Introduction
There is ample clinical and experimental evidence to suggest that monotherapy, using phosphodiesterase (PDE) 5 inhibitors or selective α-blockers, ameliorates the lower urinary tract symptoms (LUTS) associated with benign prostatic hyperplasia (BPH) by reducing prostatic smooth muscle tone. In this study, we provide mechanistic evidence that treatment strategies utilising a combination of phosphodiesterase 5 inhibitors and selective α-blockers may be more efficacious than either drug alone, in the management of LUTS associated with BPH.

Hypothesis
Our overall hypothesis is that changes in the mechanisms regulating spontaneous activity of the prostate gland, significantly contribute to the pathogenesis of BPH.

Objectives
The aim of this study was to examine the direct effect of a clinically used PDE5 inhibitor, sildenafil, alone and in combination with an existing well established treatment for BPH, the α1 antagonist tamsulosin, in a novel model of human prostatic contractility.

Study design, materials and methods
Transition zone (TZ) tissue (10mm X 15mm) from the prostate gland was obtained from consenting patients undergoing radical prostatectomy. Contractile recordings were made from prostatic preparations (5mm X 10mm) using standard tension recording techniques as we have previously described. A paired Student’s t-test was used to test for statistical significance (P < 0.05).

Figure 1. The different zones of the human prostate gland. Figure modified from (Eilers LG, 2010).

Disclosure statement
No financial disclosures.

Results 1: Sildenafil significantly reduced spontaneous contractions recorded in the TZ of the human prostate gland.

Results 2: Tamsulosin significantly reduced spontaneous contractions recorded in the TZ of the human prostate gland.

Results 3: Together, sildenafil and tamsulosin significantly reduced spontaneous contractions recorded in the TZ of the human prostate gland in comparison to either drug alone.

Conclusion
The current study supports the notion that sildenafil and tamsulosin have a direct inhibitory effect on human prostatic smooth muscle tone, with the combination of the two drugs having an enhanced effect on human prostatic smooth muscle tone, in comparison to either drug alone. Given that LUTS / BPH and erectile dysfunction share common pathophysiology, treatment strategies using combination therapies of PDE5 inhibitors and alpha 1 antagonists may be more efficacious than either drug alone, in the management of BPH in men with or without erectile dysfunction. Further studies are needed to assess long term safety and efficacy.