low-dose computed tomography (CT) every year.
- Stop screening once a person has not smoked for 15 years or has a health problem that limits life expectancy or the ability to have lung surgery.

To whom does this recommendation apply?

Adults aged 50 to 80 years who have a 20 pack-year smoking history and currently smoke or have quit within the past 15 years. (See below for definition of pack-year.)

What's new?

The USPSTF has revised the recommended ages and pack-years for lung cancer screening. It expanded the age range to 50 to 80 years (previously 55 to 80 years), and reduced the pack-year history to 20 pack-years of smoking (previously 30 pack-years).

How to implement this recommendation?

1. **Assess risk based on age and pack-year smoking history:** Is the person aged 50 to 80 years and have they accumulated 20 pack-years or more of smoking?
   a. A pack-year is a way of calculating how much a person has smoked in their lifetime. One pack-year is the equivalent of smoking an average of 20 cigarettes—1 pack—per day for a year.
2. **Screen:** If the person is aged 50 to 80 years and has a 20 pack-year or more smoking history, engage in shared decision making about screening.
   a. The decision to undertake screening should involve a discussion of its potential benefits, limitations, and harms.
   b. If a person decides to be screened, refer them for lung cancer screening with low-dose CT, ideally to a center with experience and expertise in lung cancer screening.
   c. If the person currently smokes, they should receive smoking cessation interventions.

How often?

- Screen every year with low-dose CT.
- Stop screening once a person has not smoked for 15 years or has a health problem that limits life expectancy or the ability to have lung surgery.

The USPSTF recognizes that clinical decisions involve more considerations than evidence alone. Clinicians should understand the evidence but individualize decision making to the specific patient or situation.

U.S. Preventive Services TASK FORCE
www.uspreventiveservicestaskforce.org

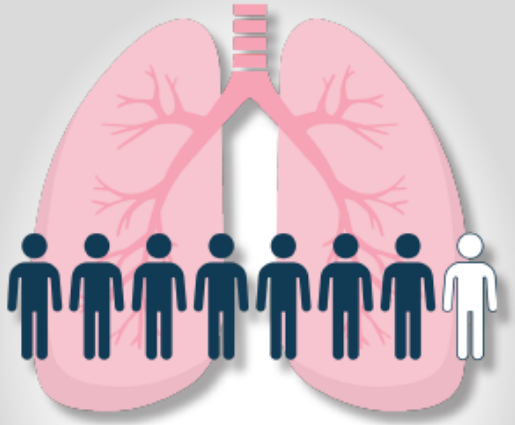
Centers for Disease Control and Prevention
MMWR

LUNG CANCER SCREENING SAVES LIVES

Lung Cancer is #1 Cause of Cancer Deaths

Screening with low dose CT* can detect lung cancer early and save lives

More Screening is Needed



7 of **8** adults who met **screening criteria** **did not** report recommended screening

Healthcare Providers: Discuss Screening

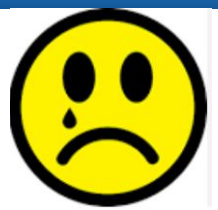
With Adults

- Age 55–80
- Heavy smoking history**
- Smoke now or quit within the past 15 years

*Low-dose computed tomography (CT) is the only test recommended by the US Preventive Services Task Force.
**Heavy smoking is a smoking history of 30 pack-years or more. A pack-year is smoking an average of one pack of cigarettes per day for one year.
Data from BRFSS, 10 states in 2017, as reported in Richards et al, *MMWR* 2020 Read the full report: bit.ly/CDCVA34

WWW.CDC.GOV

CS 14820-B



- Has been recommended for those at high risk since 2013
  - 2017 12.5% of those eligible were screened
  - 2021 5.8% of those eligible were screened

ASCO answers

Stopping Tobacco Use After a Cancer Diagnosis

Resources and Guidance for Patients and Families from the American Society of Clinical Oncology

Cancer.Net

Doctor-Approved Patient Information from ASCO®

1. Benefits of Quitting
2. Talking With Your Doctor About Your Tobacco Use
3. How to Quit Smoking and Using Tobacco
4. Your Plan to Quit
5. Resources to Help You Quit

https://www.cancer.net/sites/cancer.net/files/stopping_tobacco_use.pdf

Myth or Fact

Smoking is an entirely personal choice.


