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Accelerating Progress for Lung Cancer Prevention, Diagnosis, and Treatment: *Learnings from APEC Collaboration on Cancer Control*

APEC Health Working Group

May 2025

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Executive Summary

On Saturday, 17 August 2024, delegations from six economies met at the sidelines of the APEC Health Working Group (HWG) meetings to discuss how recommendations from the 2022 APEC report, "Best Practices and Recommendations for APEC Collaboration on Cancer Control," could be applied to lung cancer and to share opportunities and challenges in developing lung cancer control programs in each of their economies. Hosted by the **United States**, delegations present included **Australia**; **Republic of Korea**; **Peru**; the **Russian Federation**; and **Chinese Taipei**.

Peru provided a presentation on their efforts to expand equitable access to lung cancer screening and treatment programs. The United States also presented on progress and challenges in the prevention of lung cancer in their economy. Finally, Chinese Taipei offered insights into how they are using innovative, sustainable financing mechanisms to optimize a low-dose CT program and reduce lung cancer mortality by 2030.

The discussion that followed the presentations focused on the following key topics: data sharing and collaboration, tobacco control and screening programs, and the use of precision medicine and innovative technologies. Economies recognized the importance of expanding lung cancer screening programs, particularly when it concerns non-smokers with other risk factors for lung cancer, and for underserved populations. Economies also re-affirmed that increased collaboration and data-sharing is necessary for producing better research and addressing gaps in the lung cancer care continuum. The need for lung cancer screening programs to incorporate innovative technology also was addressed, particularly as it concerns better management and sharing of data. Finally, economies discussed how precision medicine techniques – such as genetic testing and targeted therapies – should be used to reduce the mortality rate of lung cancer and ensure better care.

"To better prevent, diagnose, and treat lung cancer, we must work together across the region, and together, we can find new solutions to reduce the burden of lung cancer and its impact on our families and communities."

– **Dr. Alberto Tejada, Director General, Office of International Technical Cooperation, Ministry of Health, Peru**

Background

Lung cancer causes more deaths globally than any other type of cancer and incurs a significant burden on patients, health systems, and economies.[1] In Australia; Canada; China; Japan; Republic of Korea; Mexico; and the United States, lung cancer is the leading cause of cancer-related deaths, while in Malaysia; Peru; Thailand; and Viet Nam, lung cancer is the second-leading cause of cancer-related deaths.[2] Given that lung cancer is driven primarily by tobacco smoking and secondarily by genetic, occupational, or environmental risk factors, primary prevention can reduce the incidence of lung cancer, while screening and early treatment can drastically improve survivability rates for ever-smokers and never-smokers alike. Yet, in many APEC economies, lung cancer is diagnosed at an advanced stage, when treatment effectiveness drops precipitously.[3] Concerningly, lung cancer mortality is rising in Australia;[4] Peru,[5] and in Asia[6] among women who have never smoked but have other risk factors for the disease.

In response to these epidemiological trends, APEC economies are instituting new policies and programs to address access gaps across the care continuum for lung cancer. In Australia, patient organizations have been instrumental in the design and implementation of an upcoming National Lung Cancer Screening Program (NLCSP).[7] In Canada, provinces have developed targeted pathways for lung cancer screening, diagnosis, and care,[8] while in Chinese Taipei, a comprehensive screening program covers older adults with a history of smoking and people who have a family history of lung cancer.[9] Peru has similarly launched initiatives to increase access to innovative medicines for lung cancer.[10] Despite progress, reducing the lung cancer burden in APEC will require the sharing of research and best practices to ensure that screening guidelines are evidence-based and holistic to the lung cancer risks of smokers and nonsmokers; that patients can access and afford quality diagnostics, treatment, and care; and that health systems are equipped with the knowledge, skills, and technical capacity to implement population-wide programs and policies for lung cancer control.

Often diagnosed at a late stage, lung cancer causes more deaths globally than any other cancer.

#1 Cause of cancer-related deaths in:

| **Australia** | **Canada** | **China** | **Japan** |
| **Republic of Korea** | **Mexico** | **The United States** | |

#2 Cause of cancer-related deaths in:

| **Malaysia** | **Peru** |
| **Thailand** | **Viet Nam** |

Introduction

This project convened a policy dialogue at the margins of the Third APEC Senior Officials Meeting (SOM3), where the Health Working Group met in August 2024, to advance recommendations applicable to lung cancer from the 2022 APEC report, "Best Practices and Recommendations for APEC Collaboration on Cancer Control." Member economies gathered to share learnings from their lung cancer control programs, including new regulatory and financing pathways for lung cancer screening, diagnosis, and treatment. Economies additionally sought to develop a shared agenda to reduce the burden of lung cancer across the APEC region.

