



# HAND HYGIENE TIMES



Your Canadian resource for the latest news in effective infection control program development and best practices.

Issue 2

Volume 3



## Hand Sanitizer Efficacy: Formulation Matters

Jane Kirk MSN, RN, CIC, Clinical Manager

Infection Preventionists, purchasing agents, materials management and healthcare staff are often involved in the selection of alcohol based hand rubs (ABHR) for the healthcare facility. Although the Technical Bulletins and the Material Safety Data Sheets (MSDS) tell us that the products are safe and effective, do we really understand the testing process that a hand hygiene product goes through before they are labeled as such? Do we understand the terminology related to the reported results?

In Canada, alcohol based hand rubs (ABHR) are classified as Natural Health Products and are regulated by Health Canada. Health Canada specifies antimicrobial testing and performance requirements for ABHR, requiring both *in vitro* and *in vivo* testing of the finished product. *In vitro* or laboratory methods, including time-kill assays, are used to demonstrate the speed of kill and the spectrum of activity of products. *In vivo* studies using human subjects are used to simulate clinical efficacy. The Healthcare Personnel Handwash (HCPHW) method, American Society for Testing and Material (ASTM) E 1174 and the European Norm (EN) 1500 are the current recognized standards for the *in vivo* bactericidal evaluation of ABHR.<sup>2,3</sup> The ASTM E 1174 method

was originally designed in the 1970's to evaluate antimicrobial hand washing agents, which are lathered with the aid of water and then rinsed off. In the absence of a method specifically designed to evaluate ABHR, the ASTM E 1174 method has become the default method for *in vivo* ABHR evaluation.

During the ASTM testing process, the desired outcome is a measurable reduction in the quantity of test bacteria that remains on the hands. This measurement is expressed as a  $\log_{10}$  reduction. A  $\log_{10}$  reduction is calculated by subtracting the quantity of bacteria recovered post product usage from the quantity recovered at baseline. The hand contamination and product application procedures are then repeated for a total of ten product applications and the hands are sampled for bacterial recovery after the final product application. Health Canada requirements are a 3  $\log_{10}$  reduction (99.9%) after the first product application and a 3  $\log_{10}$  reduction (99.9%) after the tenth and final product application.<sup>2</sup>

The antimicrobial efficacy of ABHR cannot be assumed based solely on the inclusion of ethyl alcohol at levels between 60 and 95%. Differences in efficacy can be attributed to

### Log Reduction Calculator:

Log10 Reduction from Baseline	Percent Reduction of Bacteria from Baseline
1	90.000%
2	99.000%
3	99.900%
4	99.990%
5	99.999%

### Health Canada Test Requirements:

Handwash Application	Log <sub>10</sub> Reduction Requirement
1	3
10	3

variation in product formulation to create specific attributes including skin tolerance, skin moisturization, and aesthetic properties. These additional ingredients can in some cases either improve or inhibit the formulation's antimicrobial efficacy. In addition, the volume or quantity of product applied to hands in the ASTM test will influence the test results; with increasing application volumes directly correlating to increased *in vivo* efficacy. Therefore, critical examination of product literature, especially application 1 and 10 data, must be performed to determine and compare antimicrobial efficacy of products. Infection

(continued on next page)

## THAT'S a FACT!

A study showed that the frequency of hand-washing with mild soap appears to increase the risk of skin dryness, but the frequency of disinfection with an ABHR is not associated with increased hand dryness. The type of soap and ABHR used were also significantly correlated to skin dryness.<sup>1</sup>

1. Chamorey E. et al. (2011) A prospective multicenter study evaluating skin tolerance to standard hand hygiene techniques. *AM J Infection Control* 2011;39:6-13.



## Hand Sanitizer Efficacy: Formulation Matters

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preventionists and others involved in product selection should feel comfortable asking to review the scientific data supporting ABHR products and not just rely on advertisement materials.