N
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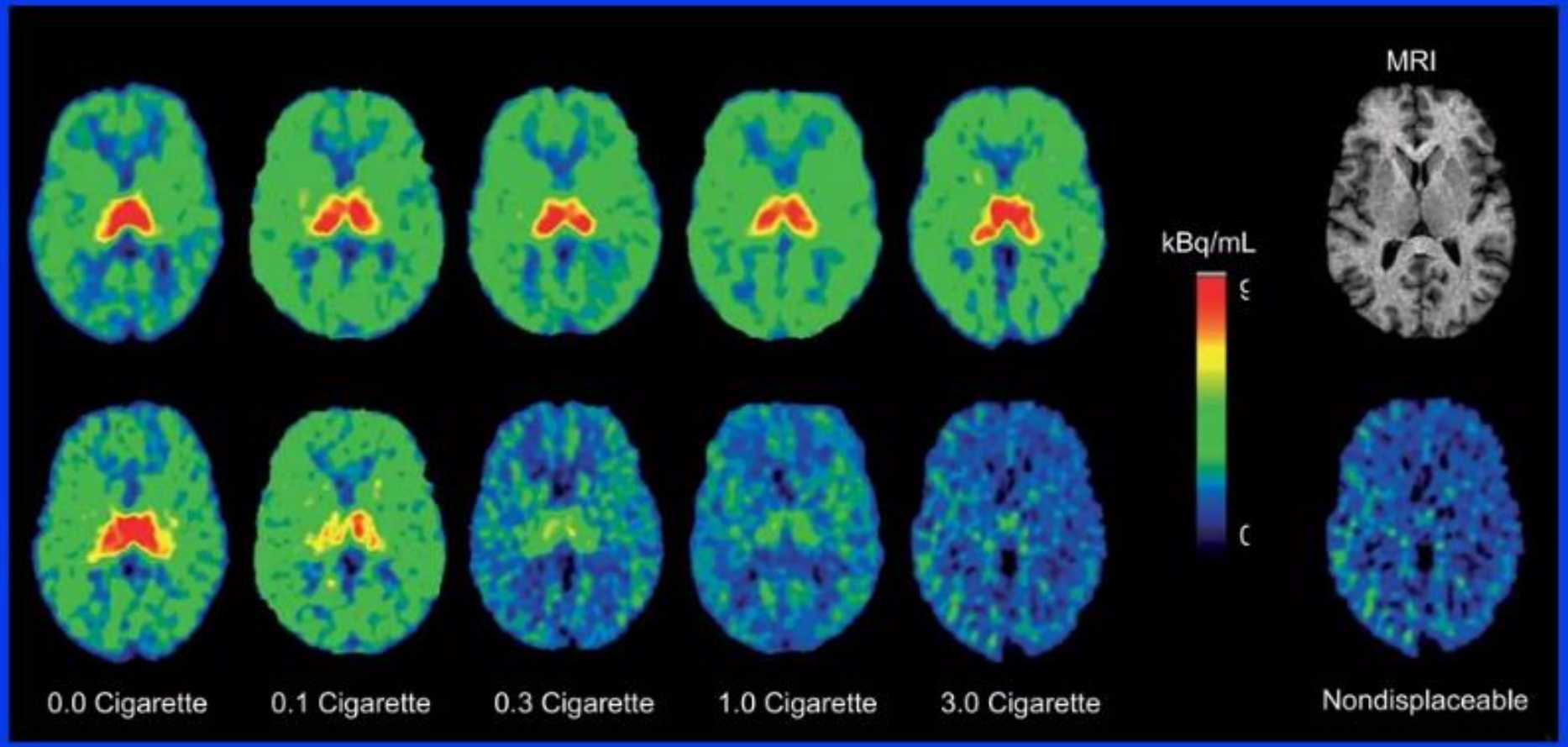
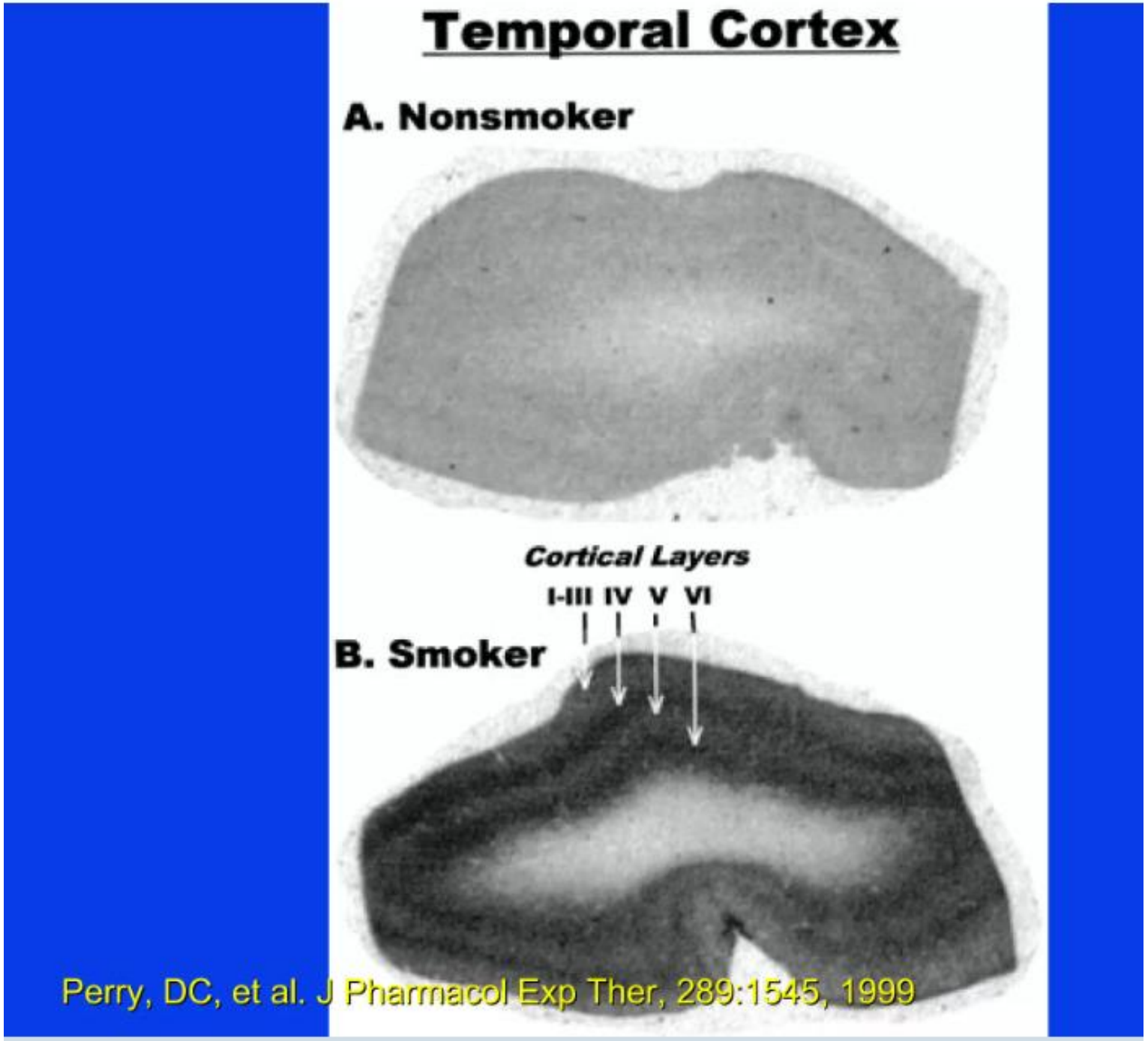
Smoking Saturates Nicotinic Receptors