The objectives of the policy dialogue were to:

- Advocate for the inclusion of lung cancer-specific targets in action plans on cancer and noncommunicable diseases,

- Identify next steps for implementing best practices on cancer prevention, control, and treatment, and

- Discuss efforts to close gaps in access to lung cancer prevention, screening, and treatment across the APEC region.

> "We have a lot of work left to do. There are significant disparities in lung cancer prevalence and survival for different racial and ethnic groups, and those who have been long exposed to environmental factors that increase the risk of cancer. The U.S. government is committed to addressing these disparities through our research, our programs, and our President's Cancer Moonshot Initiative to ensure that no one has to die from lung cancer." – **Dr. Loyce Pace, Assistant Secretary for Global Affairs, Department of Health and Human Services, U.S.**

Best Practices and Recommendations for APEC Collaboration on Cancer Control: Implications for Lung Cancer Control
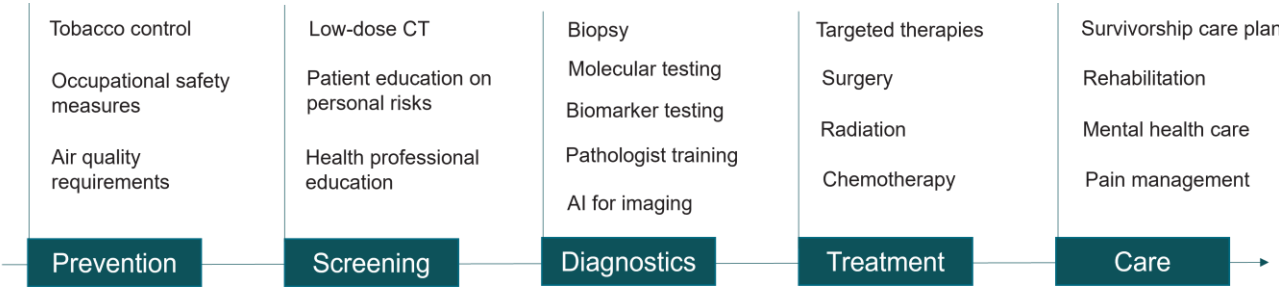
Adrienne Mendenhall

This presentation highlighted how lung cancer is often diagnosed at a late stage despite being the leading type of cancer to cause more deaths globally. Particularly in APEC economies, lung cancer is the leading cause of cancer-related deaths in seven economies and the second-leading cause of cancer-related deaths in four economies. Through past APEC projects, economies have discussed best practices and recommendations for collaboration on cancer control. Nevertheless, there is an opportunity to adapt these recommendations to specifically target lung cancer.

Current best practices across the lung-cancer care continuum include prevention measures such as tobacco control, occupational safety measures, and air quality requirements; screening measures such as low-dose CT, patient education on personal risks, and health professional education; diagnostic measures such as biopsy, molecular testing, biomarker testing, pathologist testing, and AI for imaging; treatment measures such as targeted therapies, surgery, radiation, and chemotherapy; and care measures such as survivorship care plans, rehabilitation, mental health care, and pain management.

Improving access and coverage to these measures can save lives. For instance, updated screening guidelines, better patient education, increased health professional education, and sustainable and innovative financing for best practices in screening, diagnosis, treatment, and care can all make a difference in reducing the rate of lung cancer-related deaths.

Tobacco control	Low-dose CT	Biopsy	Targeted therapies	Survivorship care plan
Occupational safety measures	Patient education on personal risks	Molecular testing	Surgery	Rehabilitation
		Biomarker testing		
Air quality requirements	Health professional education	Pathologist training	Radiation	Mental health care
		AI for imaging	Chemotherapy	Pain management
Prevention	**Screening**	**Diagnostics**	**Treatment**	**Care**

Access measures:

Updated screening guidelines | Patient education | Health professionals education | Sustainable and innovative financing for best practices in screening, diagnosis, treatment, and care

Expanding equitable access to lung cancer screening and treatment programs in Peru

Essy Maradiegue Chirinos

Peru's presentation highlighted trends in lung cancer incidence and mortality. The presentation pointed out increasing rates in women – which is unlike what is reported internationally.

