

THE BRACHYTHERAPY PROCESS

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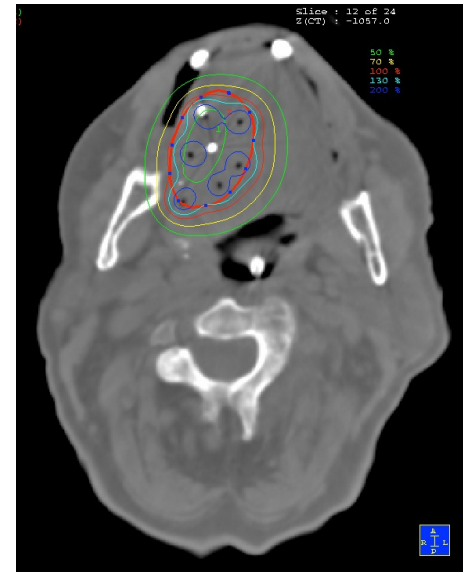
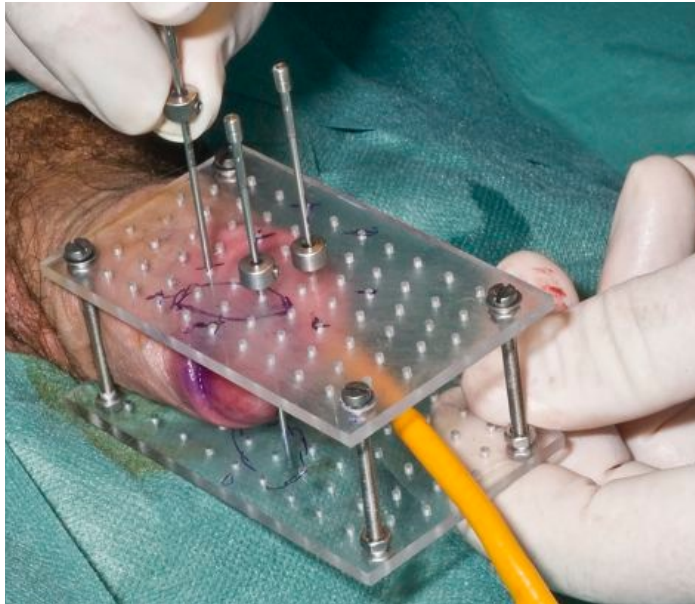
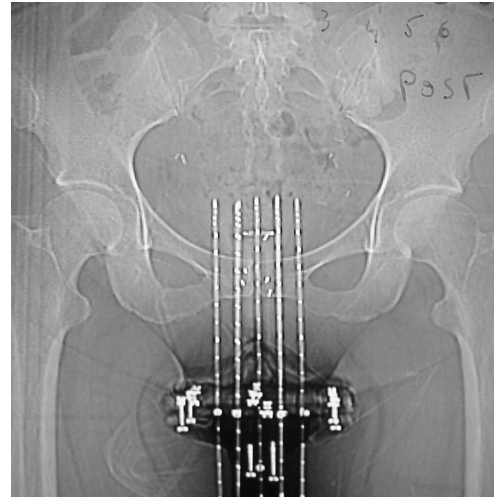
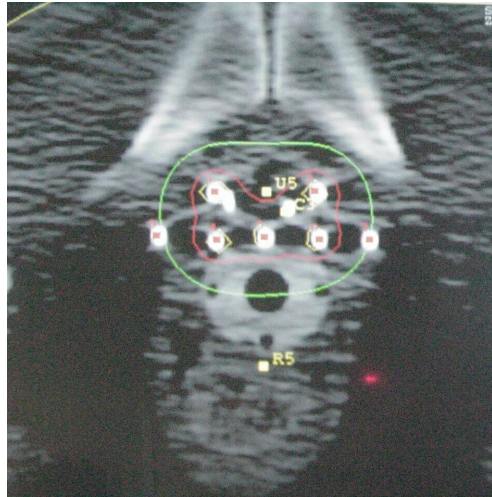
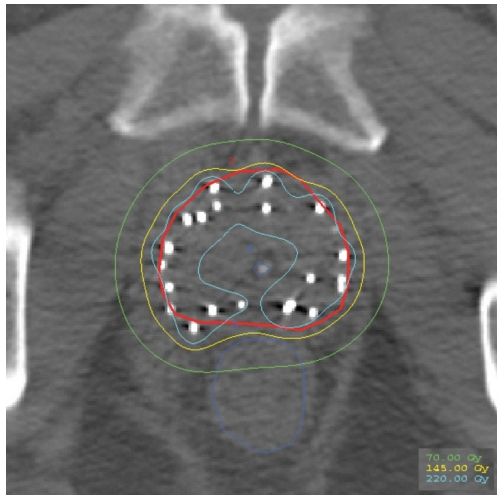


