

## **How Does Circumcision Prevent Prostate Cancer and Could Understanding Why Reduce False Positive PSA Screening Tests?**

**Introduction and Objective:** There is evidence that sustained sub-clinical prostatic inflammation leads to Proliferative Inflammatory atrophy (PIA) a known precursor of malignant change in the prostate. A circumcision trial in Africa demonstrated the dominant bacterial flora in un-circumcised men was anaerobes. There are reports that circumcised men have an unexplained lower incidence of PC and conflicting reports that Vitamin D deficiency increases death from prostate cancer. This presentation reviews the literature as a first step in investigating the hypothesis that lack of circumcision and Vitamin D deficiency synergise as a cause of PC through diminished host surveillance facilitating anaerobe colonization of the prostate.

**Materials and Methods:** Four PubMed literature searches performed using the terms prostatic & PC and circumcision & foreskin identified 11 studies. Globocan 2008 data has been analyzed for PC and cervix cancer incidence and deaths on basis of incidence of circumcision. Ten papers in the IARC 2008 report on vitamin D and PC + 4 more published from 2008-12 and 3 papers that have examined impact of an index of life-time sun exposure on PC risk have also been reviewed

**Results:** Four studies comparing people of Jewish decent (n=2,878) vs people of non-Jewish decent (n=40,768) demonstrated significantly reduction of PC in people of Jewish decent (OR 0.25). Seven reports of circumcision frequency in PC (n=2,500) and matched controls (n=2,463) demonstrated a reduced frequency in patients (OR 0.86). In Globocan 2008 data though predominantly circumcised USA, Israeli/Saudi populations had less PC deaths than uncircumcised Brazilians, PC deaths were even lower in uncircumcised Japanese, Chinese and Danes and the circumcised Pakistani and Bangladeshi populations had similar PC mortality as predominantly uncircumcised Indians. Only 2 of the 13 plasma 25-OH Vit D series showed significant reduction of PC overall though 4 did show reduced deaths. In contrast all 3 series that have examined an index of long-term sun exposure showed significant reduction of PC (OR 0.18, 0.32 and 0.52 n= 850)

**Conclusions:** The conflicting Vitamin D data suggest that there is a need for prolonged sub-clinical immune-deficiency to enable anaerobes to promote the development of PC. If confirmed by prospective studies, elimination of false positives due to anaerobes could improve the specificity of PSA screening. The inconsistencies in the circumcision data suggest that the hygiene rules associated with religious circumcision could add to the reduced PC in Jewish men, and mirror the similar differences seen in the protective value against AIDS of circumcision in Asian Muslims compared to Xhosa African men.