The Population-Based Cancer Registry of Metropolitan Lima showed that from 2013 to 2015, the age-standardized rate of lung cancer incidence in metropolitan Lima was 13.14 for males and 9.81 for females. For men, from 1968 to 2015 there has been a general decrease in the rate of incidence. For women, however, from 1968 to 2015 there has been a general increase in the rate of incidence. A similar trend occurs in lung cancer mortality where the rate of mortality in women has been increasing from 1968 to 2015.

In the Arequipa Population Cancer Registry (2008-2014), lung cancer mortality and incidence were higher in women than in men.

The Population-Based Cancer Registry of Metropolitan Trujillo (2013-2015) showed that while new lung cancer cases were more prevalent among men, lung cancer mortality was higher among women.

The presentation also showcased survey results of Peru's smokers.

✦ In Peru, 16.7% of the population older than 15 years old smoked at least one cigarette in the last 12 months. In the last 30 days, around 9.3% of the population older than 15 years old smoked at least one cigarette, and 1.3% smoked at least one cigarette daily.

Current programmatic screening in Peru identifies people aged 55 to 74 years old who smoke 30 packs of cigarettes or more per year and invites them to screen for lung cancer. However, there is no registry in Peru that identifies this risk group. Thus, Peru is looking to move towards more opportunistic screenings where any person aged 55 to 74 years old who identifies as a smoker of 30+ packs/year during a consultation is screened for lung cancer. In both cases, annual low dose CT is indicated.

Peru shared how they are improving access to lung cancer screening and diagnosis through increased investments. There are currently 79 tomographs in Peru, with seven of them being acquired in the last year due to an investment of USD7 million.

Peru also spotlighted the various laws that support the prevention, early detection, and treatment of lung cancer.

- ✦ Law No. 28705: General law for the prevention and control of the risks of tobacco consumption

- ✦ Law No. 31181: Law declaring the prevention, early detection, and treatment of lung cancer

- ✦ Law No. 29344: Framework Law for Universal Health Insurance

- ✦ Law No. 31336: National Cancer Law

Peru also provides free coverage of 58 essential oncology medications, including Cisplatin, Carboplatin, Paclitaxel, Docetaxel, Gemcitabine, Vinorelbine, and Etoposide. They also provide coverage of four high-cost medications: Pemetrexed, Pembrolizumab, Osimertinib, and Alectinib.

Peru's presentation concluded with a call to action for an epidemiological analysis of factors related to lung cancer, including age group and sex. Additionally, improved methods to identify smokers who are at a higher risk of developing lung cancer are necessary to enhance lung cancer screening efforts.

Progress and challenges in the prevention of lung cancer in the United States

Dr. Ted Trimble

The United States began its presentation by giving an overview of lung cancer in their economy.

Updated estimates from the American Cancer Society showed how lung cancer made up 12% of all new cancers in the United States and 20% of all cancer deaths.

Particularly for the United States, black men have the highest rate of lung cancer incidence and death of any racial or ethnic group.

For smokers, higher smoking rates are associated with fewer years of education, lack of health insurance, low income, a presence of disability, and mental health issues.

The United States shared an overview of global activities related to lung cancer. These included the World Health Organization's (WHO) Framework Convention on Tobacco Control, the 2015 World Health Assembly resolution "Health and the environment: addressing the health impact of air pollution," and the APEC 2019 workshop on lung cancer prevention and control hosted by China's National Health Center with speakers from the following economies: Chile; Japan; Republic of Korea; Mexico; the Russian Federation; Thailand; and the United States.

Common risk factors for lung cancer in the United States include:

✦ Smoking cigarettes, with smokers having 20 times increased risk compared to non-smokers.

✦ Second-hand smoke, which increases risk by 20%.

✦ Workplace exposure to asbestos, arsenic, beryllium, cadmium, chromium, and nickel. Those exposed have five times increased risk compared to those not exposed.

✦ Air pollution – particularly small particles – which can increase risk up to 40%.

✦ Radiation exposure, including high-energy ionizing electromagnetic radiation and particles, such as alpha-particles from radon.

The United States shared details on several of its initiatives on lung cancer.

The National Institutes of Health (NIH) International Tobacco and Health Research and Capacity Building Program (TOBAC Program).

