P1.04.34: AI Powered Incidental Pulmonary Nodule Program Demonstrates High Lung Cancer Detection Rate: Canadian IDEAL Study

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INTRODUCTION

The majority of pulmonary nodules are found incidentally on imaging **unrelated to screening**, referred to as incidental pulmonary nodules (IPNs).

IPNs are generally poorly managed due to a lack of structured reporting, tracking, and management workflows, resulting in a **missed opportunity for early lung cancer detection**.

The IDEAL study (Vancouver, Canada site) prospectively evaluated deployment of a **Natural Language Processing (NLP) system** to identify all patients with IPNs and create an automatic 'fail-safe' management pathway.

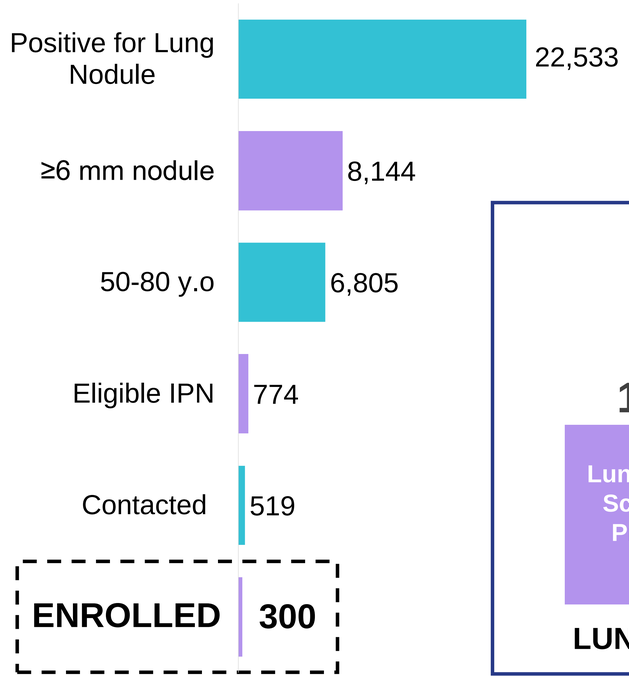
The **primary aim** of this study is to describe lung cancer incidence and risk profiles in a large Canadian IPN cohort.

Harnessing NLP for IPN management represents a scalable opportunity to reduce missed cancers and transform early detection.

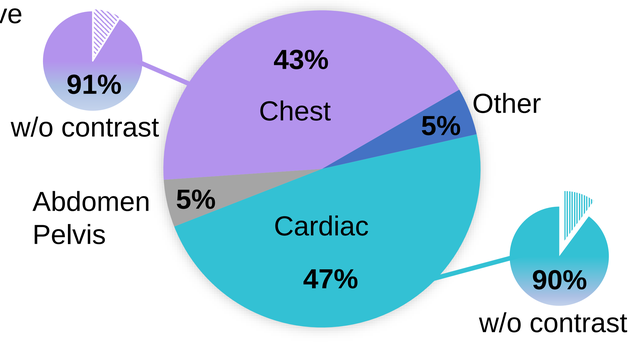
RESULTS

The Vancouver site evaluated **85,482** lung-in-view scans from Nov 1st 2023 – June 30th 2025. To date, 300 participants have been enrolled for nodule tracking and management.

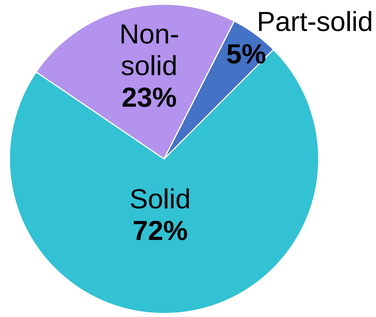
Patient capture by NLP system (n = 85,482):

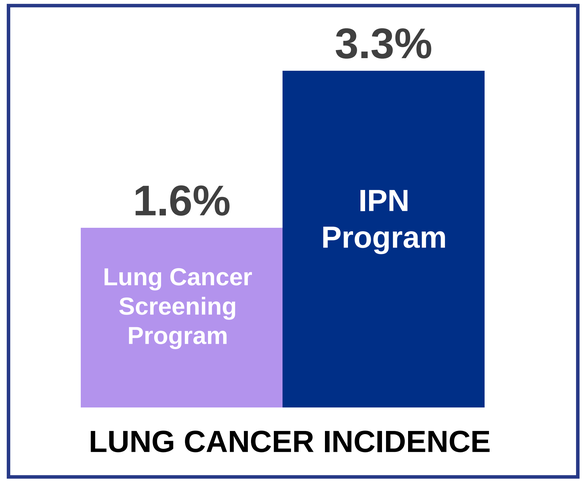


CT Scan Types



Nodule Characteristics





90%

of IPN cancers were **early stage**

40%

of IPN cancers **never used tobacco**

70%

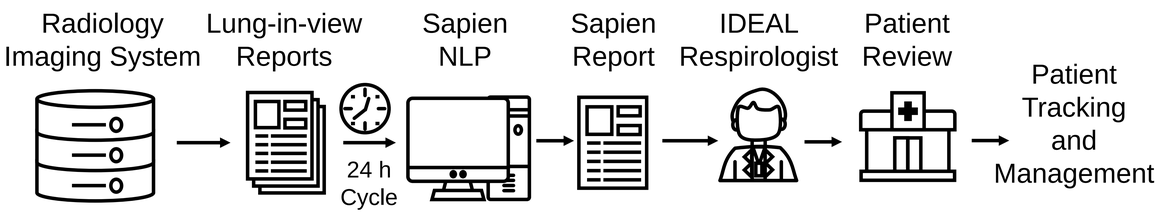
of all cancer patients were ***NOT*** **eligible** for screening ($PLCO_{m2012}$)

78%

of IPNs who use(d) tobacco were ***NOT*** **eligible** for screening ($PLCO_{m2012}$)

METHODS

SapienNLP v4 analysed **all** unstructured radiology reports to identify IPNs ≥ 6mm in a large public health authority with 4 hospitals servicing 1.25 million people.



Demographics	Category	n
Age (years)	Mean ± SD	67 ± 8
Sex	Female	50%
Immigration status	Immigrant	47%
Knowledge of nodule	Yes	67%
Has primary care physician	Yes	97%
Family history of lung cancer	Yes	15%
Tobacco use	Never	58%
	Former	34%
	Current	7%
PLCOm2012 (Tobacco users only)	>1.51% (Eligible for screening)	22%

CONCLUSION

First large-scale, prospective study in Canada aiming to improve IPN detection and management and define lung cancer incidence in this population.

Deploying NLP in a large health authority reliably identifies clinically relevant IPNs and allows streamlined tracking and management.

Lung cancer incidence in this population surpasses our lung screening program capturing individuals that would not qualify for screening.

IPN programs **expand the reach of early detection beyond current screening programs**, particularly in persons who have never smoked or have a light smoking history.

https://idealung.ca