Methods
Prospective comparative study. A standardized, traditional fiberglass cast was applied to a synthetic leg model. No human subjects used.

Testing Groups:

-Effeection of preventing casts from water saturation was measured through the weight of casts before and after exposure to water.
-After each cast was made, they were given 10 minutes for drying.
-Weights were measured with a Scale-Tronix© Pediatric Digital Scale
-Final weights were measured after removal of protection layer.
-Using specific weight of water (1g=1ml), weight of casts was converted to amount of water absorbed.

Cost Analysis: Performed on each method while assuming one use per day and cost of commonly employed methods utilized by patients to keep traditional casts dry.

Ease of use: Subjectively evaluated on difficulty of application/removal.

Results

<table>
<thead>
<tr>
<th>Group</th>
<th>Commercial Price per single use</th>
<th>Cast per 6 weeks</th>
<th>Cost per 6 weeks (theoretical)</th>
<th>Cost per 6 weeks (actual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - Press &amp; Seal</td>
<td>5.67</td>
<td>0.34</td>
<td>56.01</td>
<td>58.67</td>
</tr>
<tr>
<td>B - single bag &amp; duct tape</td>
<td>1.27</td>
<td>0.18</td>
<td>12.99</td>
<td>12.99</td>
</tr>
<tr>
<td>C - single bag &amp; tape</td>
<td>2.94</td>
<td>0.35</td>
<td>29.35</td>
<td>29.35</td>
</tr>
<tr>
<td>D - double bag &amp; tape</td>
<td>3.88</td>
<td>0.39</td>
<td>38.88</td>
<td>38.88</td>
</tr>
<tr>
<td>F - DryPro Cast Cover</td>
<td>37.95</td>
<td>37.95</td>
<td>37.95</td>
<td>37.95</td>
</tr>
</tbody>
</table>

Figure 1 (top): Amount of water saturation (ml) after submersion in water with protective method. Figure 2 (left): Amount of protection from water absorption using Control group as amount of maximum saturation. Figure 3 (right): Cost analysis on each group. Assumed one use per day for six weeks.

Discussion
Effectiveness:
Our findings suggest that each method tested was significantly effective in preventing the majority of water absorption.

The double bag with duct tape and commercial products from CVS® and Dry Corp®, on average, prevented the most appreciable water absorption within the sensitivity of our measurements.

Ease of Use:
Least difficult: Bags (single and double) and tape and CVS® product. Most difficult: Dry Pro, Press and Seal.

In conclusion:
The purpose of the present study was to determine the most ideal method of water protection for patients wearing casts.

However, if the patient chooses to venture near or in water, based on our study we currently recommend traditional use of double plastic bags with duct tape or the CVS® Cast Protector as preferred methods due to their effectiveness, relative ease of use, and minimal cost.

References