This program was a partnership between researchers from across developed and developing economies. The program served as a two-way learning experience in which the majority of the funds and research activity took place at developing economy institutions. As part of the program, there was a requirement for both research and capacity building that strengthened the ability to conduct research while generating evidence to inform the evolving tobacco control research landscape. There was also a condition that research be locally relevant and address a need of the host economy/economies. This enhanced the number and knowledge of tobacco investigators and their capacity to conduct rigorous tobacco-related research that was essential to an economy's ability to implement and evaluate tobacco control programs and policies.

✦ ✦ ✦

The U.S. Food and Drug Administration (FDA) and NIH Tobacco Regulatory Science Grant

In 2022, the program gave 92 grants which totaled USD67 million across the NIH. Research domains included chemistry and engineering, toxicity, health effects, marketing, communication, behavior, and impact analysis.

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Sherlock-Lung: Tracking Lung Cancer Mutation Processes in Never Smokers

Sherlock-Lung is an NIH comprehensive study that aims to trace lung cancer etiology in never smokers. Researchers are collecting data from approximately 2,500 never smokers and analyzing genomic data in tumor and surrounding lung tissue. Early results have showed that a majority of the lung tumors analyzed arise from the accumulation of mutations caused by natural processes in the body. The study has also identified three novel molecular subtypes of lung cancer in people who have never smoked.

Additional considerations for lung cancer control shared by the United States included the adverse impacts of cigarette smoking and air pollution upon cardiovascular and chronic lung disease, and the adverse impact of cigarette smoking upon treatment for HIV & TB. The United States also spotlighted how cigarette smoking increases risk for cancers of the larynx, oral cavity and pharynx, esophagus, pancreas, bladder, stomach, colon and rectum, liver, cervix, kidney, and acute myeloid leukemia (AML). Finally, the United States shared how tobacco cultivation leads to adverse environmental impacts including deforestation, loss of biodiversity, excess use of pesticides and herbicides, and watershed destruction.

The United States concluded its presentation by sharing how it is strengthening its health system to better prevent and provide care for lung cancer. This includes primary care measures such as tobacco control, identification of women and men appropriate for screening, and patient navigation to ensure compliance with screening and follow-up. Measures also include increased coverage for tobacco cessation, screening, follow-up, and lung cancer treatment and diagnosis. The United States is also strengthening access to and quality of medical imaging and pathology on the diagnostic pathway, as well as access to surgery, radiation therapy, chemotherapy, and symptom management on the treatment pathway. Strengthening health data systems is also an important part of the United States' lung cancer control and prevention approach. This includes creating screening, cancer, and death registries, ensuring follow-up after screening, evaluating quality and timeliness of diagnosis and care, and linking records across levels of the health system with includes public, private, and faith-based health systems.

"Lung cancer continues to be the leading cause of mortality due to cancer in the United States. The U.S. is strongly aligned with the WHO Framework Convention on Tobacco Control to reduce rates of lung cancer prevalence and deaths in our economy and around the world. In 2023, the U.S. National Institutes of Health supported over USD500 million in tobacco policy and regulatory research."

 – **Dr. Ted Trimble, Senior Advisor for Global HPV and Cervical Cancer Research and Control, National Cancer Institute Center, Department of Health and Human Services, U.S.**

Optimizing a low-dose CT program to increase lung cancer survival: How Chinese Taipei is using innovative, sustainable financing mechanisms to significantly reduce lung cancer mortality by 2030

Dr. Chung-Liang Shih

Chinese Taipei focused the beginning of their presentation on how estimated age-standardized mortality rates for lung cancer in 2020 for both males and females of all ages are higher in Eastern Asia compared to the World rate.

More than 30% of lung cancer patients globally do not have a history of smoking. In East Asia, more than 60% of patients are non-smokers.

In Chinese Taipei, the stage of cancer diagnosis determines the survival rate. The survival rate of early-stage lung cancer is more than 94.6%, which decreases rapidly from Stage 2 to 13.1% in Stage 4. Meanwhile, the number of newly diagnosed lung cancer patients continues to increase each year, with an increase in Stage 1 but a limited decline in Stage 4. The Stage 4 ratio of other cancers is significantly less than that of lung cancer.

Strategies for lung cancer prevention and treatment in Chinese Taipei include health promotion and tobacco control, evidence-based screening through a low-dose CT program that was launched in July 2022, early diagnosis and follow-up of suspected cases identified by low-dose CT, and precision treatment through next-generation sequencing (NGS), targeted therapy, and immunotherapy.