IAEA

60 Years

Atoms for Peace and Development





TAXONOMIES IN BRACHYTHERAPY

TAXONOMY OF BRACHYTHERAPY PROCEDURES

ANATOMY PLACEMENT	SOURCE INSERTION	SOURCE CONTROL	DOSE RATE
Interstitial Intracavitary Surface Intraluminal	Hot-loading After-loading	Manual Remote	LDR MDR PDR HDR

TAXONOMY OF BRACHYTHERAPY PROCEDURES

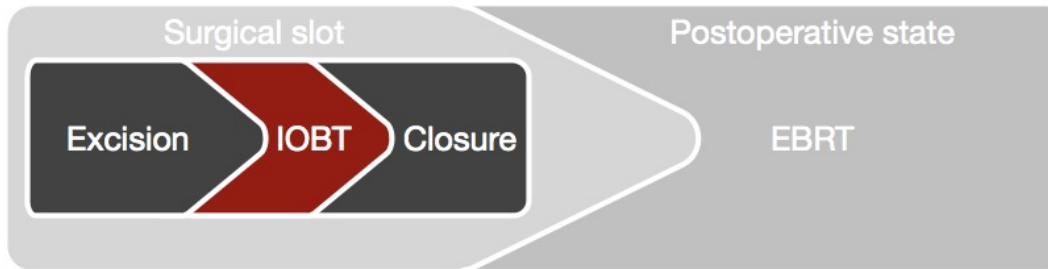
DOSE RATE vs. SOURCE ENERGY

	Low dose-rate	High dose-rate
Low energy source	I-125 Pd-103	eBT
High energy source	Cs-137 Ru-106 Ra-226* Ir-192* Co-60*	Ir-192 Co-60

