CLAIMS

1. A method that is computer-implemented for selection of dosimetry levels and sphere amounts of radioactive compounds for use in a radioembolization procedure for procedure planning, the method comprising:

inputting activity parameter information into a dosimetry portal of a dosimetry selection tool;

determining, via a processor, a customized activity based on the activity parameter information and one or more customized activity algorithms;

generating one or more sphere amount and dosage recommendations based on the customized activity and one or more dosimetry selection algorithms;

selecting one of the one or more sphere amount and dosage recommendations as a selected sphere amount and dosage recommendation; and

generating, via the processor, a radioactive compound order for the radioembolization procedure based on the customized activity and the selected sphere amount and dosage recommendation.

2. The method of claim 1, further comprising transmitting the radioactive compound order to a radioactive compound manufacturer for processing and order fulfillment.

3. The method of claim 1, further comprising assigning the radioactive compound order for review by an assigned personnel such that the radioactive compound order is transmitted to a radioactive compound manufacturer for processing and order fulfillment after approval by the assigned personnel.

4. The method of claim 1, wherein the activity parameter information comprises a lung shunt fraction percentage value, an anticipated residual waste percentage value, a previous dose to lungs value, a desired dose to liver value and a target liver volume.

5. The method of claim 1, wherein the one or more customized activity algorithms comprises at least one of a MIRD dosimetry calculation algorithm, a BSA dosimetry calculation algorithm, or a Partition dosimetry calculation algorithm.

6. The method of claim 1, wherein:

the one or more customized activity algorithms generate customized activity information comprising a target liver mass, activity at administration, a calculated dose to lungs, a dose limit to lungs, a cumulative dose to lungs, and a cumulative dose limit to lungs; and

the customized activity is based on the customized activity information.

7. The method of claim 1, wherein the one or more dosimetry selection algorithms to generate the one or more sphere amount and dosage recommendations comprises at least one of an activity-per-sphere algorithm or an activity based on embolic load algorithm.

8. The method of claim 7, wherein the activity-per-sphere algorithm comprises division of the customized activity with a predetermined amount of spheres per activity unit.

9. The method of claim 7, wherein the activity based on embolic load algorithm comprises use of a tissue volume input and a predetermined embolic load determination per cubic centimeter of tissue.

10. The method of claim 9, wherein the predetermined embolic load determination comprises 20,000 spheres per cubic centimeter of tissue.

11. The method of claim 1, wherein selecting the selected sphere amount and dosage recommendation further comprises selecting a desired radioactivity level per sphere.

12. The method of claim 1, wherein selecting the selected sphere amount and dosage recommendation further comprises inputting a dose modification as a positive or negative percentage value.

13. The method of claim 1, wherein selecting the selected sphere amount and dosage recommendation further comprises splitting the selected sphere amount and dosage recommendation across a plurality of vials based on a percent differentiation per vial, the percent differentiation in total comprising 100% of the selected sphere amount and dosage recommendation.

14. The method of claim 13, wherein the plurality of vials comprises a maximum of three vials.

15. The method of claim 1, wherein:

the dosimetry portal is configured to provide for data collaboration among a plurality of users such that the plurality of users are granted access rights to view at least one of a first draft order or one or more radioactive compound orders;

a user is assigned one of a plurality of security clearance levels; and

the plurality of security clearance levels include at least one of a basic security clearance level or an advanced security clearance level providing a user with a greater amount of access rights than the basic security clearance level.

16. The method of claim 15, wherein the basic security clearance level is configured to allow a first user to create the first draft order, and the advanced security clearance level is configured to permit a second user to review and approve the first draft order.

17. A system for selection of dosimetry levels and sphere amounts of radioactive compounds for use in a radioembolization procedure for procedure planning, the system comprising:

a dosimetry selection tool including a dosimetry portal and a graphical user interface; and

a processor communicatively coupled to the dosimetry selection tool and a non-transitory computer storage medium, wherein the non-transitory computer storage medium stores instructions that, when executed by the processor, cause the processor to:

receive, via the graphical user interface, an input of activity parameter information into the dosimetry portal of the dosimetry selection tool;

determine, via the processor, a customized activity based on the activity parameter information and one or more customized activity algorithms;

generate, via the processor, one or more sphere amount and dosage recommendations based on the customized activity and one or more dosimetry selection algorithms;

receive, via the graphical user interface, a selection of one of the one or more sphere amount and dosage recommendations as a selected sphere amount and dosage recommendation; and

generate, via the processor, a radioactive compound order for the radioembolization procedure based on the customized activity and the selected sphere amount and dosage recommendation.

18. The system of claim 17, further comprising instructions that, when executed by the processor, cause the processor to transmit the radioactive compound order to a radioactive compound manufacturer for processing and order fulfillment.

19. The system of claim 17, further comprising instructions that, when executed by the processor, cause the processor to assign the radioactive compound order for review by an assigned personnel such that the radioactive compound order is transmitted to a radioactive compound manufacturer for processing and order fulfillment after approval by the assigned personnel.

20. The system of claim 17, wherein the one or more customized activity algorithms comprises at least one of a MIRD dosimetry calculation algorithm, a BSA dosimetry calculation algorithm, or a Partition dosimetry calculation algorithm.

21. The system of claim 17, wherein the one or more dosimetry selection algorithms to generate the one or more sphere amount recommendations comprises at least one of an activity-per-sphere algorithm or an activity based on embolic load algorithm.

22. The system of claim 17, further comprising instructions that, when executed by the processor, cause the processor to receive, via the graphical user interface, a percentage split of the selected sphere amount and dosage recommendation across a plurality of vials.

~~23. A system for flow rate determination for a radioembolization procedure for procedure planning, the system comprising:~~

~~a delivery device;~~

~~a flow software application tool including a graphical user interface to receive one or more inputs related to the radioembolization procedure; and~~

~~a processor communicatively coupled to the delivery device, the flow software application tool, and a non-transitory computer storage medium, wherein the non-transitory computer storage medium stores instructions that, when executed by the processor, cause the processor to:~~

~~receive, via the graphical user interface, the one or more inputs related to the radioembolization procedure;~~

~~determine, via the processor, one or more flow rate recommendations based on the one or more inputs and one or more optimization algorithms;~~

~~generate, via the processor, one or more corresponding probabilities of reflux based on the one or more flow rate recommendations;~~

~~receive, via the graphical user interface, a selection of one of the one or more flow rate recommendations as a selected flow rate recommendation; and~~

~~use the delivery device to deliver Y90 radioembolization spheres for the radioembolization procedure based on the selected flow rate recommendation.~~