Disposable Prophy Angles: What’s Best?

Gordon's Clinical Bottom Line: There are many more prophy angles and cups than you may have considered. In preparation for this report, CR identified 135 disposable prophy angles (DPAs) being marketed by 34 companies. They vary in important characteristics and in cost. This project has identified the brands most used, their relative effectiveness, and the differences in price. It became very evident that DPAs and cups vary significantly, and these differences relate directly to their clinical effectiveness in both dental hygiene and in restorative dentistry. CR suggestions about the important features to consider and best overall DPAs reviewed are listed.

Plastic disposable prophy angle (DPA) use continues to increase; 84% of dentists and dental hygienists responding to a CR survey report using DPAs with the majority selecting latex-free cups (see survey on page 3). DPAs are convenient, can be cost effective, and are individually packaged for each patient. Although well-maintained metal reusable prophy angles offer smoothest operation, low noise, and excellent visibility, the time and effort required for cleaning, lubricating, and sterilizing is considered less convenient by most CR Evaluators and CR Project Directors.

This report identifies the most used disposable prophy angles (DPAs); provides a table with ratings and cost; lists CR identified desired features; offers clinical tips; and includes CR conclusions.

Survey Results (n=626, dentist and dental hygienist respondents)

• Prophy Angle type used most: 84% disposable, 16% reusable
• Angle of prophy angle used most: 84% 90°, 16% contra-angle
• Cup material type used most: 74% non-latex, 22% natural rubber, 4% both
• Prophy cup rigidity preferred most: 77% soft, 20% firm, 2% ultrasoft
• Cup design used most: 45% webbed, 28% ribbed, 22% webbed and ribbed, 5% spiral ridges
• Leading 3 criteria for prophy angle purchase (multiple responses allowed): 72% cost, 62% smooth running, 43% reputable company

Comparison of Top Reported Disposable Prophy Angle (DPA) Brands and Unique New Prophy Angles

All DPAs tested were identified as the most used brands in a CR survey, and the DPA companies identified cup designs most sold for those brands (all soft and latex free). New brands with unique features were also tested. The top 16 products are listed by rating then alphabetically.

