**Methods. Supplemental Digital Content 1: Definition of disease states**

**Neurological disease**: Parkinson’s, myasthenia gravis, autonomic neuropathy, mitochondrial disease or non-diabetes mellitus peripheral neuropathy, excluding multiple sclerosis.

**Diabetes Mellitus**- Type I or II, either insulin treated or with proven disease related end organ damage (peripheral neuropathy, nephropathy, retinopathy or vasculopathy).

**Inflammatory bowel disease -** Quiescent patients with Crohn’s disease, ulcerative colitis or microscopic colitis with known history of rectal inflammation. Must have colonoscopy/sigmoidoscopy in the 6 months before perception testing to exclude active rectal inflammation.

**Connective tissue disease** - scleroderma or mixed connective tissue disease with proven gastrointestinal manifestations (scleroderma-like esophagus or small bowel intestinal overgrowth).

**Neuromodulators drugs** – patients treated on a regular basis with medications previously shown to effect gut perception: tricyclic antidepressant (amitriptyline, imipramine, clomipramine, doxepin, deptran, prothiadone, dothiadone, trepidine), gabapentoids (gabapentin, pregabalin), opiod containing drugs (including codeine, mersyndol), tramadol or serotonin and noradrenaline reuptake inhibitors (venlafaxine, desvenlafaxine or duloxetine).

**Non-specific psychiatric medications** - patients taking psychiatric medications with no known effect on gut perception: serotonin or noradrenaline reuptake inhibitors other than above, tetra-cyclic antidepressants, lithium, lamotrigine, quetiapine or monoamine oxidase inhibitors.

**Anal surgery** - patients at least 1 year from one of the following surgical procedures: sphincterotomy (for anal fissure), hemorrhoidectomy (surgical only), fistulectomy, Lord’s procedure, anal repair following high grade obstetric associated sphincter injury, imperforate anus corrected as child or anterior overlapping sphincter repair.

**Rectal surgery** - patients at least 1 year from one of the following surgical procedures: rectopexy for rectal prolapse, repair of rectocele, repair of recto-vaginal fistula, rectal resection for solitary rectal ulcer syndrome or stapled trans-anal rectal resection, excluding surgery for rectal cancer (low anterior resection).

**Colon surgery** - patients at least 1 year following a non-rectal segmental colonic resection.

**Pelvic surgery** - patients at least 1 year from one of the following surgical procedures: bladder and/or urethral repair, pelvic organ prolapse or prostatectomy.

**Pelvic radiation -** patients at least 1 year from radiation therapy to the pelvis for the treatment of the following: cervical/uterus cancer, ovarian cancer or prostate cancer. Patients with rectal cancer were excluded.

**Obstetrics associated anal sphincter injury (OASI) -** patients with a history of obstetrics associated perineal tear grade 3a or above.

**Spinal cord injury/surgery -** patients with a history of spinal cord trauma or surgery (for various etiologies including lymphoma, solid cancer, paraganglioma, spinal stenosis or sciatica), transverse myelitis or decompression injury, with resulting cauda equina, incomplete or complete injury as per ASIA classification. At least 6 months from insult.