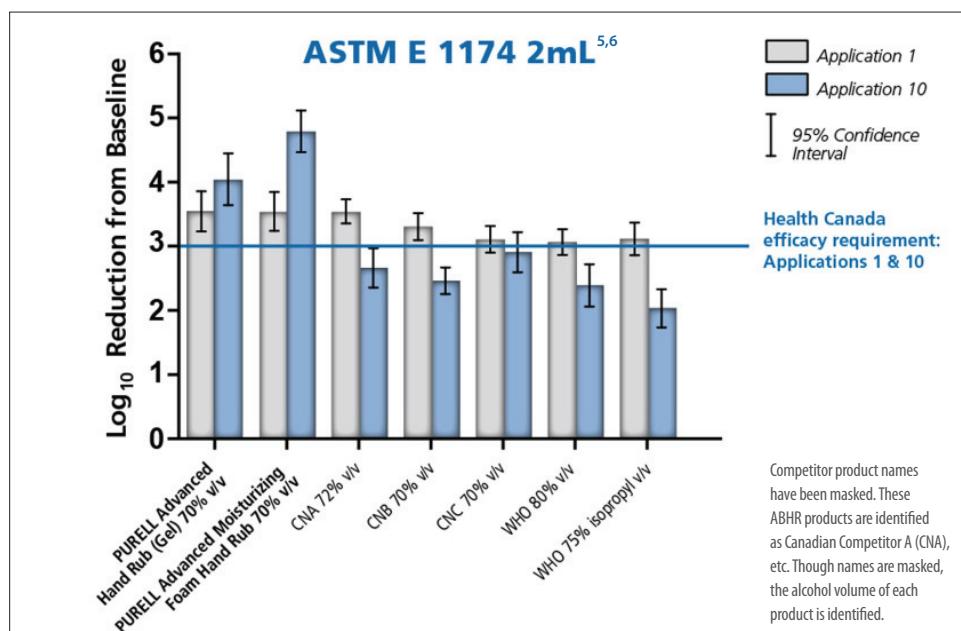
Practical considerations regarding product availability, dispensing systems, and cost should also be assessed during a product selection period.<sup>4</sup> For example, ABHR supply must be continuously available and dispenser systems should be functional and reliable. Cost is always a consideration when selecting products, but the costs associated with treating preventable HAI clearly suggest that proper hand hygiene is a cost effective strategy.

The ultimate purpose of the chosen ABHR is to interrupt the spread of pathogens, and stop the acquisition of HAIs through the reduction of transient bacteria and the promotion of hand hygiene compliance. While there are many factors to evaluate and consider when selecting the proper ABHR, efficacy and end user acceptance are of utmost importance. Critical evaluation of product efficacy data, namely ASTM, should be completed because total product formulation, not just alcohol level, dictates product efficacy. Product trials should be conducted to verify product acceptance and dermal tolerance by the staff who provide patient care. Engaging staff in the product selection process ensures their acceptance and usage of the hand hygiene products. Proper ABHR selection can drive hand hygiene compliance, resulting in decreased HAI rates and ultimately lead to a safer hospital environment for patients, staff, and visitors.

2. Health Canada. Guidance Document Human-Use Antiseptic Drugs. December 2009.
3. ASTM International. E-1174-06: Standard test method for evaluation of the effectiveness of health care personnel or consumer handwash formulations. 2006. West Conshohocken, PA, ASTM International.
4. Larson, E., Girard, R., Pessoa-Silva, C. L., Boyce, J., Donaldson, L. and Pittet, D. Skin reactions related to hand hygiene and selection of hand hygiene products. Am. J. Infect. Control 34, 627-635 (2006).

# Product Feature

## PURELL® ADVANCED HAND RUB FORMULATIONS



Application 1  
Application 10  
95% Confidence Interval

Health Canada  
efficacy requirement:  
Applications 1 & 10

Competitor product names have been masked. These ABHR products are identified as Canadian Competitor A (CNA), etc. Though names are masked, the alcohol volume of each product is identified.

### Unprecedented germ kill in skin friendly formulations

Today's PURELL Instant Hand Sanitizer formulations are highly effective. As science changes and new pathogens emerge, we must also be prepared to improve our products to meet changing infection control environments.

