P1.04.33: Sybil Pilot for Incidental Pulmonary Nodules

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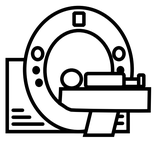
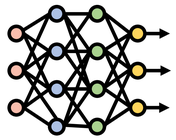
INTRODUCTION

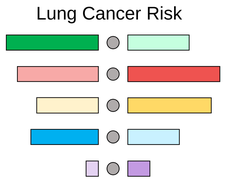
> 1.6 million incidental pulmonary nodules (IPNs) are identified annually in the USA. The average lung cancer detection rate is 4-6% (higher than most screening programs).



Analysis of CT scans completed for non-screening purposes may offer a practical approach to expand lung cancer risk assessment by capturing IPNs.

Deep learning algorithms, such as Sybil, have been trained and validated on LDCT scan to predict 6-year lung cancer risk scores, although the accuracy may vary by nodule sizes.





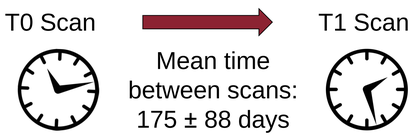
Here we compare Sybil scores on diagnostic 'lung-in-view' scans with IPNs to dedicated repeat low-dose CT chest on the same individual to assess the applicability of the tool on all "lung-in-view" imaging.

Every scan is an opportunity for early detection

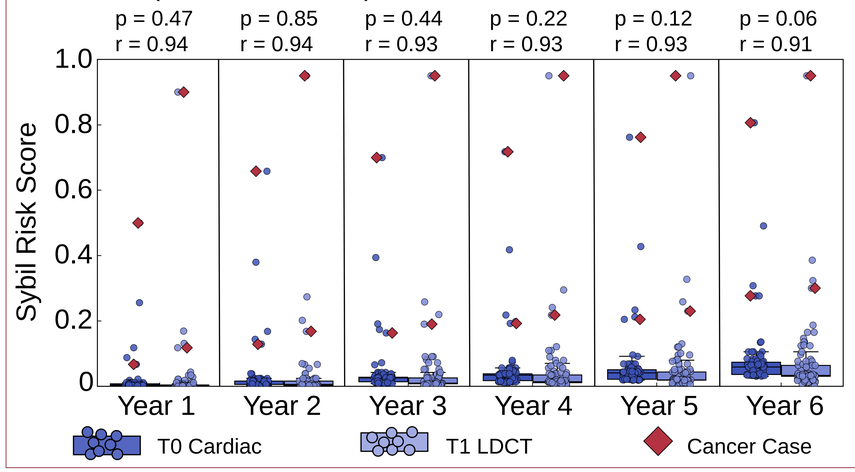
RESULTS & DISCUSSION

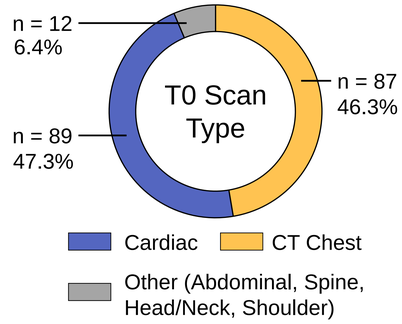
A total of 188 patients (aged 67 ± 8, 48% female) with IPNs detected on various diagnostic scans with repeat paired dedicated LDCT were included. Head/neck, spine, shoulder, and abdominal scans were removed from analysis. Sybil was applied to a subset of 156 patients with paired T0 (71 CT chest scans, 85 cardiac scans) and T1 LDCT scans.

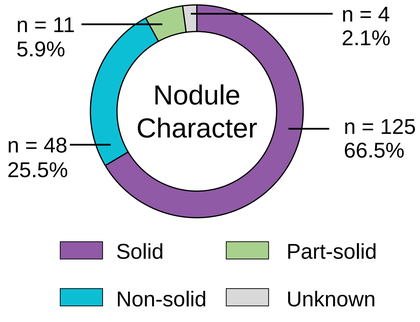
Never, n = 109 (58%)
Former, n = 68 (36%)
Current, n = 11 (6%)



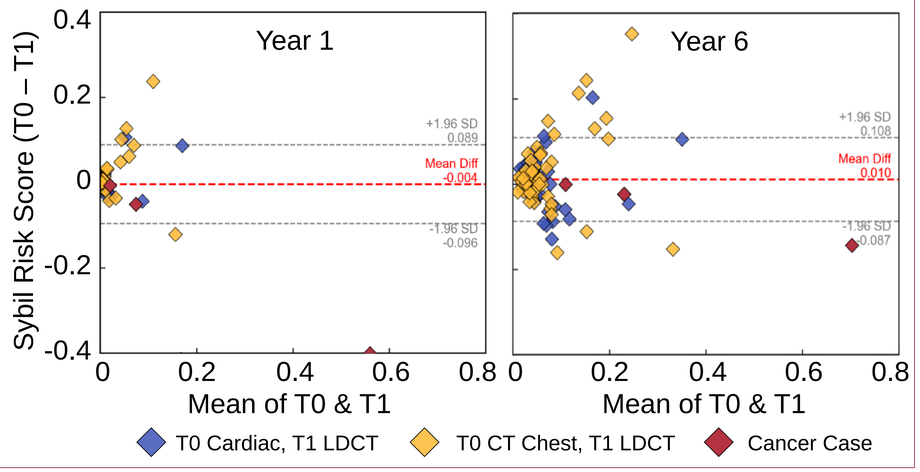
No statistically significant differences between T0 cardiac and T1 LDCT Sybil risk scores were observed at any time-point over 6 years (t-test, p > 0.05). Strong correlation between T0 and T1 scores was observed (Pearson r > 0.91).







Bland-Altman analysis showed excellent agreement between T0 and T1 at all time points. Risk scores for cardiac T0 to LDCT T1 were most similar for year 1 with a mean difference of -0.4% increasing to 1.0% for year 6.



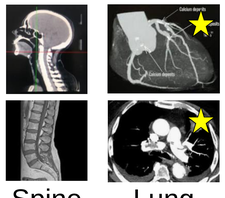
METHODS

Recruitment

A cohort of prospectively, sequentially enrolled patients with IPNs identified on a diagnostic scan were included from the IDEAL trial, Vancouver, Canada site, from 2023-2025.

→ **Initial lung-in-view CT Scan (T0)**

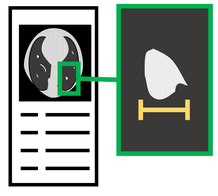
Head/neck Cardiac



☆ Used for analysis

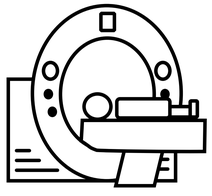
→ **Nodule detection**

> 6mm nodule detected



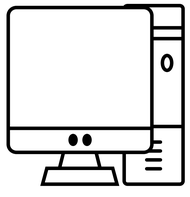
→ **Follow-up LDCT scan (T1)**

CT Scanner



→ **Deep learning algorithm**

Sybil



→ **Lung cancer risk prediction**

T0 vs. T1

CONCLUSION

Sybil risk scores remained consistent across both dedicated low-dose CT chest scans and diagnostic CT scans, including cardiac scans.
There was a good correlation in the Sybil score between contrast enhanced cardiac CT and LDCT. The threshold to triage patients with IPN on a cardiac CT for clinical follow-up requires further research.

Canadian Cancer Society
Société canadienne du cancer
Vancouver Coastal Health Research Institute