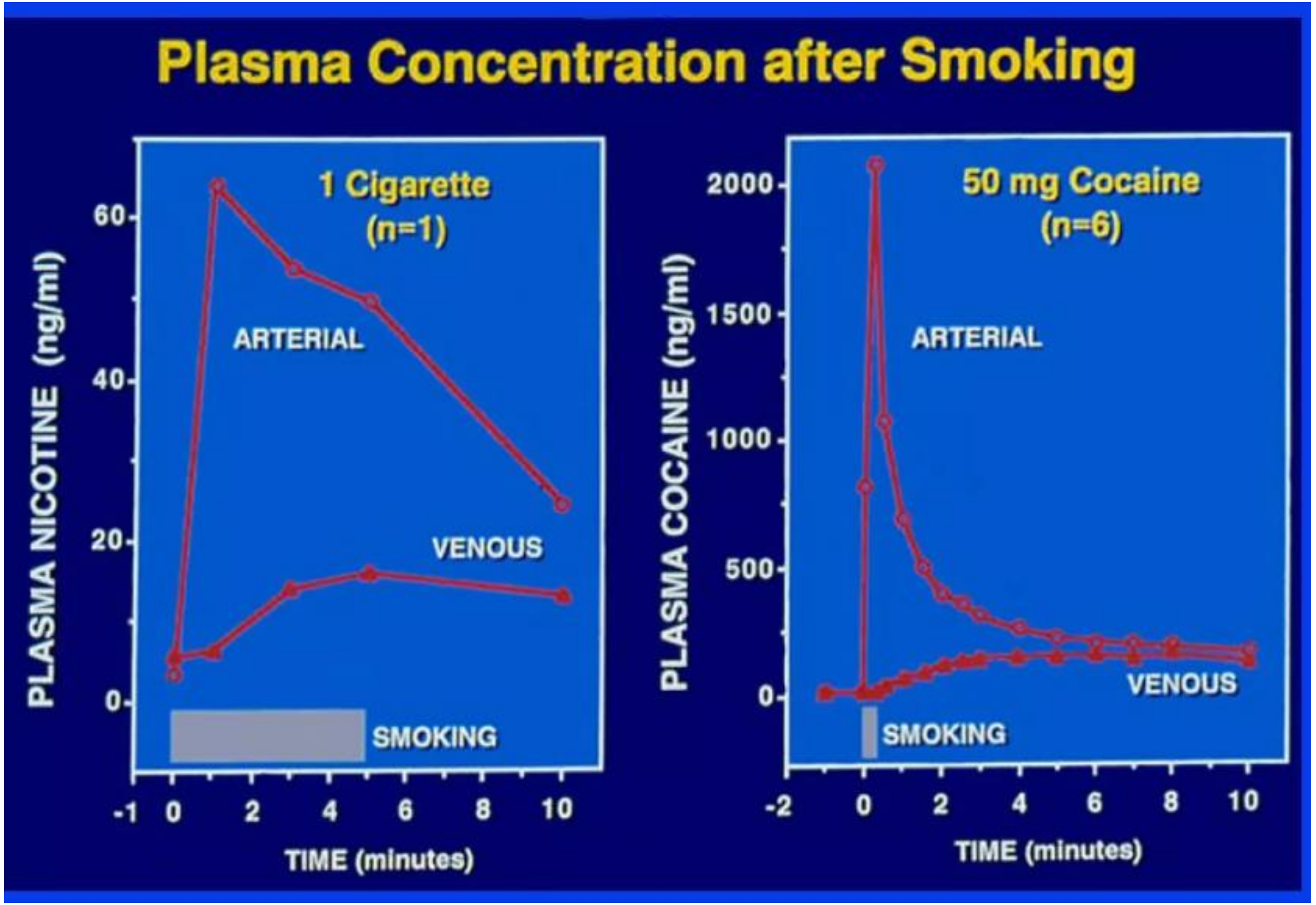


Brody, A.L. Arch Gen Psychiatry. 63;907-915, 2006

Temporal Cortex

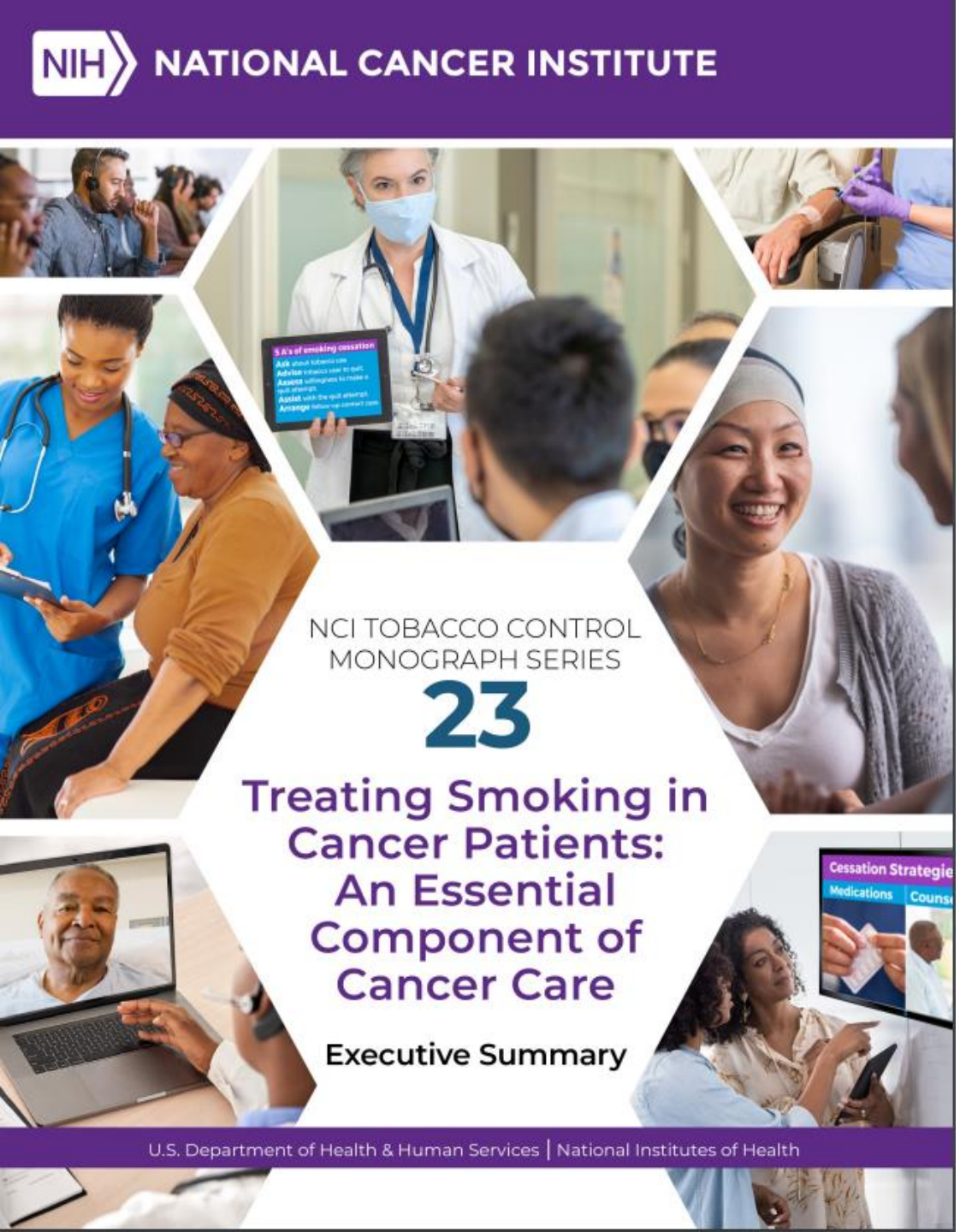


Perry, DC, et al. J Pharmacol Exp Ther, 289:1545, 1999


Plasma Concentration after Smoking
1 Cigarette
(n=1)
ARTERIAL
VENOUS
SMOKING
PLASMA NICOTINE (ng/ml)
60
40
20
0
-1
0
2
4
6
8
10
TIME (minutes)
50 mg Cocaine
(n=6)
ARTERIAL
VENOUS
SMOKING
PLASMA COCAINE (ng/ml)
2000
1500
1000
500
0
-2
0
2
4
6
8
10
TIME (minutes)

Apart from disease site and stage, continued smoking is the strongest predictor of mortality in cancer patients.

There is no point in quitting smoking now that I have cancer.