Chinese Taipei's low-dose CT program

Chinese Taipei's Health Promotion Administration initiated the low-dose CT screening program on July 2022. The goal of this program is to promote early lung cancer detection, with a subsidy of NTD4,000 (USD130) per case, once every two years. The subsidy is for high-risk groups of lung cancer which includes (1) men (aged 50-74) and women (aged 45-74) with a family history of lung cancer or any parent, child, or sibling of someone that has had lung cancer, and (2) heavy smokers aged 50-74 with a smoking history of 30 packs/day or more who are currently smoking or have quit within the last 15 years.

Since July 2022, the National Health Insurance Administration has also launched a quality improvement program to encourage medical institutions to track cases with abnormal

screening results for five cancers and complete the diagnosis through insurance benefits. The follow-up rate for lung cancer in 2023 was 52.3%, achieving the 40% target.

As a result of the early detection program, 114,445 people have been screened for low-dose CT. Around 1,400 lung patients have been identified, of which 1,165 (83.2%) were early-stage (Stage 0 and Stage 1) cases. Of the people diagnosed, 94% of the women had a family history and 61% of the men were heavy smokers.

The program has overall been effective in reducing advanced (Stage 2+) lung cancer. It has reduced advanced lung cancer in those with a family history by 85%, in heavy smokers by 53%, and overall by 77%. It is estimated that the program's predicted effectiveness in reducing lung cancer death is a 55% rate of reduction.

Chinese Taipei also shared more details on its National Health Insurance Administration (NHIA) policies to promote lung cancer prevention and control.

Through the NHIA, Chinese Taipei integrates precision testing and precision medication reimbursement. They incorporate NGS reimbursement to assist physicians in developing personalized treatment plans. They are also accelerating the inclusion of new drugs to reduce the financial burden on the public and optimize the use of medical resources.

Chinese Taipei is also developing precise and diverse payment systems to accelerate the introduction of evidence-based and breakthrough new drugs and technologies. As part of these efforts, they are establishing a Health Technology Assessment (HTA) organization for NHI evidence-based reimbursement.

The government has established a public-private platform to collect NGS data for precision drug treatment. The platform assesses test results through MediCloud to avoid duplicated tests and facilitate timely medications.

Taking an innovative approach to building a precision medicine ecosystem, Chinese Taipei is establishing a cancer drug fund to satisfy unmet medical needs and expand early access for new medications. They are also developing a NHIA insurance sandbox to facilitate innovations in the pharmaceutical and biotech industries.

Chinese Taipei concluded by restating how effective policy interventions, combined with precision medicine and flexible payment systems, can effectively reduce lung cancer mortality. Given the successful implementation of their lung cancer early detection program, they suggested translating this screening strategy to other economies.

Roundtable Discussion

During the roundtable discussion, economies affirmed the need for cross-economy collaboration, centering efforts on communities that bear the greatest burden of lung cancer. The discussion had three major themes: (1) data sharing and collaboration, (2) tobacco control and screening programs, and (3) precision medicine and innovative technologies.

Data Sharing and Collaboration

Economies emphasized the importance of data sharing and collaboration to address genetic and environmental factors influencing lung cancer rates.

The United States delegation pointed to the need to leverage forums like APEC to reduce the burden of lung cancer through ongoing programs and research. They also stressed the importance of strengthening health data systems, including linking records across all levels of the system.

Peru's delegation also addressed the need for regional cooperation to improve prevention and diagnosis, and the importance of building stronger relationships to find new solutions.

The Republic of Korea echoed these statements, emphasizing the importance of data and technology in enhancing prevention and screening efforts.

Tobacco Control and Screening Programs

The United States stressed the importance of returning to basic public health measures, such as tobacco control, alongside innovative approaches in screening and treatment.

Australia shared how they are introducing a systematic lung cancer screening program, with a focus

"In Australia, First Nation communities have amongst the highest rates of lung cancer. Instead of placing them in 'last mile delivery efforts,' we will focus on our First Nation communities first. If we can get it right with them, we are likely to be successful for the general population" – **Dr. Liz Develin, Deputy Secretary, Department of Health and Aged Care, Australia**

on high-risk groups such as First Nations people. The program includes strong tobacco control measures and aims to provide free screening and treatment through Medicare.

