## Supplement 1. Currently Marketed Devices for SBRT

<table>
<thead>
<tr>
<th>Device Name</th>
<th>Manufacturer/Distributor</th>
<th>Features</th>
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</table>
| Axesse™                   | Elekta                   | Beam delivery – wide range of noncoplanar angles  
Beam energy – multiple energy (photon)  
Collimation – MLC  
Design – image-guided robotic linac that combines high-conformance beam shaping with 4D Adaptive™ IGRT technology  
Dose delivery – multiple energy choices  
Imaging – CT/MR imaging with patient in immobilization (no fiducials necessary)  
Patient Positioning/Localization – BodyFIX dual vacuum-activated immobilization and fixation system; automatic reposition in up to 6 degrees of freedom  
Treatment Sessions – single and fractionated  
|                           |                          | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                           |                          | No response from FDA or manufacturer  
Extracranial Indications Presented on Company Web site: Spinal metastases, lung, liver, prostate, head, neck  
CyberKnife® robotic radiosurgery system | Accuray Incorporated | Beam delivery – noncoplanar and nonisocentric; anterior beam delivery  
Beam energy – 6 MV nominal (photon)  
Collimation – 12 fixed apertures; Xchange™ Robotic Collimator Changer automatically exchanges collimators  
Design – a treatment radiation generator, linear accelerator, manipulator (robot) with six degrees of freedom, and a target locating subsystem  
Dose delivery – A 6 MV X-band linac  
Field size – determined by the use of interchangeable secondary circular cones with diameters ranging from 5.0 to 60.0 mm  
Imaging – continuously delivers imaging to ensure target accuracy throughout the entire treatment; InTempo™ Adaptive Imaging System tracks and corrects for intra-fraction prostate motion  
Output – available at 800 MU/min at 80 cm, 600 MU/min, and 400 MU/min  
Patient Positioning/Localization – only radiosurgery system to move to and with the patient; room-based stereo x-ray with 2D kV-kV match  
Tracking – Fiducial tracking, Xsight™ Spine Tracking, Xsight™ Lung Tracking, and Synchrony™ Respiratory Tracking for dynamic positioning and pointing of the linac  
Treatment Sessions – single and fractionated  
|                           |                          | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                           |                          | Treatment planning and image-guided SRS and precision RT for lesions, tumors and conditions anywhere in the body  
Extracranial Indications Presented on Company Web site: Spine, lung, liver, prostate, pancreas, kidney, head, neck  
[8](https://annals.org)
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<th>Dedicated to SRS</th>
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| Leksell Gamma Knife®      | Elekta Inc.                   | Beam delivery – 192 cobalt-60 sources housed in the central body of the unit produce 192 collimated beams directed to a single focal point (isocenter)  
Collimation – 4, 8, 16 mm diameter  
Design – a radiation unit with patient-positioning system and an operator console  
Dose delivery – multiple converging fixed beams of ionizing radiation  
Imaging – MRI/CT prior to treatment  
Output – >3 Gy/min  
Patient Fixation – head fixed in the Leksell® Stereotactic Frame. Awaiting approval on re-locatable frame.  
Total cobalt-60 activity at loading (approximate) – <6,300 Curie (2.33 x 10^{14} Bq)  
Treatment Sessions – single with availability of fractionated upon approval of Extend™ program | No               | Metastatic tumors, and head structure targets (a few millimeters to several centimeters) | Cervical spine, head, neck, larynx tumors |
| Perfexion™                |                               |                                                                          |                 |                      |                                                        |
| MHI-TM2000 Linear Accelerator System | Mitsubishi Heavy Industries (MHI) | Beam delivery – Gimballed x-ray irradiation offers tilt and pan-rotation functions enabling fine adjustments in any direction  
Collimation – MLC  
Design – O-ring-shaped mechanical structure provides a high level of rigidity; X-ray generator incorporates a compact accelerator tube  
Image Processing System – ExacTrac 3rd Party by BrainLAB (K072046 approved by FDA on 8/07)  
Treatment Sessions – single and fractionated | No               | Radiation therapy of lesions, tumors and conditions anywhere in the body | NR |
| Novalis TX™               | BrainLAB/Varian Medical Systems | Accuracy - millimeter precision utilizing BrainLAB’s iPlan and ExacTrac technologies  
Beam delivery – fixed beam positions and continuous arc delivery with RapidArc; anterior beam delivery and full 180 degree posterior beams  
Beam energy – 6-20 MV/6-20MEV  
Collimation –Varian’s HD120 MLC 120 interleaved ultra-thin collimators provides 2.5 mm collimation at isocenter and 5.0 mm collimations at the periphery  