- Treating smoking in cancer patients is essential

WHY?

cancercontrol.cancer.gov/monograph23

NIH NATIONAL CANCER INSTITUTE

Tobacco Control Monograph 23—*Treating Smoking in Cancer Patients: An Essential Component of Cancer Care*

Tobacco Use, Including Smoking, Is Not Consistently Treated in Cancer Care Settings

The 23rd National Cancer Institute (NCI) Tobacco Control Monograph expands upon prior research to inform clinicians and their patients with cancer about the science and practice of quitting smoking.

The research summarized in this monograph demonstrates that quitting smoking is among the most effective treatment options for improving the likelihood of survival, quality of life, and overall health of people with cancer who smoke.

Why Addressing Smoking in Cancer Care Settings Is Essential

It is important for clinicians treating patients with cancer, and for patients themselves, to realize that quitting smoking improves cancer outcomes, regardless of cancer type. The consequences of continued smoking after a cancer diagnosis include:

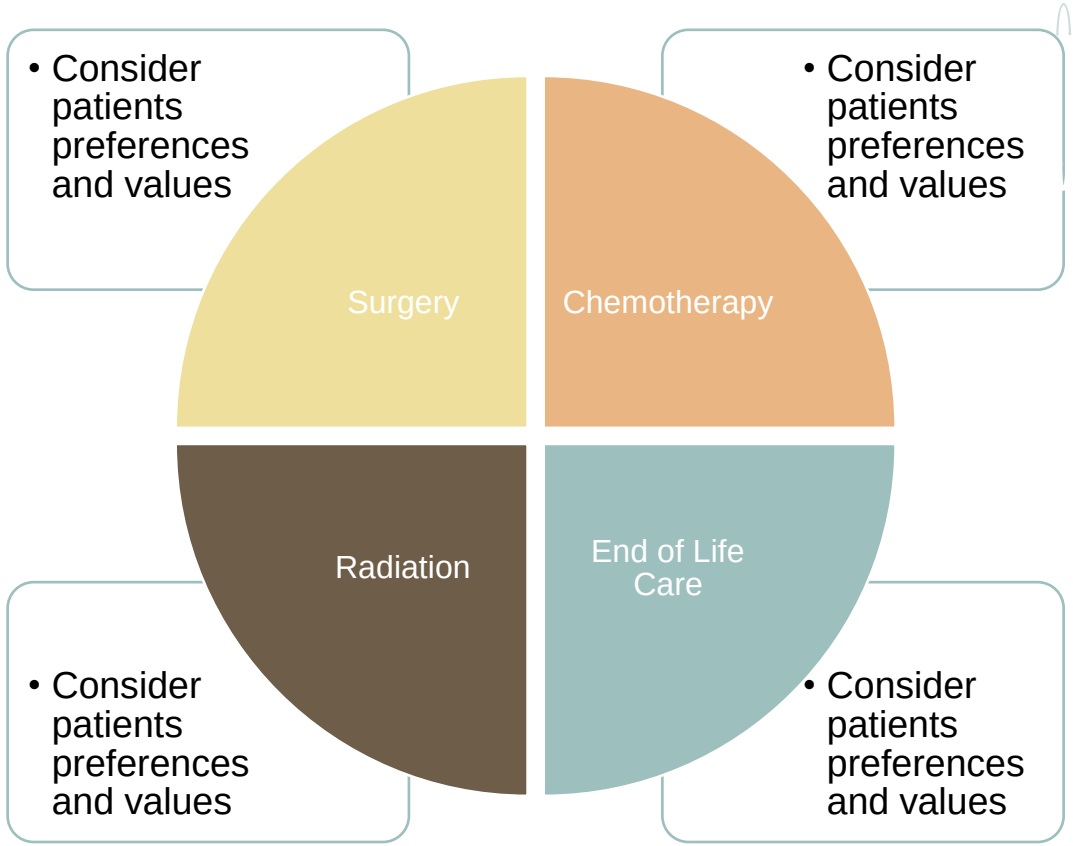
- Increased risk of cancer-specific mortality and mortality due to other causes, such as heart disease, noncancer pulmonary disease, and stroke.
- Increased risk of second primary cancers.
- Increased risk of cancer recurrence and adverse treatment-related outcomes, including postoperative pulmonary complications, poor surgical healing, and decreased response to chemotherapeutic medications and radiation.
- Increased health care costs.

Treating Smoking in Cancer Patients: An Essential Component of Cancer Care emphasizes the need to intervene with patients with cancer who smoke.

Monograph 23 provides a synthesis of—

- The effects of smoking on the biology of cancer.
- Effectiveness of smoking cessation treatment in the general population of individuals who smoke and in cancer populations specifically.
- How smoking cessation treatments can be applied to address the special challenges and needs of individuals with cancer.
- How smoking cessation treatment can be implemented in health care contexts generally and in cancer care

Cancer Treatment

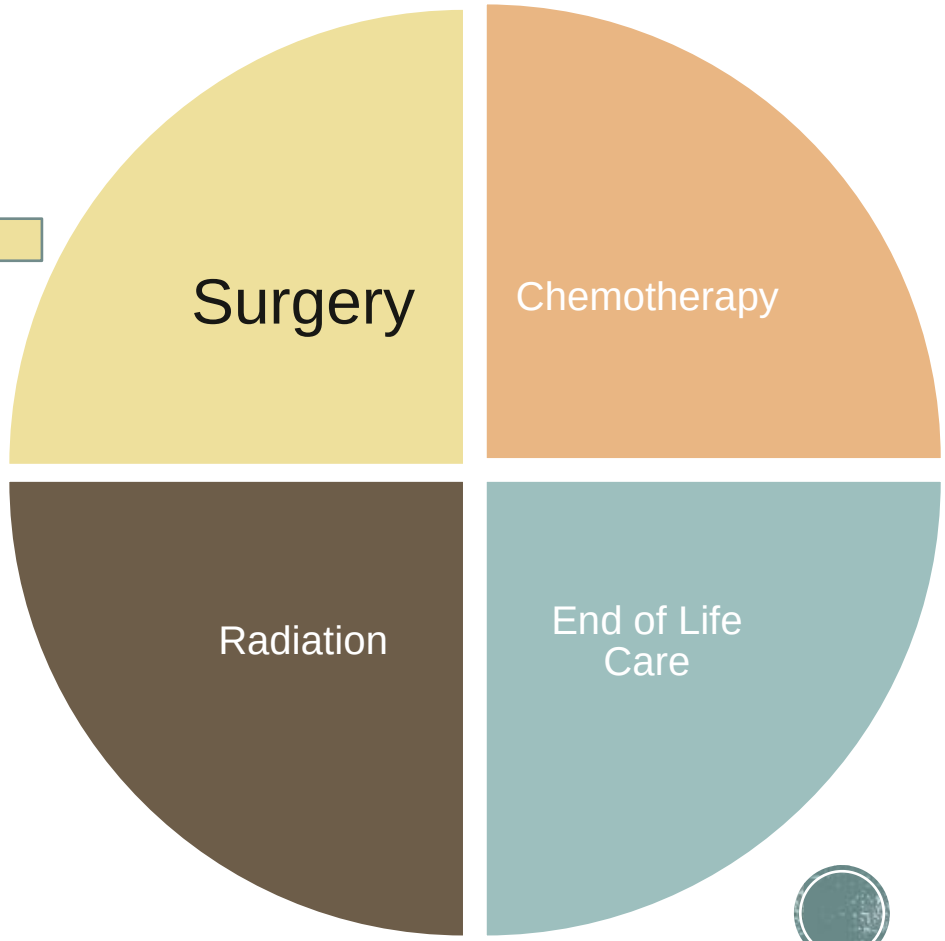


- Smoking-Associated Risks
  - Exposing cancer cells to cigarette smoke has been shown to promote a more malignant phenotype. Sobus and Warren 2014. MS-6
  - All members in the household who smoke should be encouraged to quit for the benefit of the patient.
  - Current smoking increases risk of death and negatively impacts survival.