* Currently unavailable sources

TAXONOMY OF BRACHYTHERAPY PROCEDURES

INTRAOPERATIVE TECHNIQUES



INTRAOPERATIVE BRACHYTHERAPY

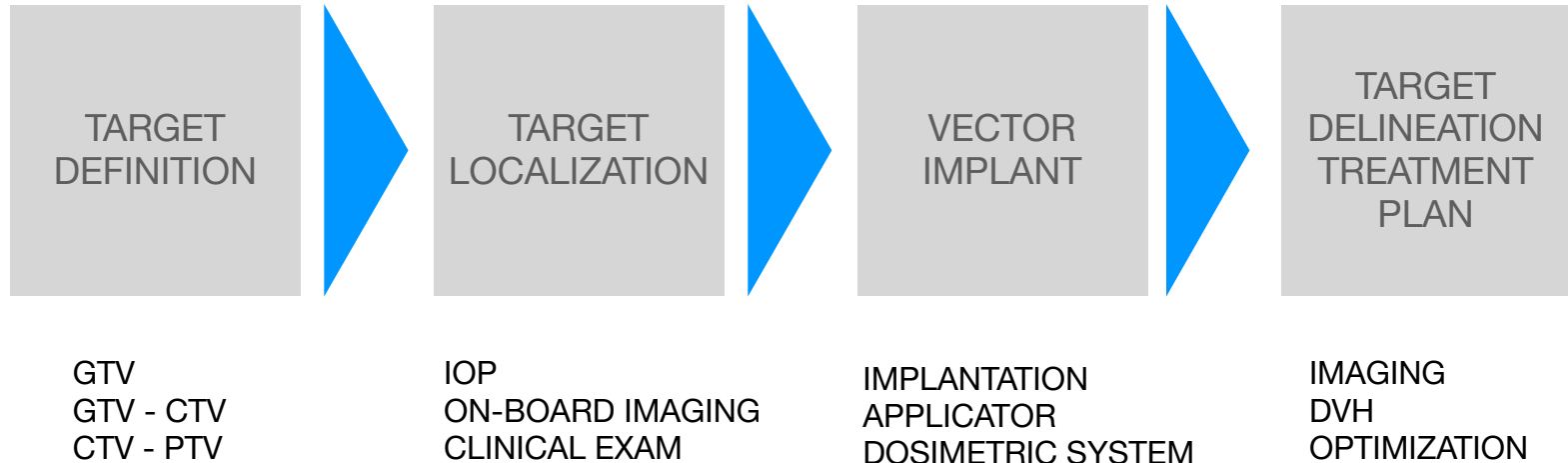


PERIOPERATIVE BRACHYTHERAPY

THE BRACHYTHERAPY PROCESS

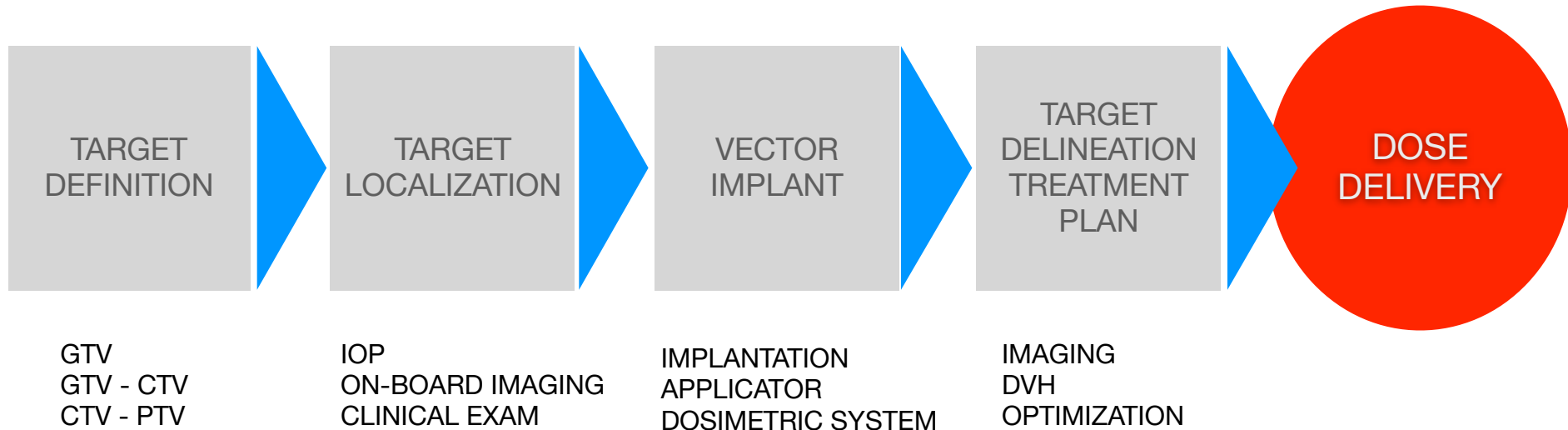
ULTIMATE GOAL OF BRACHYTHERAPY

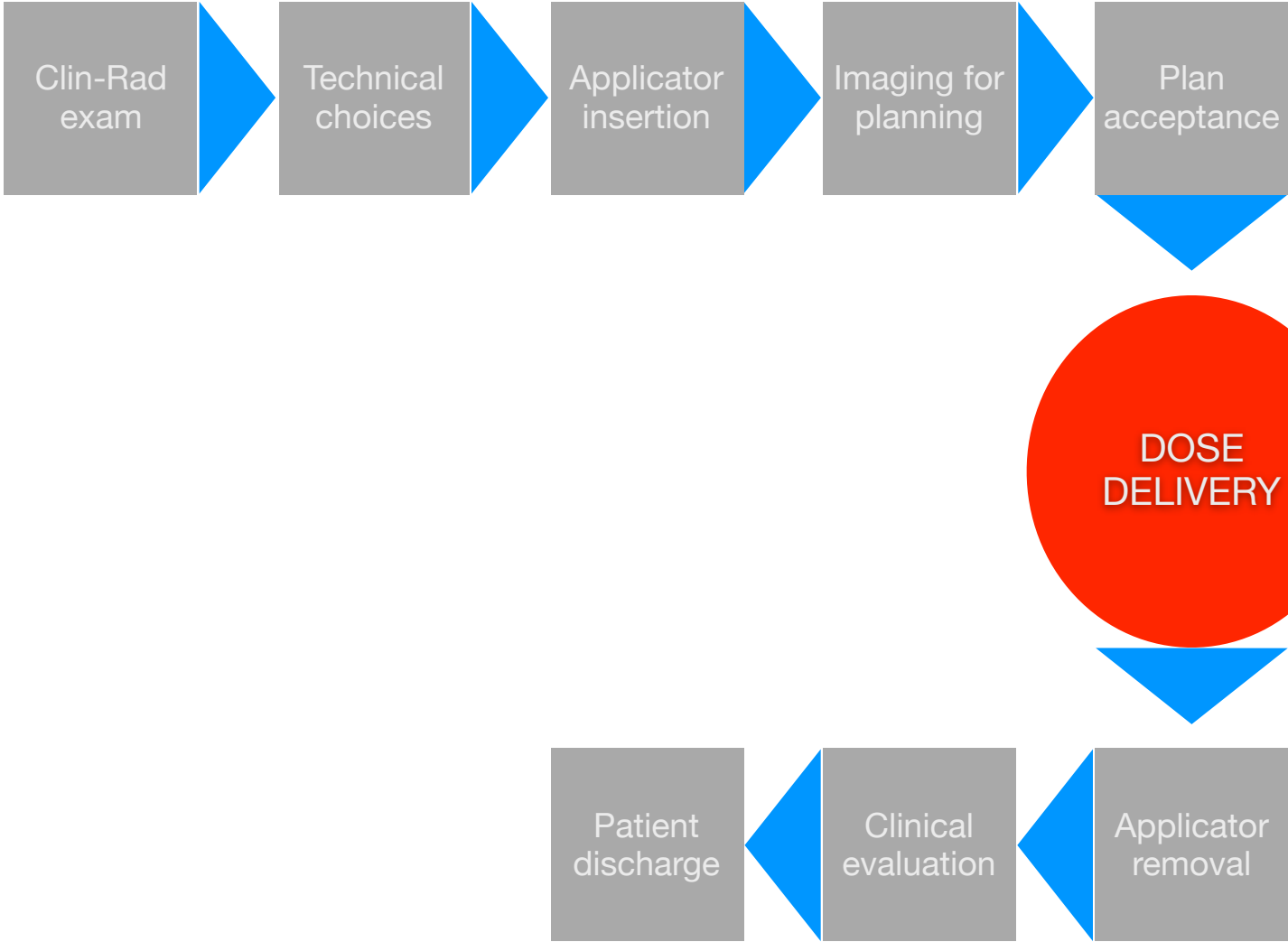
TARGET COVERAGE WITH APPROPRIATE DOSE, SPARING CRITICAL ORGANS

