Purpose: To evaluate the effect of field size variation in the measurement of output factors for stereotactic cones used in cranial treatments.

Method and Materials: Output factors for stereotactic cones were measured in a Novalis TX linear accelerator for a 6MV photon beam. It is common practice to use a fixed field size for all SRS cones as recommended by the manufacturer. However, there is no readily available evidence about the effect of field size on the output factor values. In our centre we have cones with diameters ranging from 4 to 30 mm as manufactured by Brainlab.

We measured the output factors for all the cones as a function of field size from 2 to 5 cm. Please note that field size refers to the settings on the jaws. We performed measurements using a PTW diode and radiochromic film (Gafchromic EBT2). We defined the output factors as explained in the iPlan User Manual (BrainLAB).

Results: There was a very small variation, within 1 %, in output factor as the field size was varied for cones with diameter 4.0, 7.5 and 10.0 mm. For cones with diameters 20.0 and 30.0 mm there was a slightly higher increase in variation within 1.5 %.

Conclusion: We have Theses results show that the output factor values does not change significantly as the field size defined by the jaws changes from 2 cm to 5 cm. While Brainlab recommends a certain maximum value1 depending on the maximum cone diameter we can see from these results that for the cones we have available it is acceptable to use a field size of 5x5 cm as the fixed field size for all our cones.