Purpose: The Conformation Number (CN) defined by van't Riet et al. was adopted in this study to evaluate the degree of conformality for Intensity Modulated Radiation Therapy (IMRT) plans. The purpose of this work is to find a set of reasonable CNs for different anatomical sites as our guideline for future IMRT planning. CN was calculated, retrospectively, for more than 170 previously approved and treated IMRT cases. The average CNs and their standard deviations were determined for each site.

Methods: The CN is defined as

$$CN = \left( \frac{VT_{\text{ref}}}{VT} \right) \left( \frac{VT_{\text{ref}}}{V_{\text{ref}}} \right)$$

where $VT_{\text{ref}}$ is the volume of target receiving a dose equal to or greater than the reference dose, $VT$ is the volume of target, $V_{\text{ref}}$ is the volume receiving a dose equal to or greater than the reference dose. Our reference dose was 95% of the prescribed dose. The first fraction defines the quality of coverage of the target whereas the second term evaluates the ability to avoid irradiation of the healthy tissue. The CN ranges from 0 and 1, where 1 is the ideal value. A value close to 0 indicates either total absence of conformation or a very large volume of irradiation compared to the target. In this study, the CN was calculated for each plan. The average CNs along with their standard deviations were analyzed for each treatment site. Treatment sites include prostate, H&N, chest wall, brain and other less common cases.

Results: The CN averages for different sites ranged from 0.66 to 0.84. For Prostate, Lung and Brain case, average CN is around 0.80. The chest wall had an average of 0.76. Head and neck cases had an average of 0.66.

Conclusions: The established CN value for a specific treatment site can be used as a guide for future planning evaluation.