Our next generation PURELL Advanced Hand Rub formulations contain a patent-pending blend of ingredients that maximize the impact of alcohol on bacteria and maintain skin moisture and skin health. Both PURELL Advanced Hand Rub gel and foam formulations exceed Health Canada ASTM E 1174 requirements with an application of 2 mL while outperforming other hand sanitizer brands - even those with equal and higher volumes of alcohol.<sup>5,6</sup>

The formulations are so effective and gentle that end-users will want to use them - the ultimate path to compliance. And studies have shown that when hand hygiene compliance increases, the incidence of hospital acquired infections decreases.<sup>7,8</sup>

With PURELL, North America's # 1 instant hand sanitizing brand, GOJO offers a diverse selection of effective products, state-of-the-art dispensing systems and compliance building educational solutions that put an effective hand hygiene program in the hands of your healthcare facility.



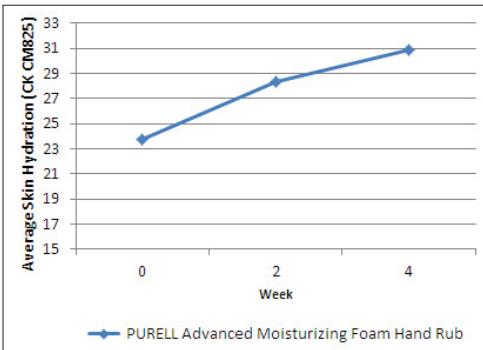
# KEY BENEFITS OF PURELL ADVANCED FORMULATIONS

## EFFICACY

Developed with 70% ethyl alcohol, this new formulation delivers unprecedented efficacy by killing common bacteria on hands, not just in the lab. Many hand sanitizers make a 99.99% germ kill claim based on in vitro testing, PURELL Advanced makes our claim based on *in vivo* testing on actual human hands.

## SKIN HEALTH

While killing many germs that may cause infection, PURELL Advanced Hand Rub is available in moisture-rich formulations that contain four different skin conditioners proven to maintain skin health and skin moisture while improving overall skin feel. PURELL Advanced Moisturizing Foam Hand Rub is clinically proven to lock-in moisture<sup>9</sup> and improve skin condition within 14 days of continued use.<sup>9-11</sup>



## SKIN PROTECTION TECHNOLOGY

In addition to superior efficacy, the ability of PURELL Advanced Hand Rub to retain moisture and maintain skin health sets it apart from other hand sanitizers. We call it Skin Protection Technology. It's the ideal amount of alcohol plus a patent-pending blend of complementary ingredients that sensitizes microbial cells to the denaturing activity of ethanol and maximizes bacterial cell membrane destruction.

## FORMAT AND DISPENSING OPTIONS

PURELL Advanced Hand Rub is currently available as a gel and a foam in our new LTX™ touch free and ADX™ manual push dispensing systems. GOJO® will be delivering this formulation upgrade in stages – from April 2012 through 2013, including a variety of bottle and point of care dispensing options.



## PRODUCT COMPARISON CHART

Product Description	PURELL® Advanced Hand Rub	PURELL® Advanced Moisturizing Foam Hand Rub
Exceeds ASTM E 1174 at 2 mL <sup>5</sup>	✓	✓
Kills common germs on hands <sup>9</sup>	✓	✓
Broad-spectrum antimicrobial activity – 5 log reduction on key healthcare pathogenic bacteria	✓	✓
Improve skin condition within 14 days <sup>10,11</sup>		✓
Maintain skin health	✓	✓
Improve overall skin feel	✓	✓
4 out of 5 end-users said PURELL Advanced Formulations were soothing to the skin <sup>10,11</sup>	✓	✓
Green Certified solutions	✓	✓
Available in gel formats	✓	
Available in foam formats		✓
Touch free dispensing systems	✓	✓
Hypoallergenic	✓	✓

