# A Comparison of EDGE Radiosurgery and CyberKnife M6

<table>
<thead>
<tr>
<th>Feature</th>
<th>CyberKnife® M6™</th>
<th>EDGE™ Radiosurgery System</th>
<th>EDGE Radiosurgery System processes</th>
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</thead>
<tbody>
<tr>
<td><strong>Immobilization</strong></td>
<td>Frameless¹ ²</td>
<td>Frameless² ³ and SRS Frame</td>
<td>• Decide which treatment is best — Frameless or Frame-Based.</td>
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<td><strong>Treatment Planning</strong></td>
<td>MultiPlan treatment planning system with IMRT &amp; SRS⁴ ⁵</td>
<td>Eclipse⁶ with MLC-based SRS &amp; IMRT⁶ ⁸ ⁹</td>
<td>• Perform IMRT and other standard techniques in addition to doing SRS &amp; SBRT.</td>
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<td>Eclipse w/ RapidArc Radiosurgery⁶ ¹⁰ ¹¹ ¹²</td>
<td>• RapidArc SRS plans can be planned for delivery in 15 to 20 minute time slots.¹³ ¹⁴</td>
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<td>RapidArc SBRT⁶ ¹⁴ ¹⁵ ¹⁶ &amp; RapidArc RT</td>
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<td>RapidPlan™ knowledge-based planning</td>
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<td>Eclipse Cone Planning (cone-based treatments)</td>
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### Setup Localization
- **Stereo x-ray with 2D-2D kV match based on retrospective DRRs (digitally reconstructed radiograph) from planning CT² ¹⁵**
- **Stereo x-ray with 2D-2D kV match and 2D-3D match using real-time DRRs²**
- **Cone-Beam CT provides 3D-3D kV match²**
- **MV Beam’s Eye-View w/ 43x43 cm MV imager, high contrast MV² & True kV fluoro²**
- **Real Time Patient Tracking via Optical Surface Monitoring System²**

### Treatment Delivery
- **6 MV treatment beam energy²**
- **1000 MU/min at 80 cm SAD (6x & 10x delivering 2000 & 4000 MU/min treatment power²)**
- **7 Cones (4 mm – 17.5 mm)²**
- **Beam shaping with HD120™ MLC with 120 interleaved leaves including 64 – 2.5 mm leaves for central 8 cm field and 56 – 5 cm leaves for two peripheral 7 cm fields² ¹² ¹³**
- **Dynamic IMRT field size: 22x32 cm² ¹³ ¹⁴ ¹⁵**
- **MLC leakage = 0.02%²**
- **Ultrafast (10 msec) Maestro processor enables real-time process switching² ¹⁶**
- **Continuous beam shaping and dose delivery with RapidArc Radiosurgery² ¹³ ¹⁶**
- **With HIM & RapidArc Radiosurgery, EDGE can deliver an 18 Gy treatment, of multi-angle, non-coplanar arcs, in one fraction to multiple metastases in 15-20 minutes² ¹³ ¹⁶**

### Intra-Fraction Motion Management
- **Optical Surrogate tracking via infrared²**
- **Intermittent kV x-ray shots² ¹⁶** for Intra-fraction Motion Review.

### Information Systems
- **DICOM RT Support² ¹⁶**
- **DICOM RT Support²**
- **Sophisticated ARIA data base with intuitive Visual Care paths plus Record & Verify oncology information management system²**

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¹ ¹⁰⁻¹²⁰⁰ MU/min at 80 cm SAD equals 640 MU/min at 100 cm SAD by inverse square (to distance) fall-off rule. SAD = Source to Axis Distance is the distance from the source to isocenter.
² ³ – CK cones & leaves are defined at 80 cm SAD (cranial nodes). At 100 cm SAD (body nodes) this projects 25% larger by geometry: 5 mm cones become 6.25 mm cones; 2.5 mm leaves become 3.125 mm leaves.
⁴ – CK MLC field defined at 80 cm SAD. The 10x12 cm field becomes a 12.5x15.0 cm field at 100 cm SAD.
CyberKnife® M6™ references

1. CyberKnife® M6™ - Overview Brochure — 501004.B
2. CyberKnife M6 Series Technical Specifications — 501047.A
5. CyberKnife® Treatment Delivery — 500686.F
6. CyberKnife DICOM Conformance — PN19055-ReVL
7. CyberKnife Patient Brochure — 500272.C
8. CyberKnife M6 Series sell sheet — 501011.A
10. Shielding Whitepaper — 500627.A

Note: All of the above documents were based on material obtained between September 2011 and April 2014 at www.accuray.com, www.cyberknife.com, www.varian.com, on the web or at trade shows.

EDGE™ Radiosurgery System references

A. EDGE Radiosurgery System — Specifications — RAD10310A
B. Eclipse Treatment Planning Feature Sheet — RAD10090A
C. Eclipse Sell Sheet — RAD10112
D. RapidArc — Brochure — RAD10008B; RapidArc Radiotherapy & Radiosurgery — Brochure — RAD10254; RapidArc Radiosurgery — Bibliography — RAD10216C
J. RapidArc for SBRT — Revolutionary Results — RAD10100
K. Data on file
L. HD120 MLC - Specifications — RAD9998D; HD120 MLC - Data Sheet — RAD9997B; HD120 MLC - Bibliography — RAD1026A
N. TrueBeam Architecture — Maestro Synchronous control: RAD10152
O. Real-time Motion Tracking for Real-life Results - The Calypso System: RAD10237B
P. ARIA Oncology Product Brief (Certified for "Meaningful Use" of the HITECH Act): RAD10172B
Q. EQUICARE CS — RAD10031
R. Cancer Care Standards 2012: Ensuring Patient Centered Care, American College of Surgeons Commission on Cancer, www.facs.org/cancer/
V. Real-time Position Management™ (RPM) Specifications — RAD5616A
X. Chae SM, Lee GW, Son GH. The effect of multileaf collimator leaf width on the radiosurgery planning for spine lesion treatment in terms of the modulated techniques and target complexity. Radiat Oncol. 2014 Mar 8;9(1):72 [Epub ahead of print]