Intravascular Brachytherapy (IVBT) has been recognized as a preferred treatment for coronary in-stent restenosis in routine practice. Stents made of high-Z materials will inevitably perturb the dose distribution of IVBT. In this work, we have conducted a systematical study on these dose perturbations using a Monte Carlo technique for three commercially available IVBT sources (192Ir, 90Sr and 32P). Dependence of the dose perturbation on type of source, stent material, stent diameter, strut thickness and width, and metallic surface area (MSA) is investigated. Results show that dose enhancement of 5–20% occurs inside stent in the region close to the stent struts (luminal side) for all three sources. In the region outside stent (adventitial side), dose reduction of 5-20% is observed for a beta source, while the dose effect is negligible for the gamma source. For a given stent design, the tantalum stent yields a larger dose effect than other stents made of steel, Ti, Ni or Nitinol. It is found that the dose effect strongly depends on strut thickness and it is correlated to MSA. In the effort to simplify practical methods to take into account the stent effect, we have introduced a stent factor. Methods to derive empirical relationships to determine the stent factor in routine practice are proposed. As an example, the relationship of stent factor and MSA for a given source and a given strut thickness was derived. The data presented are practically useful to consider the stent effects in the dose evaluation/treatment planning for IVBT.