The importance of screening non-smokers was also raised by Chinese Taipei, who shared that the incidence of lung cancer in never smokers is growing, especially in East Asia. The Chinese Taipei delegation further discussed how they are optimizing low-dose CT screening programs to increase lung cancer survival rates, particularly among non-smokers.

The Republic of Korea also discussed its lung cancer screening program, which uses low-dose CT scans. According to the Korean delegation, the program has seen increasing participation rates.

Precision Medicine and Innovative Technologies

Chinese Taipei highlighted the importance of precision medicine, including genetic testing and targeted therapy, to reduce lung cancer mortality. The integration of precision testing into the health insurance system and the creation of a genetic biobank for public-private partnerships were key initiatives shared.

"Korea is now developing new digital systems leveraging AI and cloud-based technologies to improve our ability to prevent and screen new cases of lung cancer. We look forward to sharing these developments with other economies to contribute to our collective arsenal of tools to combat lung cancer." – **Eunsup Jang, Director of International Cooperation, Ministry of Health and Welfare, Republic of Korea**

Australia discussed its innovative approach to reaching remote populations, which involves using solar-powered trucks and addressing lung cancer in linguistically diverse communities.

The Republic of Korea also spotlighted their use of AI and cloud systems for data management within their lung cancer screening program.

Conclusion

This policy dialogue highlighted recommendations from the 2022 APEC report on "[Best Practices and Recommendations for APEC Collaboration on Cancer Control](#)," and reinforced the importance of cross-economy collaboration towards reducing the burden of lung cancer across the APEC region. Chief among the highlighted recommendations was the implementation of targeted early cancer screening programs. This policy dialogue opens the door for future and continued exploration of ways to leverage the APEC forum to facilitate cross-economy collaboration towards lung cancer elimination.

Appendix – Policy Dialogue Agenda

Time	Activity	Speakers
7:00 – 7:20 AM	**Registration and Networking**	
7:20 – 7:23 AM	**Opening Remarks**	**Clara Davis** Office of Global Health Security, Department of State, U.S.
7:23 – 7:31 AM	**Presentation:** Best Practices and Recommendations for APEC Collaboration on Cancer Control: Implications for Lung Cancer Control	**Adrienne Mendenhall** Crowell & Moring International
7:31 – 7:39 AM	**Presentation:** Expanding equitable access to lung cancer screening and treatment programs in Peru	**Essy Maradiegue Chirinos** Directorate of Cancer Prevention and Control, Directorate of Strategic Interventions in Public Health, Ministry of Health, Peru
7:39 – 7:47 AM	**Presentation:** Progress and challenges in the prevention of lung cancer in the U.S.	**Dr. Ted Trimble** National Cancer Institute, Department of Health and Human Services, U.S.
7:47 – 7:55 AM	**Presentation:** Optimizing a low-dose CT program to increase lung cancer survival: How Chinese Taipei is using innovative, sustainable financing mechanisms to significantly reduce lung cancer mortality by 2030	**Dr. Chung-Liang Shih** National Health Insurance Administration, Ministry of Health and Welfare, Chinese Taipei
7:55 – 8:28 AM	**Roundtable Discussion** Discussants to review and reflect on earlier presentations and their implications for lung cancer control in APEC economies. Topics that may be raised include: • The adoption of a patient-centric approach for lung cancer prevention, diagnosis, and treatment. What policies and practices have most supported patients and what are the areas for improvement? How to involve cancer patients at the outset into lung cancer prevention and treatment	***Facilitator*** **Sejal Mistry** Crowell & Moring International

Time	Activity	Speakers
7:55 – 8:28 AM	efforts and promote patient-centric policies? • How can economies reduce stigmatization of lung cancer, especially for vulnerable never-smoker populations with environmental exposures? • How do we build on the successes of low-dose CT for screenings to ensure that people who are diagnosed have access to the treatment they need, especially for "best buys" that reduce the mortality rate of lung cancers? • How does can health insurance authorities promote patient access through strengthened referral pathways that link low-dose CT with follow-up treatment of confirmed cases? • How can improved data on the histology and mutation typing of lung cancer in cancer registries help to measure the epidemiology, survival rates, and associated care costs? • How can economies secure funding for cancer prevention, screening, diagnosis and treatment? How have new financing mechanisms supported scaled screening and treatment programs?	
8:28 – 8:30 AM	**Closing**	**Loyce Pace** Office of Global Affairs, Department of Health and Human Services, U.S.

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