# European Respiratory Society
# Annual Congress 2012

**Abstract Number:** 3204
**Publication Number:** 3307

**Abstract Group:** 8.1. Thoracic Surgery
**Keyword 1:** Physiology **Keyword 2:** Surgery **Keyword 3:** Lung function testing

**Title:** Structured light plethysmography for the non-contact estimation of chest and abdominal motion changes after thoracic surgery: pilot experience

Dr. Irisz 12990 Levai irisz.levai.dr@gmail.com MD [3], Dr. Simon 12988 Baker Simon.baker@pneumacare.com [2], Mr. Willem 12989 de Boer Willem.de.Boer@pneumacare.com [2], Dr. Richard 12986 Iles richard.iles@addenbrookes.nhs.uk MD [1] and Mr. Aman 12987 Coonar aman.coonar@papworth.nhs.uk MD [3]. [1] Department of Respiratory Paediatrics, Addenbrookes Hospital, Cambridge University Hospitals, Cambridge, Cambridgeshire, United Kingdom, CB20QQ ; [2] PneumaCare Ltd, St. John's Innovation Centre, Cambridge, Cambridgeshire, United Kingdom, CB4 0WS and [3] Department of Thoracic Surgery, Papworth Hospital, Papworth Everard, Cambridgeshire, United Kingdom, CB23 3RE .

**Body:** Introduction: Structured Light Plethysmography (SLP) is a non-contact method of studying chest and abdominal motion. SLP allows a representation of chest and abdominal wall movement which can relate to tidal and spirometic volumes. This can also be studied with a 3D-viewer. Methods: We obtained serial data from 10 patients who underwent thoracic surgery. They were scanned pre and postoperatively with a PneumaScan-P2™ device (PneumaCare, Cambridge, UK). A checkerboard grid of light was projected onto the patients' chest area. Two digital cameras, recorded the grid movement during breathing. Data was presented as a respiratory volume trace over time and as Konno-Mead plots for left v right hemi thorax and chest v abdomen movement. A post operative patient is shown in figure 1.

Results: In some patients following thoracic surgery we demonstrate reduced chest wall motion on the operated side. We find improvements in chest wall movement over the recovery period. In one patient no significant difference in pre and post op scans can be found. This patient had virtually no pain post-op and returned to work 5 days after his limited thoracotomy and lung resection. Conclusions: SLP can objectively measure chest wall movement in thoracic surgery patients. There may be a role for it in monitoring post-operative recovery and we are exploring this further.