EE538

Hospital Budget Impact of a Lung Suite Navigation Platform to Diagnose and Treat Lung Cancer Patients

Sanjay Verma, Belinda A. Mohr, Hank van Toor, Gosse Rienks

Philips, Amsterdam, Netherlands, Chief Medical Office

Introduction

Approximately 1.8 million individuals worldwide succumb to lung cancer annually, making it the primary cause of cancer-related mortality. The introduction of low-dose CT scans as part of screening programs has led to an increase in the number of patients with treatable early-stage lung cancer. However, biopsies and surgeries for small nodules can be particularly complex in terms of localization and accessibility.

Objectives

To calculate the cost and reimbursement impact of adopting a more precise and minimally invasive method, a Lung Suite platform, a real-time 3D imaging navigation platform, to diagnose and immediately treat lung cancer patients using procedures like tumour ablation in a single room.

Methods

Diagnostic yields, incidence rates, and complication rates were obtained from literature and real-world data: the Medicare Limited Datasets 5% Sample, Optum Clinformatics Data Mart, Premier Hospital Database, and Definitive Healthcare. Hospital costs and reimbursements were also obtained from these databases. Billing codes were used to identify outpatient and inpatient procedures (Table 1).

Table 1. Procedure Billing Codes

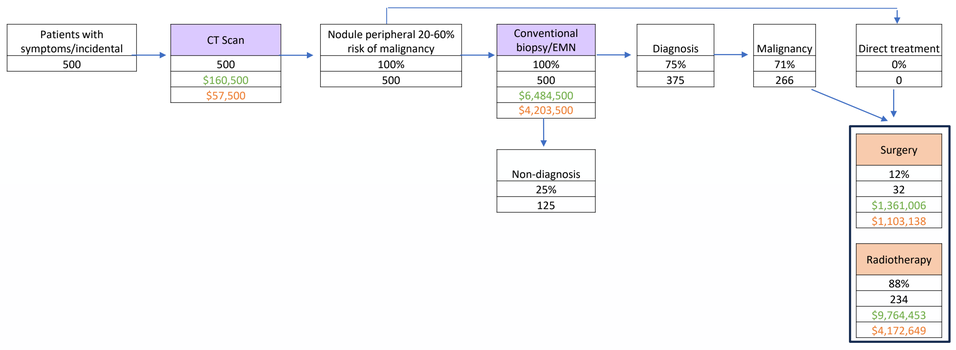
Procedure	Billing Code
Imaging	
CT scan	71271
Endobronchial diagnosis technique	
Fluoroscopic bronchoscopy	31623, 31624, 31625
+Fluoroscopic bronchoscopy, transbronchial biopsy	31628, 31629, +31632, +31633
+Electromagnetic navigation bronchoscopy procedure	+31627
	8E0WXBF
+EBUS/r-EBUS guided sampling	31652, 31653, +31654
+Fluoroscopic fiducial or dye marker placement	31626
Endobronchial therapy	
Bronchoscopic microwave ablation	C9751
Surgery: Segmentectomy, Lobectomy, Sleeve lobectomy	
Segmentectomy	0BBC0ZZ, 0BBD0ZZ, 0BBF0ZZ, 0BBG0ZZ, 0BBJ0ZZ, 0BTC0ZZ, 0BTD0ZZ, 0BTF0ZZ, 0BTJ0ZZ, 0BTK0ZZ, 0BTL0ZZ, 0BTM0ZZ
Lobectomy	0BTC0ZZ, 0BTD0ZZ, 0BTF0ZZ, 0BTG0ZZ, 0BTJ0ZZ, 0BTC4ZZ, 0BTD4ZZ, 0BTF4ZZ, 0BTG4ZZ, 0BTJ4ZZ, 0BTC4ZZ, 0BTD4ZZ, 0BTK4ZZ, 0BTL4ZZ, 0BTM4ZZ
Sleeve lobectomy	0BB30ZZ, 0BB70ZZ, 0BTC0ZZ, 0BTD0ZZ, 0BTF0ZZ, 0BTG0ZZ, 0BTJ0ZZ, 0BTK0ZZ, 0BTL0ZZ
Radiotherapy	
Treatment Planning	77263, 77295, 77290, 77301, 32701
Treatment Delivery	77373
Treatment Management	77435

Reimbursements were calculated from 2021 data as the average payment amount per claim and represent the national US payer payment for Medicare and commercial insurers. Costs were calculated from the Premier Healthcare Database for 2021 as the average cost amount per claim for all payors. Weighted averages were used to represent public and private payer reimbursements and costs for each procedure (Table 2).

