2025/11/29 06:00 1/3 Optimization Constraints

# **Defining Constraints**

## **About Constraints**

Constraints can be set in multiple levels (Plan, Fraction Group, Beam Set Group) and they will function differently in each level. Note all constraints are considered "hard limits"- constraints that must be achieved. Constraints are what drive the feasibility calculation- whether the plan is achievable. Constraints at the Plan level are applied to the total dose across all beams. Constraints at the Fraction Group level apply to the total dose across all beams in the Fraction Group. Constraints at the Beam Set Group level are split evenly and applied individually to each Beam Set. In other words, the Constraint dose is divided by the Beam Sets in the Beam Set Group, so that both SFO and IMPT can be achieved (see Fraction Groups). The following will provide a walk through of the different levels and how constraints work at each one.

The following constraint types are available. Note certain constraints are available only for *Target* type structures.

- Min: The minimum dose the structure must receive
- Max: The maximum dose the structure must receive
- Min Mean: The minimum mean dose a structure must receive
  - This will drive the dose up across the structure
- Max Mean: The maximum mean dose a structure must receive
  - This will limit the mean dose across the structure
- The user can choose to apply one of these constraints or multiple constraints to the structure

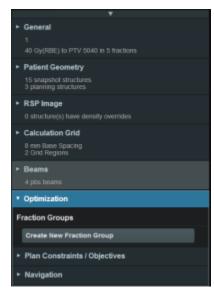
## **Working with Constraints**

### **Working with Fraction Group Constraints**

Constraints at the Fraction Group level apply to the total dose across all beams in the Fraction Group

1. Select the *Fraction Group* if it has been created or create a new *Fraction Group* 

2025/11/29 06:00 2/3 Optimization Constraints



- 2. Choose from the drop down the structure or structures to which constraints should be added
- 3. Define what constraint(s) should be applied to each structure by choosing the constraint and entering the dose



- 4. Once the constraints are set in the *Fraction Group* the user will create *Beam Set Groups* and assign *Constraints*
- 5. The assigned constraint doses will be divided evenly among the Beam Sets in the Beam Set Group



2025/11/29 06:00 3/3 Optimization Constraints

#### **Working with Plan Constraints**

Constraints at the Plan level are applied to the total dose across all beams.

- 1. Open the Constraint sub block contained in the Plan Constraints/Objectives block
- 2. Choose from the drop down the structure or structures to which constraints should be added
- 3. Define what constraint(s) should be applied to each structure by choosing the constraint and entering the dose



Once all the Constraints have been set the user can either start the Feasibility or move on to defining the Objectives



