2. WHO Global status report on noncommunicable diseases 2014
8. International Agency for research on Cancer: http://gco.iarc.fr/

Are you ready for a new era?

Screening programs are being implemented around the globe.1

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Operable patients with small peripheral lesions will soon be the majority of cases being handled thanks to an increase in lung cancer screening and patient awareness.1

There is new hope on the horizon

It is the #1 cause of cancer death worldwide.

5% increase in mortality for every week of delay.

Every week counts.

Today 60% of patients are diagnosed at a late stage, with a minimal chance of surgical cure.

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Our vision

Enable all-in-one diagnosis and treatment to improve clinical outcomes and reduce overall cost of care.

As an expert in advanced bronchoscopy, you are looking for new techniques to get the highest diagnostic yield and pave the way to new endobronchial treatments. In thoracic surgery you are facing a whole new landscape as open surgery is steadily replaced by the less invasive, but more technically challenging VATS. All with the aim of providing the best care to your patients. At Philips we share your ambition. Discover the benefits of Philips Lung suite.
As you embark upon the journey to improve the care of your lung cancer patients, it is reassuring to know you can draw upon Philips 130 years of experience and knowledge from cath labs, image guided therapy and over 800 Hybrid OR projects globally.

Our all-in-one lung cancer diagnosis and treatment platform enables you to perform biopsy, ablation, marking, and/or thoracic surgery procedures in the same room. So you can deliver same-day diagnosis and treatment to patients.

Learn more on Philips Lung suite with Cone beam CT. Visit: www.philips.com/lungsuite
Clinically proven solutions
to enable you to provide superior care

Detection accuracy of lung lesions equivalent to conventional MDCT
High quality, 5 second cone beam CT protocols allow outstanding visibility of lung lesions and other anatomical structures.

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Bronchoscopy biopsy and ablation

A step change in higher diagnostic yields and new minimally invasive therapy
Image-guided VATS (iVATS)
Streamlining biopsy, marking and surgery in one room

Decide
- XperCT Dual
  - high-quality intra-operative cone beam CT allows you to visualize and segment lung lesions.

Guide
- XperGuide planning
  - Determine optimal percutaneous approach to reach the lesion for a biopsy and/or marker placement.
- Augmented Fluoroscopy marking
  - Use the 3D orientation provided by Augmented Fluoroscopy to position the needle through the XperArm using an anteroposterior approach.

Treat
- XperGuide guidance
  - The cone beam CT data, including the segmented lesion and planned path, are automatically overlayed on live fluoroscopy to guide needle positioning.

Confirm
- FlexMove and FlexArm
  - The advanced system movements of FlexArm offer the flexibility to swiftly move the system in and out of the surgical field without disrupting staff and equipment. Dedicated low X-ray protocols can be applied to verify the correct position of the surgical staples.

XperCT Dual
- High-quality intra-operative cone beam CT is used to verify the correct positioning of biopsy needle and/or surgical marker.

Augmented Fluoroscopy
- Marking
  - Use the 3D orientation provided by Augmented Fluoroscopy to position the needle through the XperArm using an anteroposterior approach.

FlexMove and FlexArm
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Case: Cone beam CT guided endobronchial tumor ablation

Patient History
This is a 72 year old female presenting with a 1.6 x 1.7cm right lower lobe enlarging nodule. She had a smoking history of 45 pack-years but had quit smoking three years back. Her PET scan showed right lower lobe nodule with standardized uptake value (SUV) of 2.8 (Background lung = 2.0) and a brain MRI showed negative for metastatic disease.

Procedure
Cone beam CT guided endobronchial tumor ablation assisted by 3D ablation planning and tumor segmentation overlay with live fluoroscopy.

Conclusion
As the field of advanced bronchoscopy and interventional pulmonology moves towards novel therapeutic approaches, the availability of advanced imaging will be of paramount importance to ensure safety, efficacy and to meet quality standards of care. Cone beam CT offers not only the distinct advantage of intra-procedural 3D real-time imaging for ablation probe planning and confirmation but also the necessary contrast resolution to verify treatment completeness and detect any potential minor or major intra-procedural complications. In addition, cone beam CT-based segmentation of live fluoroscopy and dedicated ablation planning software (Lung suite, Philips) helps to streamline the procedural workflow and limits the number of cone beam CT scans to achieve a satisfactory probe position. Cone Beam CT offers the required precision for performing these procedures and can be considered a must for current and future endobronchial therapies.

Figure 1: Pre-operative CT (left) and intra-operative cone beam CT (right) showing small right lower lobe pulmonary nodule.

Figure 2: 3D segmentation of CBCT dataset to highlight target nodule (left). Standard 2D live fluoroscopy versus corresponding Augmented live fluoroscopy (right).

Figure 3: User interface of the ablation planning software (Lung suite, Philips) with 2D slide view of selected ablation probe (left). 3D visualization of planned ablation probe and segmented nodule (right).

Figure 4: Comparison of pre and post-ablation cone beam CT volumes using Dual view functionality (left). Overlay viewer of the two cone beam CT volumes highlighting extent of ablated tissue in yellow (right).

Courtesy: Dr. Michael Pritchett, Pulmonologist and Director of the Chest Center of the Carolinas, and is affiliated with FirstHealth Moore Regional Hospital and Pinehurst Medical Clinic, Pinehurst, NC, USA.
Case: Image guided Video Assisted Thoracoscopic Surgery (iVATS)

Patient history
This is a 57 year old male presenting with an increasing right upper lobe lung nodule. He was a current smoker (2 packs per day) and had a smoking history of over 100 pack years. Over 2 years of lung screening, his nodule grew from 2 to 6 mm with a suspicion of an early lung cancer in a high risk person. His lung function was significantly diminished and his performance status was limited.

His lesion was deep in the lung parenchyma and therefore not palpable and accessible using a classical video assisted thoracoscopic surgery (VATS) approach. He was offered a limited lung resection via image guided VATS (iVATS) using intra-operative cone beam CT.

Procedure
Image guided Video Assisted Thoracoscopic Surgery (iVATS) assisted by cone beam CT and 3D live needle guidance.

Conclusion
Using the hybrid OR with cone beam CT, navigational bronchoscopy, percutaneous biopsy, fiducial placement, and iVATS can be combined into a single-stage, single-provider procedure allowing for diagnosis and treatment in one setting. Representing a paradigm shift in thoracic surgery, the hybrid OR provides one stop workflow eliminating multiple clinical visits for improved patient experience and care. This streamlined approach not only avoids the upstaging and worse prognosis associated with delayed treatment but is also a cost-effective paradigm for the institution.

Dr. Carsten Schroeder, Augusta University Health

“Having the hybrid OR and all of its technologies at Augusta University Health allows me to tailor the patient’s care plan in one day instead of having to schedule multiple follow-up appointments”

Dr. Carsten Schroeder, Augusta University Health