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Title: Safety and tolerability of acute dosing of beta-blockers in asthma

Dr. Philip 18996 Short philipshort1@gmail.com MD [1], Dr. William 18997 Anderson wanderson@nhs.net MD [1], Dr. Peter 18998 Williamson pwilliamson@nhs.net MD [1] and Prof. Brian 18999 Lipworth brianlipworth@gmail.com MD [1]. [1] Asthma and Allergy Research Group, Ninewells Hospital, University of Dundee, Dundee, United Kingdom .

Body: Objectives We wished to assess the safety and tolerability of acute dosing of both propranolol and esmolol in mild-to-moderate asthmatics. Methods A secondary analysis of a double-blind randomised placebo controlled trial was performed (NCT01074853). Participants underwent dose titrations of propranolol (10mg BD, 20mg BD, 80mg OD). Prior to randomisation participants received an intravenous bolus dose of esmolol (0.5mg/kg). Spirometry, impulse oscillomtery and heart rate were recorded. For each dose titration of propranolol, tiotropium was given concurrently. Results 12 participants completed: mean (SEM); age 37(5), FEV1% 93 (2), R5% 127 (12), ICS ug/day 390 (67) No significant difference was seen for FEV1% predicted or R5% predicted following esmolol use.

There were reductions in heart rate, 2 minutes post esmolol, mean difference 4bpm (95%CI 1.2 -7.5). There were significant worsening of FEV1% (mean difference 4.1% (95%CI 0.22 – 7.9) and R5% 38.3% (95%CI 20.5 - 56.1) 45 minutes post 10mg propranolol. Tiotropium prevented any further bronchoconstriction post 45 minutes and also at each subsequent up-titration visit. Conclusions Acute esmolol dosing did not cause any worsening of pulmonary function within our cohort of asthmatics. Acute propranolol dosing caused evidence of bronchoconstriction with a greater signal seen with impulse oscillometry. Tiotropium prevented any further bronchoconstriction at up-titration visits.