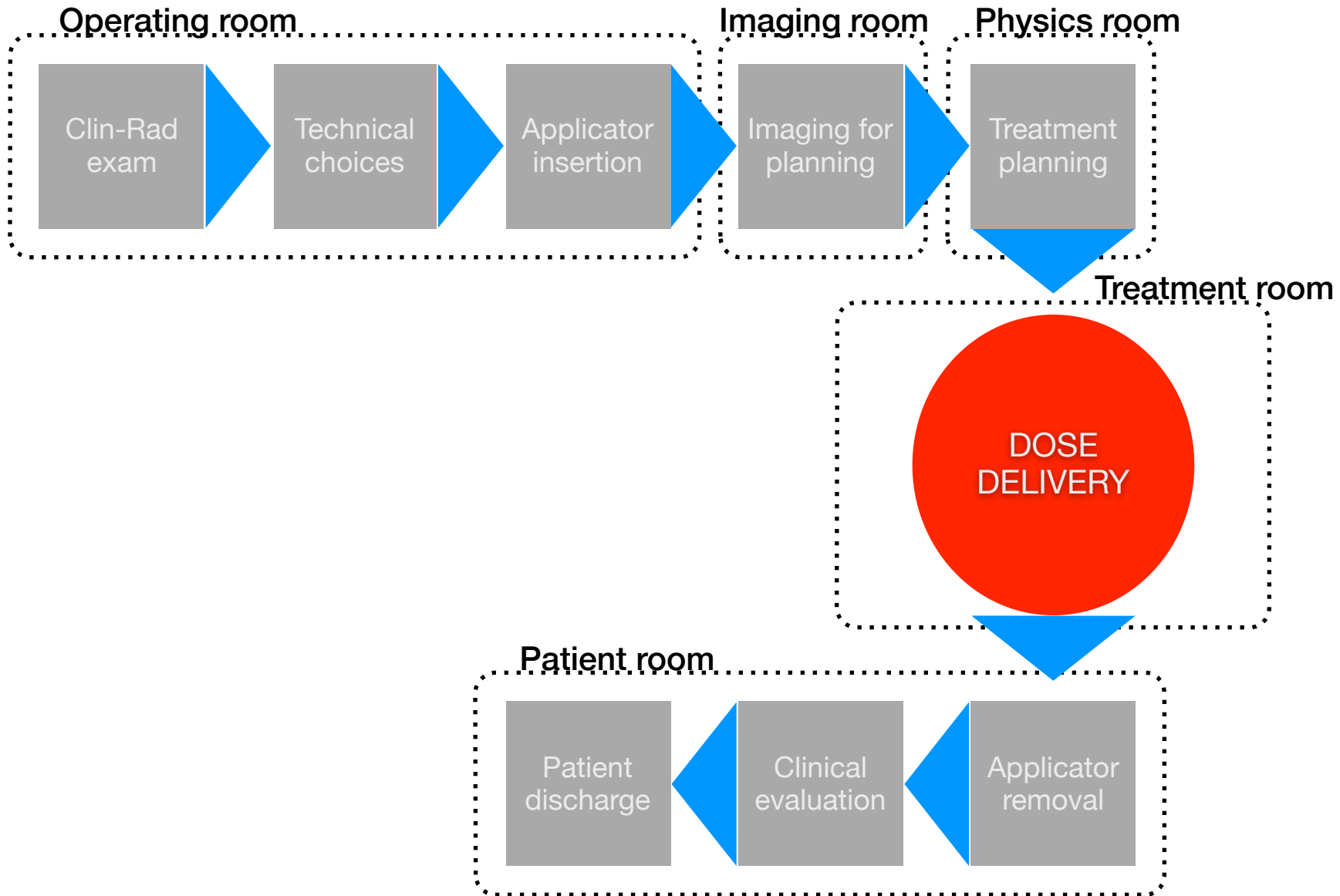


ULTIMATE GOAL OF BRACHYTHERAPY

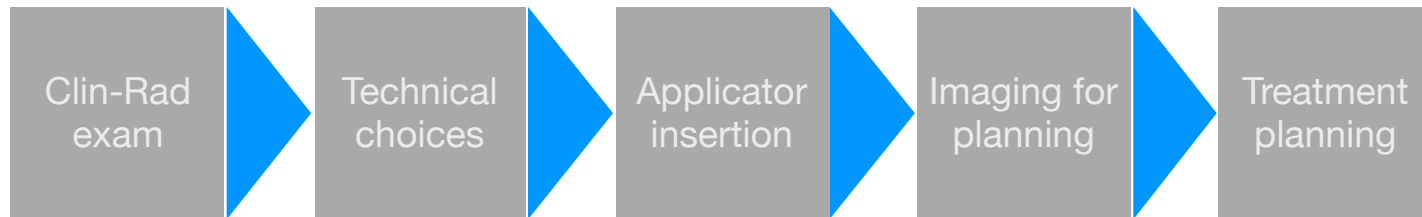
TARGET COVERAGE WITH APPROPRIATE DOSE, SPARING CRITICAL ORGANS







Operating room



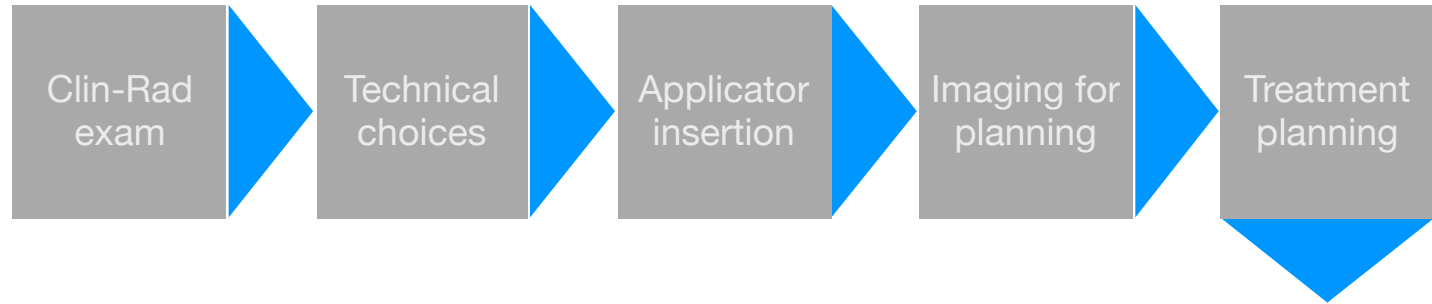
Treatment room



Patient room

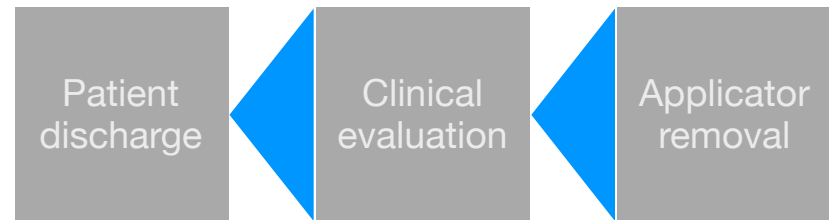


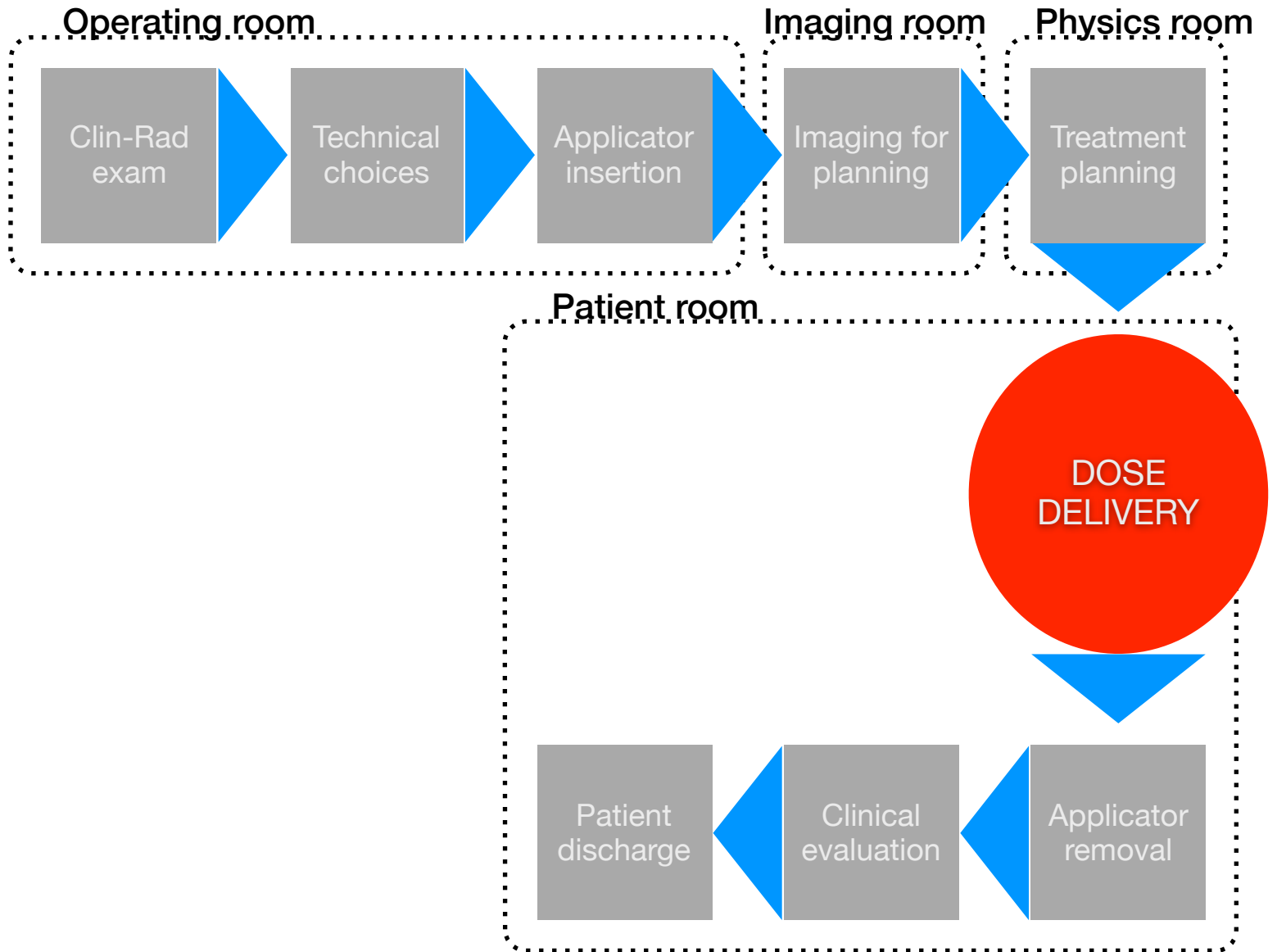
Operating room



DOSE
DELIVERY

