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INTRODUCTION & OBJECTIVES: Gleason pattern 5 prostate cancers show little to no glandular differentiation, and there have been essentially no changes in assignment of Gleason pattern 5 from Donald Gleason’s original descriptions through the 2005 International Society of Urological Pathology (ISUP) modification. There is also evidence to suggest that the presence of Gleason pattern 5 (Gleason score 9/10) within prostatic adenocarcinomas, confers a worse outcome with respect to Gleason score 8 cancers. The potential for grade migration with this ISUP refinement, poses difficulties in interpreting historical series. We report the characteristics of a recent cohort of consecutive Gleason Score 9 or 10 prostate cancers in our institution. The purpose of this study was to define clinico-pathologic variables and staging information and to identify if traditional prostate staging techniques are adequate for this sub-cohort of men within an Irish population, and to assess whether histological findings and radiological staging were significantly different from those found in Gleason sum 8 tumours.

MATERIAL & METHODS: A computational review of our pathology database was performed. Between May 2010 and September 2012, 1295 consecutive biopsies were undertaken, 168 of which were high-grade tumours (12.97%). This group were divided into two cohorts of which 84 (12.05%) had a highest reported Gleason score of 9 (N=79) or 10 (N=5), and 84 were reported as Gleason 8. All biopsies were double-reported by Pathologists with a special interest in Uropathology.

RESULTS: Men diagnosed with a Gleason pattern 5 tumour were statistically far more likely to have advanced disease on direct rectal examination of the prostate compared with Gleason sum 8 tumours (p<0.001) and a positive 1st degree family history of prostate cancer (p<0.001). Overall, Gleason sum 9/10 prostate cancers were also found to be statistically more aggressive than Gleason sum 8 tumours on TRUS core biopsy analysis with significantly higher levels of perineural invasion (p<0.0001) and extracapsular extension (p=0.001) as well as a higher levels of tumour found within the core biopsy sample. Those men diagnosed with Gleason pattern 5 prostate cancer also had radiological indicators of increased tumour aggressiveness compared with Gleason sum 8 cancer with respect to bone (p=0.0002) and visceral (p=0.044) metastases at presentation. Furthermore, it has been shown in the literature that there is a sharp decline in predicted cure for men with Gleason pattern 5 cancer at biopsy and at prostatectomy, where only 66.7% and 58.5%, respectively, are free of biochemical recurrence at 2 years.

CONCLUSIONS: This series of Gleason Score 9/10 prostate cancers serves to highlight the large disease burden, adverse pathologic features and locally advanced nature of this aggressive subtype, which has previously been under-described in the literature, and differs from historical series in having a large high-grade cohort demonstrating high rates of metastatic disease. A history of prostate cancer among 1st-degree relatives was particularly prevalent in this population raising the issue of screening in a high-risk population. There are also higher levels of core involvement and perineural invasion in the Gleason pattern 5 cohort compared with Gleason 8 tumours,
even after PSA-equalization (<10ng/ml). The high incidence of visceral metastatic disease at presentation supports upfront staging with CT thorax, abdomen and pelvis.