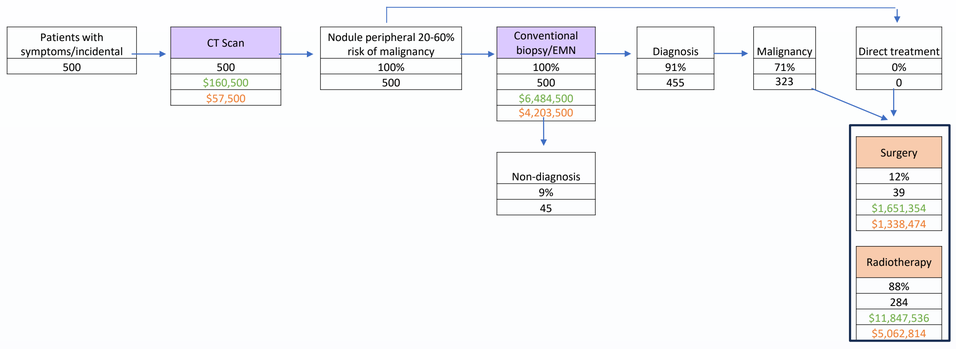
Table 2. Reimbursement and Costs

Procedure	Reimbursement	Cost	Weighting
Imaging			
CT scan	$321	$115	
Endobronchial diagnosis technique			
Fluoroscopic bronchoscopy (brush; lavage; biopsy) plus			
+Fluoroscopic bronchoscopy, transbronchial biopsy	$8,409	$5,258	37%
+EBUS/r-EBUS guided sampling	$9,462	$5,512	39%
+Fluoroscopic fiducial or dye marker placement	$15,388	$6,879	2%
+Electromagnetic navigation bronchoscopy procedure	$25,935	$18,385	23%
Weighted Average	$12,969	$8,407	100%
Endobronchial therapy			
Bronchoscopic microwave ablation	$6,618	$3,610	
Surgery: Segmentectomy, Lobectomy, Sleeve lobectomy			
Segmentectomy	$47,738	$43,494	25%
Lobectomy	$39,473	$29,442	56%
Sleeve lobectomy	$45,046	$37,714	19%
Weighted Average	$42,598	$34,527	100%
Radiotherapy			
Treatment Planning	$14,080	$6,381	
Treatment Delivery	$12,017	$6,254	
Treatment Management	$15,578	$5,174	

Current pathway



New pathway



Key
Outpatient
Inpatient
Reimbursement
Cost

Results

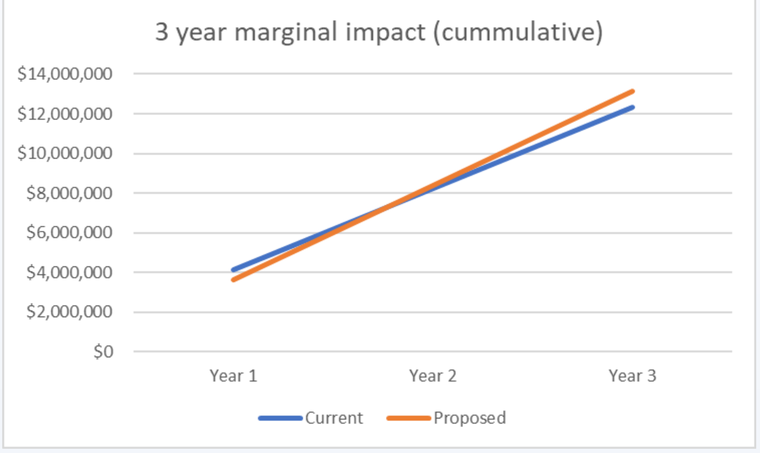
Investment

Azurion lung edition	$787,500
Room upgrade costs	$300,000

Year 1	Current	Proposed
n	250	250
Reimbursement	$8,885,229	$10,071,945
Costs	$4,768,393	$6,418,644
Difference	$4,116,836	$3,653,301
Marginal impact		-$463,535

Year 2	Current	Proposed
n	250	250
Reimbursement	$8,885,229	$10,071,945
Costs	$4,768,393	$5,331,144
Difference	$4,116,836	$4,740,801
Marginal impact		$623,965

Year 3	Current	Proposed
n	250	250
Reimbursement	$8,885,229	$10,071,945
Costs	$4,768,393	$5,331,144
Difference	$4,116,836	$4,740,801
Marginal impact		$623,965



Conclusion

Hospitals adopting the Lung Suite navigation platform can realize cost savings and better contribution margins over time versus the conventional pathway, while also delivering better patient outcomes and efficiencies to the patient pathway.

References

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Contact information

Sanjay Verma (Sanjay.verma@philips.com)