Number of Lung Cancer Surgery

The number of surgeries where the patient was given a definite diagnosis of lung cancer after a lung resection with curative intent

Definitions

• Curative intent: Cases where surgery was performed with an intent to remove the tumor completely; i.e. cases where the surgery was performed for histological examination are excluded.

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 Lung resection: All surgical procedures involving the removal of the lungs and bronchus including wedge resection, segmental resection, lobectomy, and pneumonectomy.



→ Interpretation —

 The number of lung cancer surgeries performed at SNUBH increased every year, rising sharply to about 900 in 2021 and continuing the trend in 2022.

📩 Improvement

- PR events (Organization & Management of Lung Cancer Patient Support Group; Presentation of relevant research).
- Management of the outpatient multidisciplinary care.
- Management of short-stay hospital beds for the lung cancer test.

Data source SNUBH EMR (Electronic Medical Record), CDW (Clinical Data Warehouse), Department of Thoracic & Cardiovascular Surgery Lung Cancer Registry

Lung Cancer

Proportion of Minimally Invasive Surgery for Lung Cancer

The proportion of surgeries that were performed with a minimally invasive approach for lung cancer

Definitions

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- Thoracoscopy: Surgical resection of the lungs using various devices while looking through an endoscope inserted via minimal skin incision.
- Robotic surgery: A type of surgery where lung resection is performed using the da-Vinci robot.



• The higher the percentage, the more reliable the hospital is for the surgery using the minimal skin incision.

Improvement

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- Introduction of a 3D camera.
- Workshop training for thoracoscopic surgery (four times a year).
- Robotic surgery training and promotion.

Average Length of Stay, Lung Cancer Surgery

The average length of hospitalized days after receiving lung cancer surgery

Definitions

- Postoperative length of stay: The number of days from the date of surgery to the date of discharge.
- Average postoperative length of stay: Calculated by dividing the total postoperative length of stay by the total number of patients who underwent surgery.

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Interpretation

 The length of stay after lung surgery showed a steady fall, and the level is currently maintained at 5–6 days after surgery.

h Improvement

- Operation of Lung Cancer CP (Clinical Pathway) to reduce the length of stay.
- Increased proportion of thoracoscopic surgery.

II. Health Care Quality Indicators

Lung Cancer

30-Day Mortality Rate, Lung Cancer Surgery

The proportion of patients who died within 30 days of lung cancer surgery or within the same hospital stay, among those diagnosed with lung cancer and underwent surgery



- Within 30 days (of surgery): Discharged patients who died during the 30-day period after surgery.
- The same hospital stay: Patients who died during hospital stay post-surgery regardless of the length of stay.



Interpretation

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- The mortality rate indicates the risk of lung cancer surgery.
- The proportion of elderly and high-risk patients is increasing every year, but postoperative mortality remains very low at less than 1%.

Improvement

- Management of monthly conferences for minimizing complications.
- A thorough follow-up monitoring after discharge.

The stage-specific probability of survival for 5 or more years after lung cancer surgery

Definitions

- Survival rate: Patients that survived irrespective of relapse.
- Stage: The progression of cancer based on the size or status of metastasis to lymph nodes.



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Interpretation

 The rate of complete recovery from lung cancer varied according to the diagnosed stage of cancer after respective surgery.

🔚 Improvement

- High-precision surgical treatment.
- Postoperative multidisciplinary care based on guidelines.
- A thorough follow-up monitoring after surgery.

II. Health Care Quality Indicators

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Lung Cancer

Postoperative Complications, Lung Cancer Surgery

The incidence of complications in patients after lung cancer surgery

Definitions

- Complications: All internal and surgical complications that occur after lung cancer surgery (≥ Clavien–Dindo Grade
 II).
- Major complications: Pneumonia, acute respiratory distress syndrome (ARDS), bronchopleural fistula (BPF), empyema, and sepsis (≥ Clavien–Dindo Grade II).



📥 Interpretation

• The incidence of postoperative complications for lung cancer in 2022 was 6.80%, among which the major type of infection occurred in 0.66% cases. The level is considerably lower compared to other institutions.

Improvement

- Observation of trend in complications.
- Improve accuracy before and after surgery and in the operating room to reduce complications.

Lung Cancer

Incidence of Postoperative Pneumonia

The incidence of pneumonia after surgery

Definitions

- Pneumonia diagnosis criteria (if three out of five items below are checked)
 - Fever reaching 38.3°C or above
 - Leukocytosis
 - X-ray showing pigmented parts due to infiltration
 - Detection of bacteria in sputum culture
 - Cases involving antibiotics treatment



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🔄 Interpretation

Pneumonia is a common complication after lung cancer surgery and the most frequent cause of death.