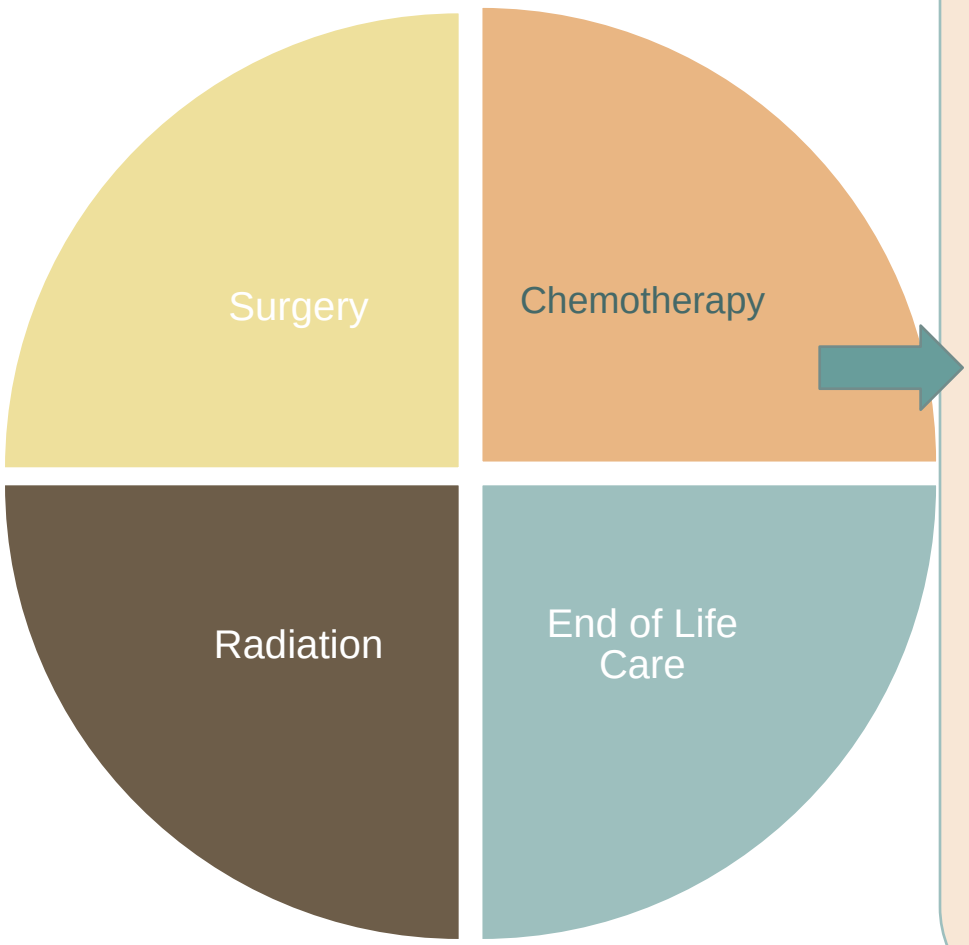
Cancer Treatment: Surgery

- Decreased effectiveness of surgery
- Increased complications from general anesthesia
- Increased risk of postoperative pulmonary complications
  - Recommend quit > 6 wks pre-op (Lugg et al 2017)
- Increased risk of infection
- Detrimental effects on wound healing
  - Compromised capillary blood flow
  - Increased vasoconstriction
  - Increased risk of infection
- Longer postoperative hospital stays
- Increased mortality rate