Patient room





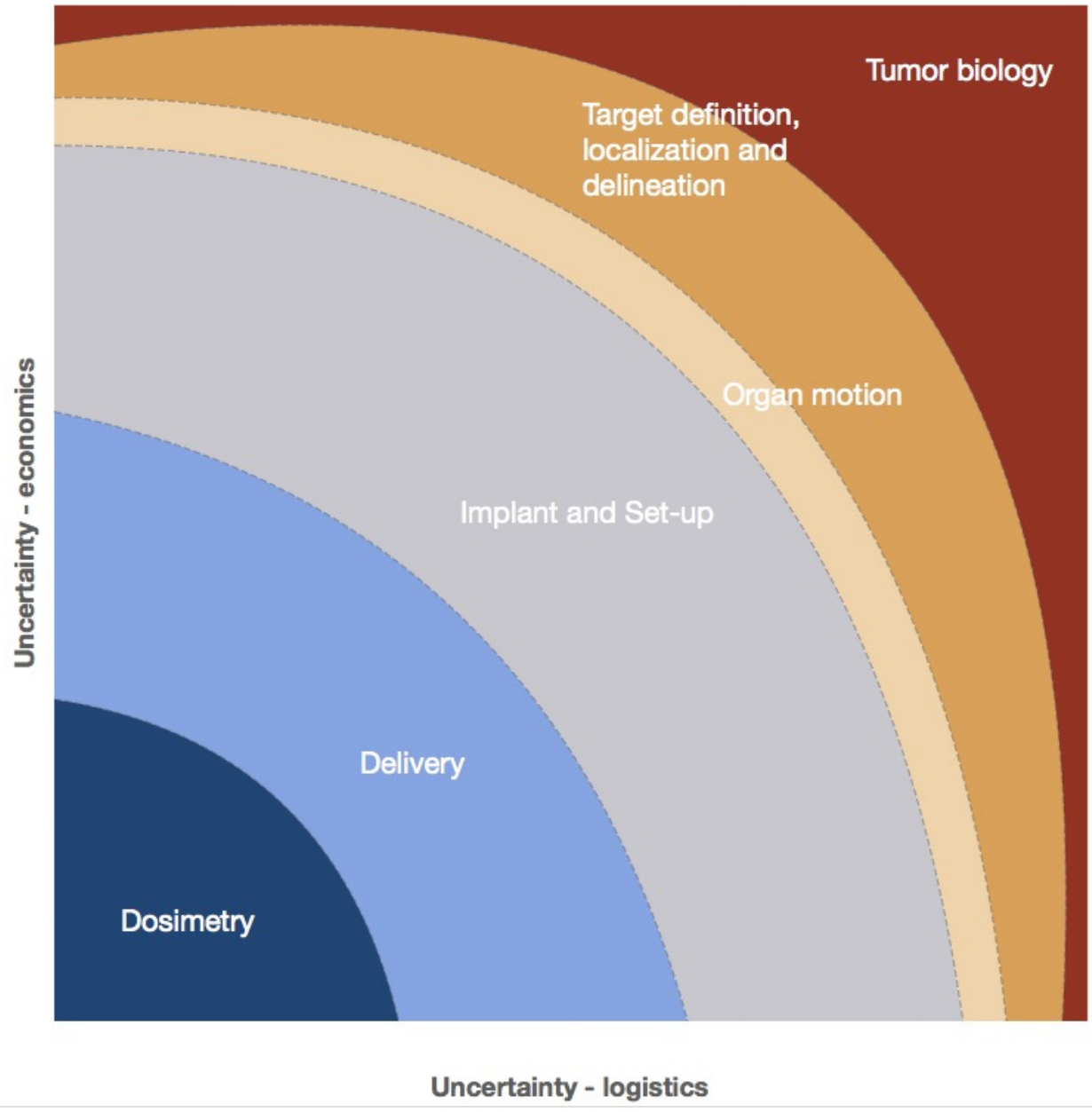
UNCERTAINTIES IN THE PROCESS

SOME CONCEPTS RELATED TO UNCERTAINTY

UNCERTAINTY	ECONOMICS	LOGISTICS
<ul style="list-style-type: none">• The quality or state of being uncertain. Something that is uncertain.• Uncertain: 1, indefinite, indeterminate. 2, not certain to occur, problematical. 3, not reliable : untrustworthy. 4, not known beyond doubt, dubious. 5, not having certain knowledge, doubtful. 6, not clearly identified or defined. 7, not constant, variable, fitful.• Uncertainty: a state of having limited knowledge where it is impossible to exactly describe the existing state, a future outcome or more than one possible outcome	<ul style="list-style-type: none">• Description and analysis of the production, distribution, and consumption of goods and services	<ul style="list-style-type: none">• The aspect of military science dealing with the procurement, maintenance, and transportation of military matériel, facilities, and personnel• The handling of the details of an operation

RISK IS A CONCEPT RELATED TO UNCERTAINTY

RISK: a state of uncertainty where some possible outcomes have an undesired effect or significant loss.



