Pediatric Patients: They’re Not Just Miniatures of Us

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About Grand Valley

- Nearly 25,000 students
- Students from all Michigan counties, dozens of other states, and many foreign countries
- 81 undergraduate and 32 graduate degree programs
- Campuses in Allendale, Grand Rapids, and Holland, and regional centers in Muskegon and Traverse City.

[other boilerplate copy options available at: http://www.gvsu.edu/identity]
Medical Mile Map

Spectrum Health Medical Center and Partners on Grand Rapids Medical Mile
Emotional Issues

• Can you handle working with sick kids?
• How do you handle sick kids?
• Parents
Physical Issues

• Immobilization Devices
• Treatment Planning considerations
Perception is Different

Are children seeing it the same as us?
PERCEPTION

• Think like a kid again
• Look at the world through their eyes
• CT Sim is a Space Ship
• Wet masks like Waterboarding
  OR
• CT Sim inviting
• Making a hockey mask
PERCEPTION
PERCEPTION
PERCEPTION
PERCEPTION
• Show children you care
• Make it personal
• Remember things
• Find out facts
• Make it about them – not you
• Speed of talk (slow isn’t always better)
• Vocabulary
• Be concrete in what you’re saying
• SHOW don’t TELL (takes time)
• Keep it positive
• Speed of talk (slow isn’t always better)
• “Try too” as opposed to “Do this”
• Expectations
• Take the parent out of the equation - gently
What about treatment planning?

- IMRT, 3d or VMAT?
- Low Dose Regions more critical in pediatric
- What about the exit dose?
- Can they do it?
IMRT vs VMAT

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## IMRT vs VMAT

<table>
<thead>
<tr>
<th>Technique</th>
<th>Mean Calculation Time (min)</th>
<th>Mean Optimization Time (min)</th>
<th>Mean Monitor Units (range)</th>
<th>Mean Treatment Time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMRT</td>
<td>0.5</td>
<td>5</td>
<td>772 (584–937)</td>
<td>6.1</td>
</tr>
<tr>
<td>ncIMRT</td>
<td>0.5</td>
<td>5</td>
<td>737 (558–900)</td>
<td>10.5</td>
</tr>
<tr>
<td>VMAT</td>
<td>9.3</td>
<td>20</td>
<td>495 (381–788)</td>
<td>2.9</td>
</tr>
<tr>
<td>ncVMAT</td>
<td>10.4</td>
<td>20</td>
<td>461 (403–546)</td>
<td>5.0</td>
</tr>
</tbody>
</table>

IMRT: coplanar intensity-modulated radiotherapy; ncIMRT: noncoplanar intensity-modulated radiotherapy; VMAT: coplanar volumetric-modulated arc therapy; ncVMAT: noncoplanar volumetric-modulated arc therapy; min: minutes.
4 Year old girl - Craniospinal Irradiation – Comparison

Proton Therapy

X-Ray Therapy

**Brain Tumor:** Proton therapy delivers less radiation to the brain stem, eyes, and healthy tissue than conventional radiation, reducing the likelihood of side effects.

These images show the areas exposed to radiation during treatment.

[Proton Therapy vs. Conventional Radiation Diagram]

Figure 1 from Maryam Motaleb et al. 2014 Phys. Med. Biol. 59 2883
Figure 3. Dose–volume histograms featuring all modalities (3-field PPT: solid black, 4-field PPT: dashed black, PBS: red, 5-field IMRT: solid blue, 7-field IMRT: dashed blue, and VMAT: green) for all patients.
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Jacob Shabason, MD

The Abramson Cancer Center of the University of Pennsylvania
• 53 survivors of pediatric brain tumors were included in this study where baseline and follow up IQ scores were obtained retrospectively.

• 31 patients were treated with proton therapy and 22 with conventional photon radiation techniques.

• Overall patients treated with photon radiation were on average younger and received a higher dose of radiation. There was no significant difference in tumor location between the 2 groups.
• Follow-up IQ scores were significantly lower in the photon group compared to the proton group (p<0.05).

• The photon group lost 10.3 IQ points on average with each additional year following radiation therapy (p<0.01), while the proton therapy group remained stable, losing only 0.1 points per year on average (p<0.05).
Review

• Kids take special care and skills – but you CAN do it
• A la Ben Nelms – Be a part of the “Good Team”
• Its not about you – its about them
Review

• Communicate with MD about planning options
• Don’t be afraid to try something new
• Research protocols for Peds
• Curative disease you have next 60+ years to worry
Review

• Be honest
• Be honest
• Be honest
THE WHITE HOUSE
WASHINGTON
April 16, 1981

Dear Dr. Colombinis,

How do I say thank you when words cannot possibly describe my appreciation? The skill with which you met the extraordinary burden thrust upon you two weeks ago has earned my lasting gratitude and admiration.

Thank you and God bless you.

Sincerely,

Ronald Reagan
“Our philosophy was that everyone got the same care. If you start making adjustments because of this person or that, you start making mistakes. So we always followed the same rules and the protocols for every patient we treated,”

Dr. Paul Colombani
Questions?

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GENERATIONAL DIFFERENCES

PART II
Attitude and Its Effect on Patient Safety