Budget Impact of low-dose computed tomography screening for Lung Cancer in Argentina

EE329

Silvestrini Viola C[1], Perelli L[1], Espinola N[1], Fernandez Ortiz S[1], Argento F[1], Alcaraz OA[1]

1. Institute for Clinical Effectiveness and Health Policy (IECS)

BACKGROUND

- **Lung cancer** is a neoplastic condition characterized by the proliferation of abnormal cells that grow in an uninhibited way within the pulmonary tissue
- Lung cancer is a leading cause of cancer **mortality** in **Argentina** and represents 1.4% of the country's healthcare expenditure.
- **Low-dose computed tomography (LDCT)** had demonstrated **higher efficacy** than chest radiography to detect cases at an early stage and prevent lung cancer mortality.

OBJECTIVE

This study **aims** to evaluate the budget impact of implementing annual LDCT screening in individuals aged 55 to 74 with a smoking history of at least 30 pack-years in the health system in Argentina.

METHODS

A **novo Budget Impact Model** was developed over a 5-year time horizon. A **dynamic cohort** was used with **incident and prevalent cases** by **disease stage**. Also, we considered **the probability of death** for each stage and year of survival.

Main characteristics and assumptions:

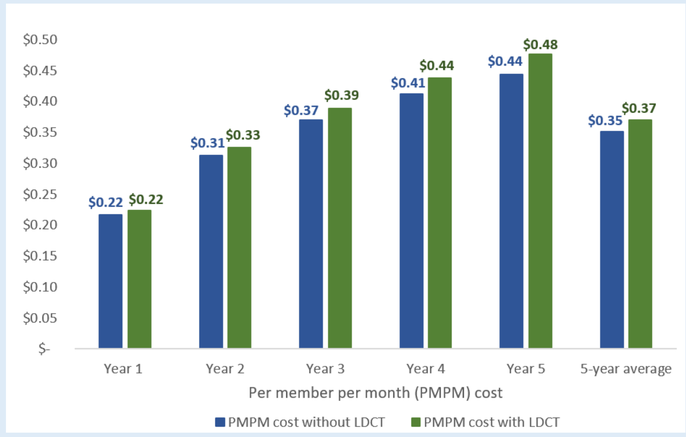
- The **target population** included individuals aged 55 to 74 who had smoked at least 30 pack-years in Argentina.
- The **intervention** is LDCT, compared to chest X-ray or do nothing.
- The **perspective** was the **Argentine health system** (weighted average of public, private and social security sectors).
- The **costs** are expressed in **2023 US dollars** (USD).
- A **market share** was established for the implementation of LDCT, starting at 10% in the first year and progressively increasing to reach 30% by the fifth year.
- **No discount rates** nor adjustments for **inflation** were considered.

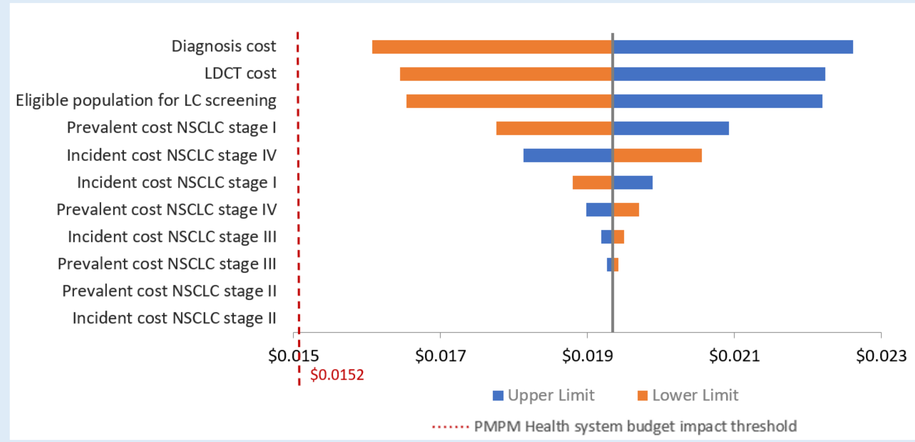
The model followed the recommendations of the ISPOR Task Force for reporting budget impact analysis in health.

RESULTS

From a population of 46 million people in Argentina, the **eligible population** for Lung Cancer screening was **726,420 individuals per year**.

Cost component	Budget Impact					Average
	Year 1	Year 2	Year 3	Year 4	Year 5	
Technology	$2,777,104	$4,165,655	$5,554,207	$6,942,759	$8,331,311	**USD $5,554,207**
Diagnosis	$3,666,190	$5,499,285	$7,332,380	$9,165,475	$10,998,570	**USD $7,332,380**
Treatment	-$2,292,514	-$2,560,402	-$2,360,214	-$1,909,880	-$1,169,385	**-USD $2,058,479**
Total cost difference	**$4,150,780**	**$7,104,539**	**$10,526,374**	**$14,198,354**	**$18,160,496**	**USD $10,828,109**
PMPM cost difference						
Budget Impact %	**3.43%**	**4.06%**	**5.08%**	**6.15%**	**7.30%**	**5.20%**





CONCLUSIONS

- The implementation of annual LDCT screening method resulted in an incremental cost of USD 10,828,109 (USD 0.019 PMPM) for the healthcare system, slightly exceeding the estimated high budgetary impact threshold of USD 8,509,796 (USD 0.0152 PMPM).
- The **incremental** budget impact outcome is **primarily attributed** to the increase in **diagnosed population** and the population to be screened with LCDT, which involves higher costs compared with chest X-ray or do nothing.
- The **reduction** in the cost of **Lung Cancer treatment** because individuals in the scenario with LCDT are diagnosed at earlier stages with lower annual treatment costs.
- The intervention showed a **relative reduction** of the estimated annual **mortality** by 14.68%.
- In this regard, more **efficient prevention policies** and programs are required.