Tumor biology

Target definition,
localization and
delineation

Organ motion

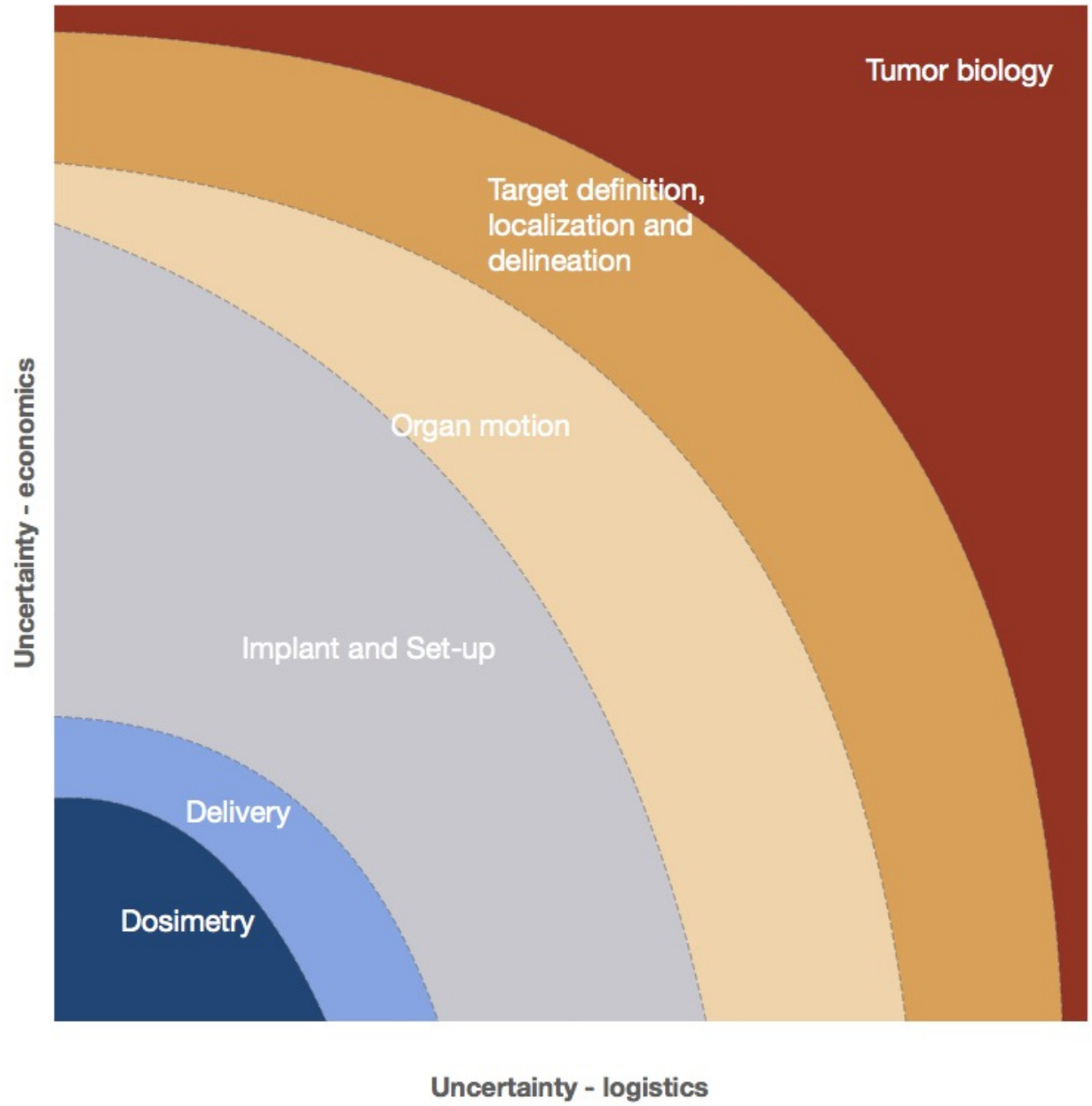
Implant and Set-up

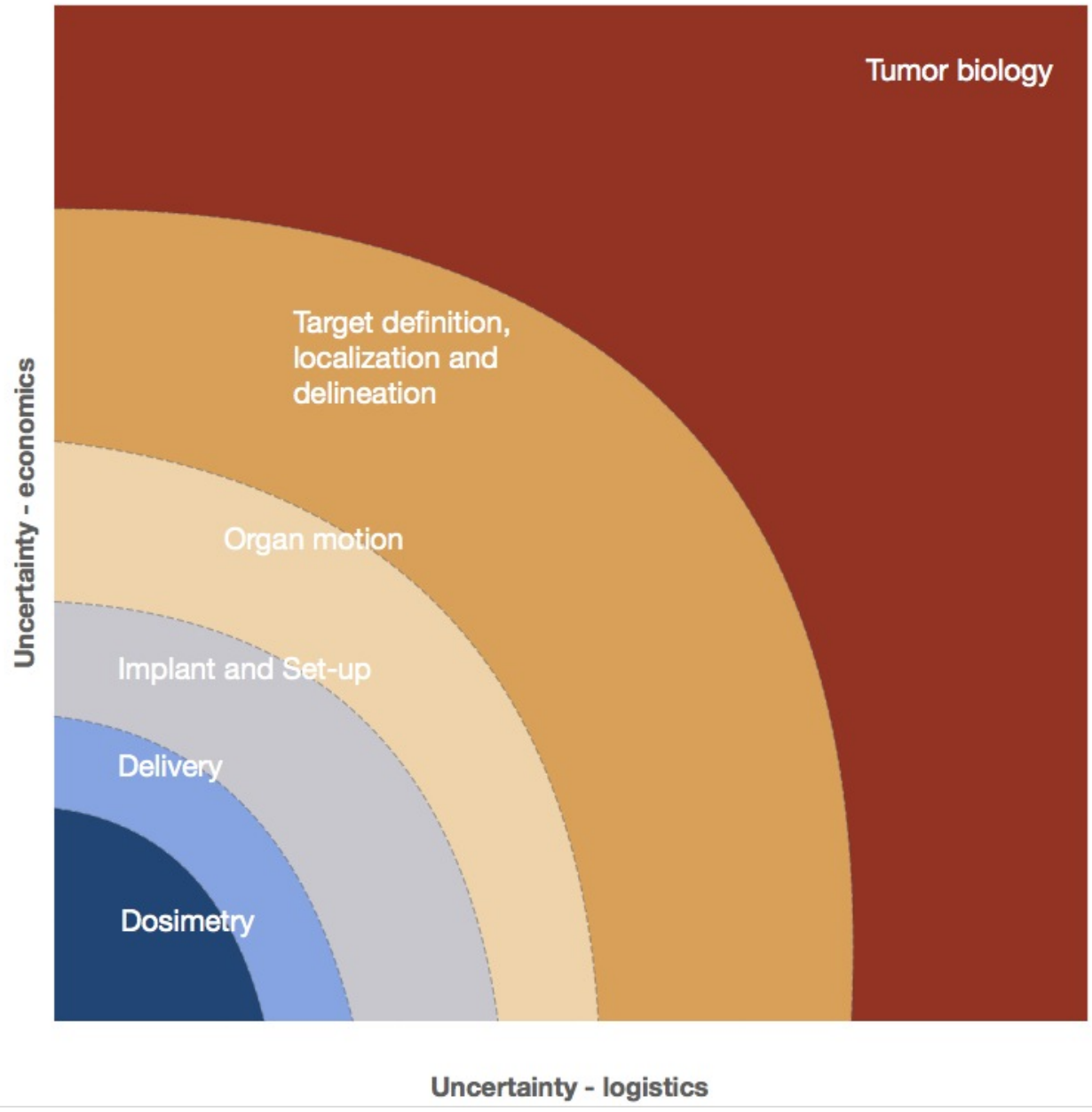
Delivery

Dosimetry

Uncertainty - economics

Uncertainty - logistics





CONCLUSION