LONGER ABSTINENCE → BETTER OUTCOMES



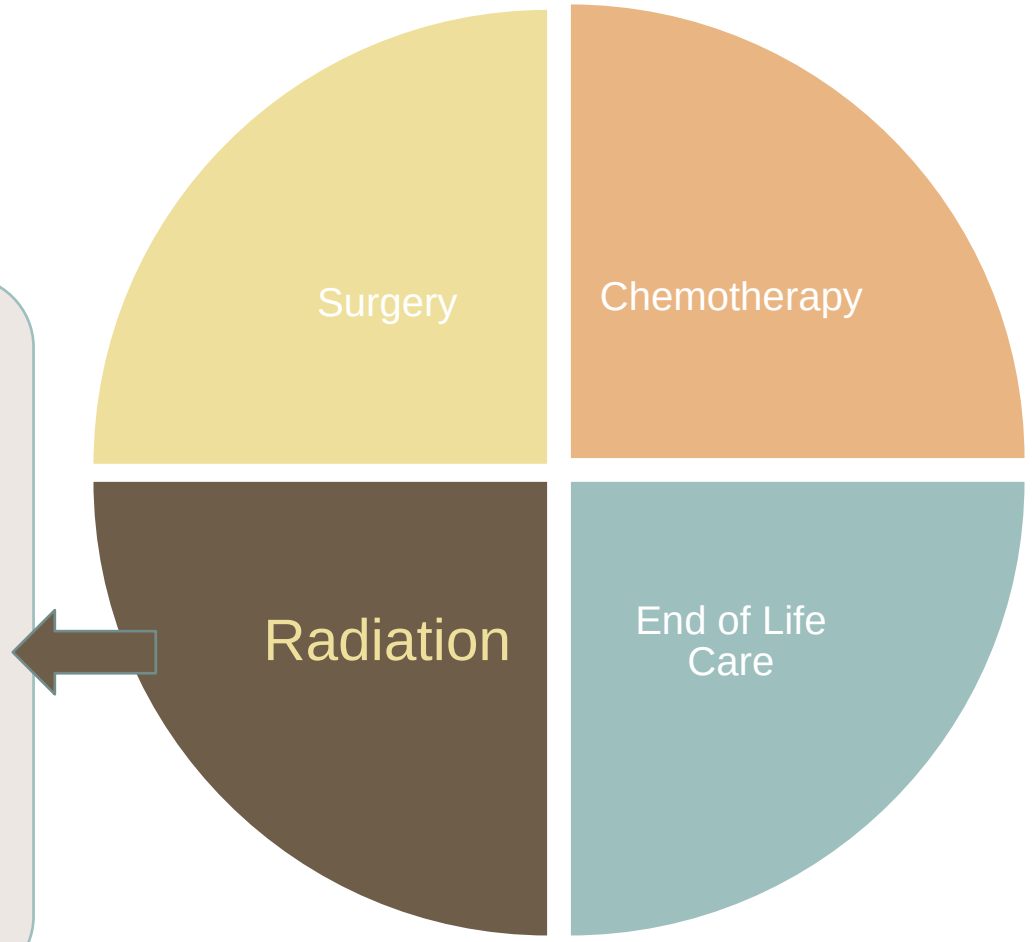
Cancer Treatment: Chemotherapy



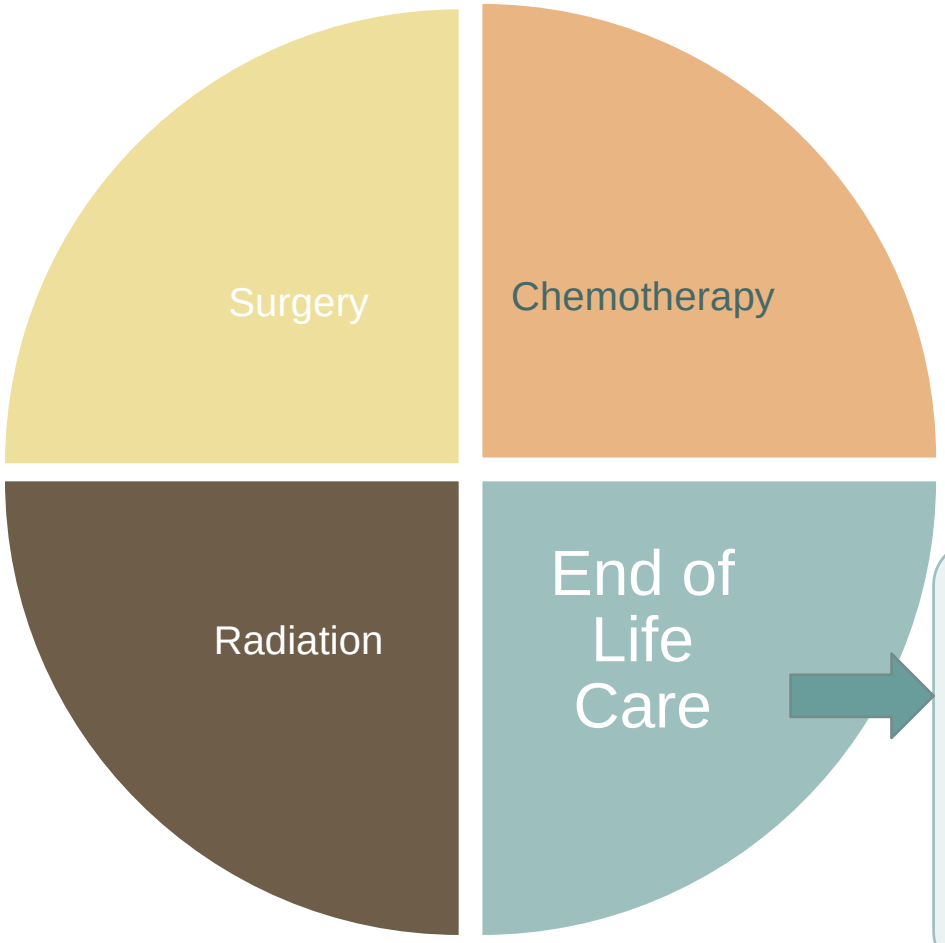
- Decrease effectiveness of chemotherapy:
  - Cytochrome P450 enzyme alters drug clearance time and plasma concentration
    - Specific chemo drugs effected:
      - ❖ Erlotinib
      - ❖ Irinotecan
      - ❖ Bendamustine
- Exacerbation of side effects:
  - Immune suppression
  - Weight loss
  - Fatigue
  - Pulmonary and cardiac toxicity
- Drug interactions/toxicity
- Increased incidence of infection

Cancer Treatment: Radiation

- Decrease effectiveness of radiation
- Reduced treatment efficacy
- Increased toxicity and side effects
  - Xerostomia (dry mouth)
  - Odynophagia (painful swallow)
  - Oral mucositis
  - Loss of taste
  - Pneumonitis
  - Soft tissue necrosis
  - Osteoradionecrosis (bone necrosis)
  - Poor voice quality



Cancer Treatment: End of Life Care



- Poor pain control
- Respiratory distress
- Home oxygen therapy
- Hemodynamic instability
- Poor quality of life (dyspnea, fatigue and pain)

Smoking will help me deal with the stresses of cancer treatment. It will be too stressful to quit smoking at the same time.

Patient-Level Barriers for Tobacco Cessation

All tobacco users

- Stress
- Dependence
- Home, work and social environmental factors
- Lack of resources and support for quitting
- Misperceptions about the safety and efficacy of cessation medications
- Mental health comorbidity
- Substance abuse comorbidity
- Low quitting self-efficacy (confidence) due to multiple prior failed quit attempts