<table>
<thead>
<tr>
<th>Company, Brand</th>
<th>Cost Each</th>
<th>% Use (from survey)</th>
<th>Available Cup Firmness</th>
<th>Cup Design Tested (interior)</th>
<th>Interproximal/Subgingival Access</th>
<th>Vibration/Comfort</th>
<th>Notable Features</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>ProphyMagic, ProphyMagic soft</td>
<td>$0.29</td>
<td>2.1%</td>
<td>Soft or Firm</td>
<td>Webbed/Ribbed</td>
<td>Excellent</td>
<td>Excellent</td>
<td>Soft cup and smooth running angle</td>
<td>Excellent</td>
</tr>
<tr>
<td>Ultradent, Ultrapro Tx</td>
<td>$0.37</td>
<td>4.0%</td>
<td>Soft or Firm</td>
<td>Webbed/Ribbed</td>
<td>Excellent</td>
<td>Exc–Good</td>
<td>Low cost</td>
<td>Excellent</td>
</tr>
<tr>
<td>Waterpik, Denso-Lax-Less</td>
<td>$0.62</td>
<td>1.1%</td>
<td>Soft</td>
<td>Webbed/Spiral Rib</td>
<td>Excellent</td>
<td>Excellent</td>
<td>Unique spiral ribbing</td>
<td>Excellent</td>
</tr>
<tr>
<td>Young, Vera Classic Petite Web</td>
<td>$0.91</td>
<td>5.7%</td>
<td>Soft or Firm</td>
<td>Webbed/Ribbed</td>
<td>Excellent</td>
<td>Exc–Good</td>
<td>Compact head and slim neck</td>
<td>Excellent</td>
</tr>
<tr>
<td>3M ESPE, Clinpro Disposable Angle</td>
<td>$0.69</td>
<td>3.2%</td>
<td>Soft or Firm</td>
<td>Webbed/Ribbed</td>
<td>Exc–Good</td>
<td>Good</td>
<td>Pre-lubricated</td>
<td>Exc–Good</td>
</tr>
<tr>
<td>Crosset, Sparkle</td>
<td>$0.60</td>
<td>1.9%</td>
<td>Soft or Firm</td>
<td>Webbed/Ribbed</td>
<td>Exc–Good</td>
<td>Exc–Good</td>
<td>Beveled gear design</td>
<td>Exc–Good</td>
</tr>
<tr>
<td>Denticator, Diamond</td>
<td>$0.63</td>
<td>2.1%</td>
<td>Soft or Firm</td>
<td>Diamond Design</td>
<td>Exc–Good</td>
<td>Good</td>
<td>Long cup, unique ribbing</td>
<td>Exc–Good</td>
</tr>
<tr>
<td>Denticator, Original Green</td>
<td>$0.60</td>
<td>7.6%</td>
<td>Soft or Firm</td>
<td>Webbed/Ribbed</td>
<td>Exc–Good</td>
<td>Good</td>
<td>Popular product</td>
<td>Exc–Good</td>
</tr>
<tr>
<td>Dentsply, NUPRO Freedom</td>
<td>$0.62</td>
<td>5.3%</td>
<td>Soft or Firm</td>
<td>Spiral</td>
<td>Exc–Good</td>
<td>Excellent</td>
<td>Requires Midwest RDH Freedom Cordless Prophy System</td>
<td>Exc–Good</td>
</tr>
<tr>
<td>Dentsply, NUPRO revol</td>
<td>$0.67</td>
<td>4.2%</td>
<td>Soft or Firm</td>
<td>Spiral</td>
<td>Exc–Good</td>
<td>Exc–Good</td>
<td>Brush or pointed tip available</td>
<td>Exc–Good</td>
</tr>
<tr>
<td>Henry Schein, Accele Disposable Angle</td>
<td>$0.59</td>
<td>5.9%</td>
<td>Soft or Firm</td>
<td>Webbed/Ribbed</td>
<td>Exc–Good</td>
<td>Exc–Good</td>
<td>Improved design</td>
<td>Exc–Good</td>
</tr>
<tr>
<td>Kerr, Pearl Perfect Pearl</td>
<td>$0.72</td>
<td>2.3%</td>
<td>Soft or Firm</td>
<td>Inner/Outer Spiral</td>
<td>Exc–Good</td>
<td>Good</td>
<td>Brush available</td>
<td>Exc–Good</td>
</tr>
<tr>
<td>Patterson, Disposable Angle</td>
<td>$0.49</td>
<td>7.4%</td>
<td>Soft or Firm</td>
<td>Webbed/Ribbed</td>
<td>Exc–Good</td>
<td>Exc–Good</td>
<td>Pre-lubricated, popular product</td>
<td>Exc–Good</td>
</tr>
<tr>
<td>Premier, 2pro Total Access</td>
<td>$0.62</td>
<td>8.1%</td>
<td>Soft or Firm</td>
<td>Webbed/Ribbed</td>
<td>Exc–Good</td>
<td>Exc–Good</td>
<td>Gearless, dual-action cup/tip</td>
<td>Exc–Good</td>
</tr>
<tr>
<td>Preventech, Pivot NL</td>
<td>$0.51</td>
<td>3.2%</td>
<td>Soft or Firm</td>
<td>Webbed/Ribbed</td>
<td>Exc–Good</td>
<td>Exc–Good</td>
<td>Brush available</td>
<td>Exc–Good</td>
</tr>
<tr>
<td>Sultan, Upgrade</td>
<td>$0.67</td>
<td>3.0%</td>
<td>Soft or Firm</td>
<td>Webbed/Ribbed</td>
<td>Exc–Good</td>
<td>Good</td>
<td>Beveled gear design</td>
<td>Exc–Good</td>
</tr>
<tr>
<td>Control: Henry Schein, Screw Type Ribbed Prophy Cup (100-1800) and Young Care-Free Autooclavable Prophy Angle</td>
<td>$0.39</td>
<td>7.9%</td>
<td>Soft or Firm</td>
<td>Ribbed</td>
<td>Excellent</td>
<td>Disposable cup (natural rubber) and autoclavable metal prophy angle</td>
<td>Excellent</td>
<td></td>
</tr>
</tbody>
</table>

Best performing prophy cup designs had thin soft lip for flare and access, and recessed webbing/ribbing/spirals to hold paste.

