



# EBMT

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## Pilot study: Correlation between FEV1 and hand held spirometry (Peak Flow) in patients with chronic GVHD

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### Background

Despite advances in assessment, diagnosis and treatment, patients with pulmonary manifestations of chronic Graft-versus-host disease (cGVHD) following hematopoietic stem cell transplantation (HSCT) continue to present with poor prognosis. In recent years the revised NIH consensus of diagnostic criteria for lung cGVHD or bronchiolitis obliterans syndrome (BOS) has facilitated the development of supportive care, assisting in the interpretation of risk factors and prognosis whilst allowing comparison of treatment strategies. Essentially, detection and diagnosis relies upon obstructive decline in pulmonary function in the absence of alternative aetiologies and

FEV1 being assessed via pulmonary function testing (PFT) at 3 monthly intervals for 2 years following HSCT in line with NIH guidelines. Interestingly in 2015, Cheng et al compared peak flow and FEV1 results of cGVHD patients (n=437) at day 0, 80 and 1 year following HSCT. These results displayed a linear correlation at all-time points suggesting that hand held spirometry may be used as a screening tool for sub-clinical changes in this cohort of patients.

The Photopheresis unit at Rotherham devised a pilot study to establish if a similar relationship could be found between FEV1 and peak flow readings in cGVHD patients receiving Extracorporeal Photopheresis.

### Methods

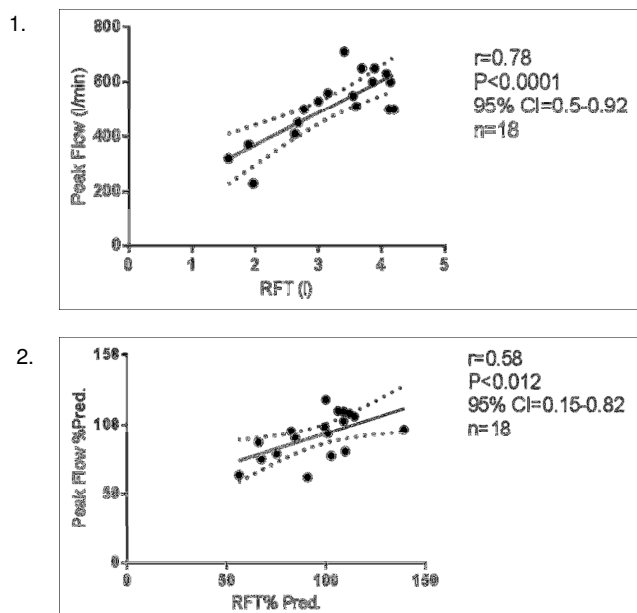
Between 01/11/2016 & 31/12/2016, all Photopheresis patients were supplied with a hand held peak flow meter, educated on performing peak flow and asked to record their results on a daily basis. However, following a compliance review in February (2017), patients were asked to record results a minimum of once weekly. In line with NIH consensus, PFTs continued to be planned at 3 monthly intervals. At the beginning of September 2017, all data from PFT and peak flows were reviewed.

### Results

50 patients were originally included within the pilot study. Only peak flows observed within 2 days of Respiratory Function Tests (RFTs) could be compared. 18 patients had an FEV1 and peak flow result that could be compared.

Results:

1. Observed FEV1 (RFT) vs Peak flow shows  $r=0.78$ ,  $P<0.0001$ , 95% CI (confidence interval)=0.5-0.92
2. FEV1 (RFT) %Predicted vs Peak flow %Predicted shows  $r=0.58$ ,  $P<0.012$ , 95% CI= 0.15-0.82



Demographics	
Male	16
Female	3
Age Range	18-71
Diagnosis	
Acute leukaemia/ myelodysplastic syndrome	9
Lymphoma	1
Chronic leukaemia	4
Myeloma	1
Other	4
Transplant	
Unrelated	9
Sibling/ relative	5
DLI	2
Unknown	2

### Conclusion

This pilot study illustrated that hand held peak flow readings may become an acceptable method of monitoring lung function longitudinally in cGVHD patients undergoing Photopheresis treatment. As such, the unit now actively encourages patients to record regular peak flow readings, allowing the identification of subclinical drops that lack an alternative aetiology. Urgent PFT may then be organised. Future results will continue to be compared, assessing the ability of peak flow readings to predict reduction in lung function, assisting the timely detection of early lung cGVHD or BOS.

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