Additional patient-level barriers with cancer diagnosis

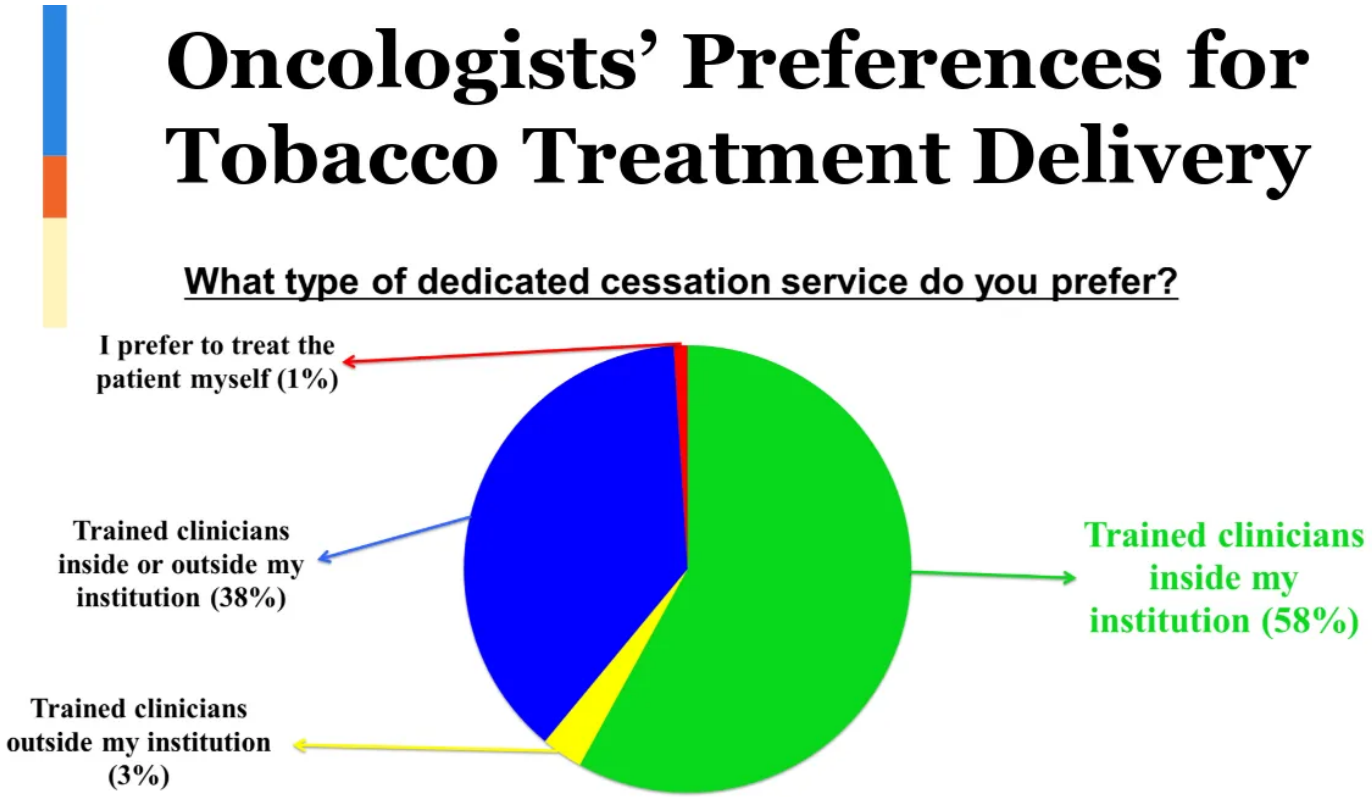
- Pain
- Desire to maintain personal control
- Loss of a coping strategy at a stressful time (anxiety)
- Guilt over Smoking
- Pressure to quit abruptly / Fear of stigmatization
- Fatalism

If my doctor does not discuss tobacco use, then it must not be important for my cancer treatment.

Provider-Level Barriers for Tobacco Cessation

- Lack of training/knowledge
- Lack of time
- Lack of confidence
- Misperceptions about the safety and efficacy of cessation medications
- Stigma

Medical and radiation oncologists overall prefer smoking cessation interventions to be managed by other members of the health care team.



Provider-Level Barriers for Tobacco Cessation

Surveys of Oncologists' Beliefs About the Importance of Tobacco Treatment in Cancer Care

Perceptions	IASLC N=1507	ASCO N=1197
Tobacco affects clinical outcomes	91.7%	87.0%
Advising cessation should be standard of cancer care	90.2%	85.8%

% Agree/Strongly Agree

Source: Warren et al, 2013, J of Thoracic Oncology; Warren et al 2013, J Oncol Practice

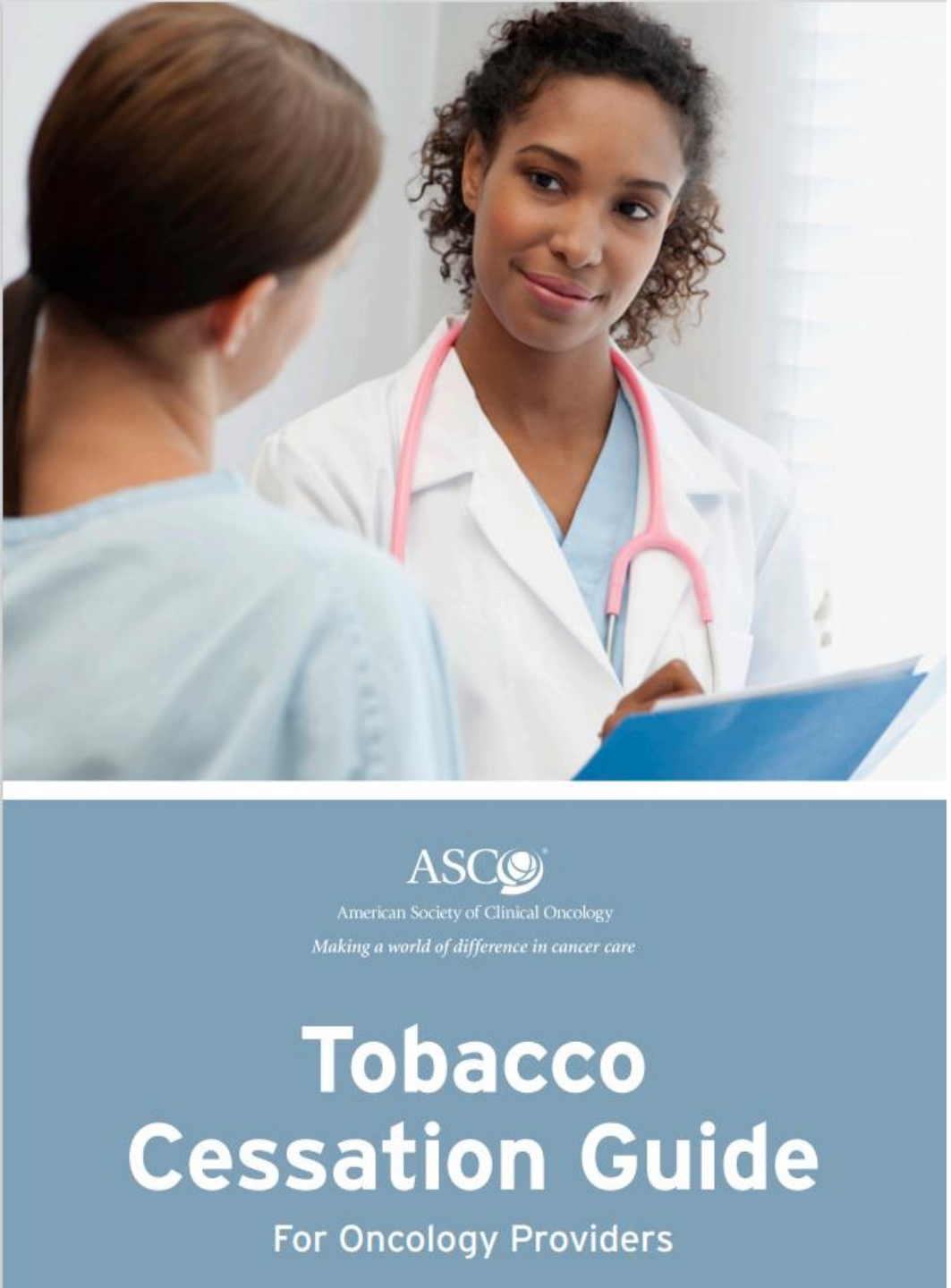
Provider-Level Barriers for Tobacco Cessation

Tobacco treatment practice patterns at initial oncology visit*

Practice Pattern	IASLC	ASCO
Ask about tobacco use	90.2%	89.5%
Assess readiness to quit	78.9%	80.2%
Advise to quit	80.6%	82.4%
Discuss medications	40.2%	44.3%
Actively treat or refer	38.8%	38.6%

% Always/Most of the Time

*Lower rates reported during follow-up visits



1. Talking to Patient About Tobacco Use
2. Motivating Patients to Stop Using Tobacco
3. Treating Nicotine Dependence in Patient with Cancer
4. Incorporating Tobacco Dependence Treatment into Your Practice

https://old-prod.asco.org/sites/new-www.asco.org/files/tobacco-cessation-guide.pdf

Provider/Clinic Staff Scripting

- “We have all patients who use tobacco visit with a specialist to learn more about how tobacco use can affect your medical care and health. This is an important part of your care.”