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CR Desired Prophy Angle Features and Main Comparison Observations

• All DPAs tested had acceptable size and design and allowed good access and visualization.
• Cup design is an important consideration.
  – For restorative polishing, web-free cups are preferred. Webs can produce irregularities in the restoration surface.
  – For prophylaxis, many clinicians often think it is merely esthetic removal of stain and plaque. However, polishing can be very useful in disruption and removal of microorganism colonies located subgingivally and interproximally. In order to gain maximum access to these areas, prophy cup must be designed with:
    • Thin lip for ability to flare with little pressure. Flare is able to access subgingivally and interproximally.
    • If internal webbed, webs must be recessed from lip. Webs provide stability to cup and prevent cup lip from folding onto itself during use. However, webs extending to lip of cup produced a rougher polishing sensation for patients and impeded desired lip flare.
    • Thin internal ribs, also recessed from lip, help hold prophy paste and provided some support to cup.
    • External ridges and features promoted for improved interproximal cleaning impeded subgingival access and were least comfortable designs reported by patients.
    • Soft cup for pliability to adapt easily to tooth contours. Firm cups require more force to flare and this increases heating of tooth structure from friction created.
    • Small cup size allowed better access and produced more comfortable polishing for all teeth. Lower anterior lingual surfaces were a challenge to access with some cups.
    • 90° vs. contra-angle design did not affect access. Long cups were a bigger issue in accessing some posterior tooth surfaces.

Clinical Tips

• Optimal handpiece speed is between 1,500 and 3,000 rpm. Faster speeds produced too much heat and can destroy DPAs.
• Light to moderate pressure with continuous cup movement reduces possibility of frictional heating of tooth.
• Hold cup at a 90° angle to the tooth surface to avoid subgingival gouging and damage to softer dentin tooth structure.
• Be aware of surfaces being polished. Softer restorative materials (gold, resin-based composite, and others) should be final polished with fine abrasives to prevent scratching. When used for restorative polishing, non-webbed cups are preferred as webs can produce restoration irregularities.
• Standardized sequence of prophylaxis helps ensure treatment of all facial, lingual, interproximals, and subgingival tooth surfaces.

CR Conclusions:

Overall performance of plastic disposable prophy angles with small, soft, non-latex cups was surprisingly good. Cup design is most critical to stain, plaque removal, and patient comfort. Desired features are small soft cups with thin lips and internal webs/ribs/spirals recessed from lip for best subgingival, interproximal, and overall access. DPAs with best overall ratings were: ProphyMagic, ProphyMagic soft; Ultradent, UltraproTx; Waterpik, Densco; and Young, Vera Classic Petite Web.

What is CR?

HOW DOES CR FUNCTION?

CR has been conducting research for over 40 years. Each year, CR tests in excess of 750 different product brands, performing about 20,000 field evaluations. CR tests all types of dental products, including materials, devices, and equipment, plus techniques. Worldwide, products are purchased from distributors, secured from companies, and sent to CR by clinicians, inventors, and patients. There is no charge to companies for product evaluations. Testing combines the efforts of 450 clinicians in 19 countries who volunteer their time and expertise, and 40 on-site scientists, engineers, and support staff. Products are subjected to at least two levels of CR’s unique three-tiered evaluation process that consists of:

1. Clinical field trials where new products are incorporated into routine use in a variety of dental practices and compared by clinicians to products and methods they use routinely.
2. Controlled clinical tests where new products are used and compared under rigorously controlled conditions, and patients are paid for their time as study participants.
3. Laboratory tests where physical and chemical properties of new products are compared to standard products.

WHY CR?

CR was founded in 1976 by clinicians who believed practitioners could confirm efficacy and clinical usefulness of new products and avoid both the experimentation on patients and failures in the closet. With this purpose in mind, CR was organized as a unique volunteer purpose of testing all types of dental products and disseminating results to colleagues throughout the world.

WHO FUNDS CR?

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