🔚 Improvement

- Reduced operation time.
- Management of patients with multiple risk factors-respiration rehabilitation and education against smoking.
- Combined treatment in collaboration with the division of pulmonology.
- Apply on Early Recovery Program after operation.

Data source SNUBH EMR (Electronic Medical Record), CDW (Clinical Data Warehouse), Department of Thoracic & Cardiovascular Surgery Lung Cancer Registry

Relevant Research 1) Jang HJ, Song JW, Cho SK, Kim KM, Jheon SH, "Prognostic implication of postoperative infectious complications in non-small cell lung cancer". ^rKorean J Thorac Cardiovasc Surg_J, 2018.

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CP Application and Completion Rates for Lung Cancer Surgery

Among the patients who received lung cancer surgery, the percentage of those for whom a CP (Clinical Pathway) had been applied and completed

Definitions

- Clinical Pathway (CP): A standardized flow of patient care, determined in advance with respect to treatment time and the sequence for a specific group of diseases or subjects.
- Application rate: The percentage of patients for whom CP had been applied among all patients who required a CP.
- Completion rate: The percentage of patients for whom CP had been completed until discharge among all patients who underwent a CP.



Interpretation

- CP application and completion rates are decreasing.
- There are some disease groups that are more convenient to not applying the CP over applying CP.

Improvement

- Differentiating diseases depending on whether CP application helps work performance.
- A double check is made by a resident, a fellow, and a physician assistant to make sure the lung cancer surgery can be applied. In the case of drop-out, detailed reasons are recorded so that efforts can be taken toward improvement.

Data source SNUBH EMR (Electronic Medical Record), CDW (Clinical Data Warehouse) Relevant Research 1) Coffey RJ, Richards JS, Remmert CS, LeRoy SS, Schoville RR, Baldwin PJ. An introduction to critical paths. Qual Manag Health Care 2005;14:46–55.

Readmission Rate after Discharge

Among the patients confirmed for lung cancer after resection, the percentage of those readmitted to the hospital within 30 days of discharge

Definitions

 Patients confirmed for lung cancer after resection: The patients who had been suspected of lung cancer and for whom the pathologic test result following resection confirmed lung cancer.

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 Readmission: A case of unplanned readmission where a symptom or imaging result has been interpreted by the clinician to indicate a need for inpatient treatment.



🛶 Interpretation

- The rate of readmission has been reduced to within 2% since 2015.
- This result may be attributed to a focused management of the correctable factors among those that predict readmission based on the studies of intra-department readmission rate.

Improvement

- Patients were given thorough education regarding discharge to maintain the rate of readmission within 2%.
- Patients were informed to make early outpatient visit to the hospital when an unexpected symptom has arisen.
- Applied the education program for patient care after operation.

II. Health Care Quality Indicators

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Lung Cancer

Wait Time for Lung Cancer Surgery

The average number of days between the day of outpatient visit to the Respiratory Center/ Comprehensive Cancer Center and the day of surgery regarding patients confirmed for lung cancer after resection

Definitions

- Patients confirmed for lung cancer after resection: The patients who had been suspected of lung cancer and for whom the pathologic test result following resection confirmed lung cancer.
- Day of outpatient visit to the Respiratory Center/Comprehensive Cancer Center: The date of outpatient visit by a patient suspected of lung cancer based on imaging or histologic result, for lung cancer surgery.



. Interpretation

 While the number of patients diagnosed with lung cancer and requiring surgery increased, the infrastructure such as wards and operation rooms remained the same so that the wait time increased compared to the previous year.

Improvement

The number of wards and operation rooms should be increased.

Proportion of Hospital Proximity of Lung Cancer Surgery Patients

The proportion of patients residing in areas outside the regions close to SNUBH (Gyeonggi province) among the patients who received surgical treatments for lung cancer



• Hospital proximity: In case the patient's registered address is in Gyeonggi province (Gwanju-si, Seongnam-si, Yongin-si, and Suwon-si), adjacent to the hospital.

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🛶. Interpretation

- The proportion of patients visiting SNUBH to receive surgical treatments for lung cancer from areas outside the hospital proximity (Gyeonggi province: Gwangju-si, Seongnam-si, Yongin-si, and Suwon-si). The proportion is approximately 60%.
- A trend of balanced increase in the number of patients from Gyeonggi province as well as other areas was observed.

Improvement Promote the inflow of patients outside of the region through active promotion.

Data source SNUBH EMR (Electronic Medical Record), Central Cancer Registration Data