Design – includes Adaptive Gating and On-Board Imager devices  
Field size – 22 x 40 cm maximum  
Imaging – ExacTrac X-Ray 6D and Snap Verification  
Output – 1,000 MU at 100 cm  
Patient positioning/localization – 6D robotic couch top, Varian Exact® couch  
Treatment Sessions – single and fractionated | Yes              | The Varian High Energy Linear Accelerator is intended to provide SRS and precision RT for lesions, tumors and conditions anywhere in the body | Spine, lung, liver, prostate, head, neck |
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<td>Oncor ARTISTE, Impression, Avant-Garde, Expression</td>
<td>Siemens</td>
<td><strong>Artiste</strong>&lt;br&gt;Beam energy – 6 MV (photon)&lt;br&gt;Collimation – 160 leaf MLC&lt;br&gt;Design – includes an Electronic Portal Imaging Device (EPID), a 160 leaf MLC, and the syngo™ RT Therapist Express Workspace with MVision™&lt;br&gt;Imaging – OPTIVUE 1000ART amorphous silicon (a-Si) portal imaging system&lt;br&gt;Patient-positioning verification – use of the OPTIVUE imaging system, including MVision™ Megavoltage Cone Beam (MVCB) Imaging and/or CTVision&lt;br&gt;Respiratory Gating – ANZAI breathing belt system</td>
<td>No</td>
<td>The delivery of x-ray radiation for therapeutic treatment of cancer.</td>
<td>Head, neck, extracranial areas</td>
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<td>Impression/Avant-Garde/Expression</td>
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<td><strong>Impression/Avent-Garde/Expression</strong>&lt;br&gt;Beam energy – 6/10 MV photon/ 6-21 MeV&lt;br&gt;Collimation – OPTIFOCUS 82 leaf MLC (static and dynamic modes)&lt;br&gt;Field size – 40 cm x 40 cm fully-conformal&lt;br&gt;Imaging OPTIVUE 1000/ST electronic portal imaging device (EPID) and MVision™ megavoltage cone beam on-board imaging&lt;br&gt;Output – 200-500 MU/min, special configuration-1,000 MU/min for maximum 5 x 5 cm field (Avant-Garde); 200-300 MU/min, special configuration-500 MU/min for maximum 5 x 5 field&lt;br&gt;Patient positioning/ localization and setup – Adaptive Targeting™ supports alignment of 3D planning data with newly acquired 3D Cone Beam data&lt;br&gt;Respiratory Gating – standard on Avant-Garde/ optional on Impression</td>
<td>No</td>
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<td>Synergy®S</td>
<td>Elekta Inc.</td>
<td><strong>Synergy®S</strong>&lt;br&gt;Beam delivery – a 62 cm treatment head in combination with industry best isocenter clearance allows for a wide variety of treatment approaches including noncoplanar&lt;br&gt;Beam energy – 4, 6, 10, 15, 18, and 25 MV photon; 6, 9, 12, 15, 18, and 25 MeV&lt;br&gt;Collimation – Beam Modulator, an integrated high-resolution, multi-leaf collimator designed for extracranial SRS&lt;br&gt;Dose delivery system – includes an integrated multi-leaf collimator&lt;br&gt;Field size – 16 cm x 21 cm&lt;br&gt;Imaging – 4D Adaptive™ IGRT technology&lt;br&gt;Patient positioning/localization – BodyFix® and HeadFix® immobilization accessories&lt;br&gt;Treatment Sessions – single and fractionated</td>
<td>No</td>
<td>Radiation therapy treatment of malignant neoplastic diseases</td>
<td>Spine, lung, liver, prostate, pancreas, head, neck</td>
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| **TomoTherapy® Hi-Art®** | TomoTherapy Inc. | Accuracy – beam modulating technology that divides a single beam into “beamlets” to better conform to tumors  
Beam delivery – 360 degree  
Beam energy – 6 MV (photon)  
Collimation – 64 leaf MLC  
Design – linac mounted to a CT scanner-like ring gantry  
Field size – 40 cm x 1.6 meters maximum  
Imaging – integrated, 3D daily CTrue™ imaging  
Output – 850 cGy/min (photon)  
Patient positioning/localization – AlignRT® (consisting of 2 ceiling-mounted 3D camera units) registers real-time image data and subsequently updates couch coordinates. Complements CTrue™ imaging when tumor is deep-seated or can move internally w/o external evidence  
Treatment Sessions – single and fractionated | No | To tumors or other targeted tissues | Lung, liver, prostate, head, neck |
| **Trilogy™** | Varian Medical Systems | Accuracy – beam modulating technology that divides a single beam into “beamlets” to better conform to tumors  
Beam delivery – choice of Intensity modulated radiosurgery (IM-RS) with multi-leaf collimation – for lesions >2.5 cm, irregular shaped and >3 lesions OR Cone-based SRS for lesions <2.5 cm, not irregular and 1-3 lesions  
Beam energy – 6 MV (photon)/4-22 MeV (6 energies)  
Collimation – 120 leaf MLC and conical collimator  
Design – external system gating interface, remote couch motion  
Field size – 15 cm x 15 cm  
Imaging – PortalVision MV imager, On-Board kV Imager (amorphous silicon detector-based radiographic, fluoro and cone-beam CT).  
Output – 1,000 MU/min (photon and electron)  
Patient position/localization – optional optical imaging-based patient positioning (FrameArray, BodyArray, and SonArray)  
Respiratory Gating – Real-time Position Management™ (RPM) System  
Treatment Sessions – single and fractionated | No | Lesions, tumors and conditions anywhere in the body | Whole body |