Options for ASSISTING

- Brief Advice
- Behavioral Counseling
- Medications
- Referral
  - On site tobacco treatment
  - Off site tobacco treatment
  - State Quitline
- Patient education materials
- EMR based resources (treatment, referral, education)

Cancer Prevalence in the United States Conclusion

-  Death rate continue to decline overall
- Increase in incidence reflect
  - Changes in risk factors
  - Screening test use
  - Diagnostic practice
- Racial/ethnic differences exist
  - ↑ Disparity: Non Hispanic Whites, Non Hispanic Blacks, Non Hispanic Alaskan Indian or Alaskan Native
  - ↓ Disparity: Asian Pacific Islander, Hispanic
- Population based incidence and mortality data change due to efforts in
  - Prevention
  - Early detection
  - Treatment

Smokers can quit on their own. A doctor's advice isn't needed.

NCCN Exceptions / Special Considerations in Pharmacotherapy

- Most effective pharmacologic treatment: **Combination NRT** (Nicotine patch + short-acting NRT [lozenge, gum inhaler, nasal spray]) or **varenicline**

- Bupropion is NOT first line therapy for cancer patients
  - Tends to increase anxiety in this oncology patients
  - Consider using with combination NRT or varenicline in patients with depression or fatigue
  - Contraindicated if using tamoxifen (due to inhibition of CYP2D6 which causes drug toxicity)

Pharmacotherapy Recommendations for Surgical Patient

- Smoking intervention in the perioperative period may be especially effectives
- Surgery within 1 week: Combination NRT
- Surgery >7 days: Combination NRT or varenicline

- Some surgeons may not allow perioperative NRT due to relationship of nicotine and decreased wound healing (from vasoconstriction impeding blood flow) → This was found to be true in animal studies…no similar data in humans exist.
  - NRT typically provides a lower overall dose of nicotine compared with cigarettes, while nearly doubling the chance of achieving smoking abstinence.
- Smoking cessation SHOULD NOT delay surgical cancer resection.

Pharmacotherapy: Varenicline

- Varenicline: Although rare, elevated seizure risk can be a concern in certain individuals receiving varenicline therapy (ETOH users). In pa with brain metastases who have a history of elevate risk of seizure, varenicline should be used with caution.

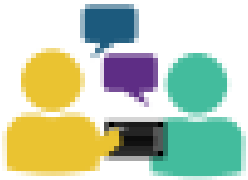
Pharmacotherapy: Bupropion

- Norepinephrine-dopamine reuptake inhibitor
- CYP2B6 inhibitor
- May increase the concentration of drugs that metabolize or that also inhibit CYP2B6 (ie, certain antidepressants, antipsychotics, beta-blockers and Type 1C antiarrhythmics)
  - Dose reduction of these medications may be considered when used concurrently with bupropion
- Tamoxifen (selective estrogen receptor modulator) requires metabolic activation by CYP2D6 and may be less effective when used concurrently with bupropion (CYP2B6 inhibitor)
- NO ELEVATED RISK of cardiovascular effects

Pharmacotherapy: Varenicline + Bupropion

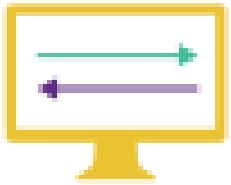
- When combination NRT is not successful
- Several diverse studies – so unable to draw conclusion
- Not commonly used as a first-line approach

Behavioral Therapy



- Provided by TTS or dedicated staff member
- Session 1 → within 3 wks of cessation (preferably within 1 week)
- At least 4 session total within 12 weeks
- 10-30 minutes duration (or longer)
- Referral to specialty care (psychiatrist or psychologist) as indicated
  - Comorbid psychiatric condition/history
  - Alcohol/Drug dependence
  - Low motivation
  - Low self-efficacy

Follow up



- Within 3 weeks after cessation (1 week preferred, if possible)
- 12 weeks
- 6 months
- 12 months

Cancer Diagnosis

- Cessation rates vary by cancer type
- 50-75% are unaware of the negative impact that smoking can have on
  - treatment outcomes
  - overall treatment efficacy
  - survival
  - risk of Recurrence (recurrent cancer in the same anatomic location as the original primary cancer)
  - development of second primary cancer
- Cessation rates tend to be higher among those with a cancer diagnosis than in the general population

  Example: Patients who were diagnosed w/ Lung CA
  - 75% more likely to attempt quitting - low to medium dependence
  - 92% more likely to attempt quitting – high to very high dependence

Thomas NA, Ward R, Tanner NT, et al. Factors associated with smoking cessation attempts in lung cancer screening: a secondary analysis of the National lung Screening Trial. Chest. September 23, 2022. doi:10.1016/j.chest.2022.08.2239.

Opportunity for Smoking Intervention

Cancer Survivorship

- Smoking remains prevalent among cancer survivors
- As patients enter long-term survivorship, achieving continuity of care for smoking treatment requires partnership with primary care providers

General Principles & Recommendations

ALL patients with cancer should be encouraged to discontinue use of all combustible tobacco products as well as smokeless tobacco products.

Primary benefits to cessation

- Improvement in cancer treatment outcomes
- Decrease in primary cancer recurrence
- Decrease in secondary cancers

Tobacco treatment plans should always include

- Evidence-based motivation strategies and behavioral therapy (counseling)
- Evidence-based pharmacotherapy
- Nicotine addiction is a chronic relapsing disorder, so close follow-up with retreatment as needed. In cancer patients that smoker, there is a high incidence of depressions, anxiety, and stress.

IT IS **NEVER TOO LATE** FOR PATIENT WITH CANCER AT ANY STAGE TO STOP SMOKING CIGARETTE AND EXPERIENCE HEALTH BENEFITS

Pharmacologic treatment + behavior therapy/ motivational strategies = Most effective approach

ENDS are not an FDA-approved method for cessation

There are opportunities for smoking cessation intervention across the cancer care continuum

*Screening
*Diagnosis
*Treatment
*Survivorship