5. ASTM E 1174, Study #1009077-101, January 6, 2011, BioScience Laboratories, Bozeman, MT. • ASTM E 1174, Study # 111209-101, March 8, 2012, BioScience Laboratories, Bozeman, MT.
6. When tested using the ASTM E 1174 test methodology, against other hand sanitizers commonly used in healthcare facilities.
7. Didier Pittet, Stéphane Hugonnet, Stephan Harbarth, Philippe Mourouga, Valérie Sauvan, Sylvie Touveneau, Thomas V Perneger, and members of the Infection Control Programme. Effectiveness of a hospital-wide programme to improve compliance with hand hygiene. Lancet, 2000: 356, 1307-1312.
8. Improving hand hygiene compliance: A multidisciplinary approach. Helms et al. Association for Professionals in Infection Control and Epidemiology, Inc. Am J Infect Control, 2010: 38, 572-4.
9. Acute Moisturization Analysis Study #110212-301, April 25, 2011, BioScience Laboratories, Bozeman, MT.
10. 4-Week Clinical Field Study #2011-F10233, Akron, OH, February - March 2011.
11. 4-Week Clinical Field Study #2011-F10232, Akron, OH, February - March 2011.

# Product Feature

## NEW GOJO DISPENSING SYSTEMS – RELIABLE AND EASY TO SERVICE.

At the foundation of every infection control program are dispensing systems that can be mounted on walls inside and outside of patient rooms. This ensures that HCWs, patients and visitors have an opportunity to clean their hands on entering and leaving the patient rooms. Providing the right delivery system and easy access to hand hygiene and skin care products are essential to help reduce

### GOJO LTX™ Touch Free Dispensing System

is a robust, third-generation touch free system that dispenses soap and hand sanitizer formulations without a touch, to reduce contact contamination. The smart, trouble-free electronics use a minimal amount of energy per actuation, usually eliminating the need to change batteries for the life of the dispenser. Combined with PURELL® Advanced Hand Rub, it delivers unprecedented germ-kill in every milliliter.



Touch free dispensing systems have been proven to help improve hand hygiene compliance. A study comparing the frequency of use of manually operated and touch free dispensers of hand sanitizers found that touch free dispensers were used significantly more often than manual dispensers; resulting in a 20.8% increase in hand hygiene compliance.<sup>12</sup> In addition, providing the right delivery system and easy access to

key issues that hinder compliance.

As a leading global producer of skin health and hygiene solutions, GOJO is committed to innovation. The products and processes we pioneer help increase hand hygiene compliance, reduce infection rates and improve patient outcomes. This is evident with our investment in our new, innovative dispensing systems.

hand hygiene and skin care products are essential to help reduce key issues that hinder compliance. Touch free dispensing systems help remove the obstacles that can affect healthcare worker compliance with proper hand hygiene and skin care practice.

**GOJO ADX™ Dispensing System** is a manual dispensing system that offers many of the features and benefits of the LTX system.



### LTX & ADX Features & Benefits

- The GOJO Lifetime Performance Guarantee
- Dispenses PURELL® & GOJO foam and gel sanitizer and soap products
- High capacity 1200mL size accommodates fewer change-outs in high traffic areas
- Compact 700mL size option fits compact spaces and can help meet fire code regulations
- Packaging supports commitment to sustainability
- Fully ADA depth and push force compliant
- Sustainability enhancements
- Optional accessories offer convenience for maintenance and awareness.

Description	TOUCH FREE	MANUAL		
DISPENSERS	LTX-7™ 700 mL	LTX-12™ 1200 mL	ADX-7™ 700 mL	ADX-12™ 1250 mL
Order No.	Order No.	Order No.	Order No.	Order No.
<b>PURELL BRAND</b>				
PURELL White/White	1320-04	1920-04	8720-06	8820-06*
<b>GOJO BRAND</b>				
GOJO Grey/White	1384-04	1984-04	8784-06	8884-06
ACCESSORIES	Order No.	For Use With Dispenser		
TRUE FIT™ Wall Plate	1990-WHT-12 1390-WHT-12 8890-WHT-12 8790-WHT-12	LTX-12 LTX-7 ADX-12 ADX-7		
SHIELD™ Floor & Wall Protector	1045-WHT-12	Any LTX or ADX		
AT-A-GLANCE™ Service Refill ALERT™	2101-24	Any LTX or ADX		
MESSENGER™ Dispenser Station	1091-WHT-12	Any LTX or ADX (requires TRUE FIT Wall Plate)		

12. Larson EL, Albrecht S, O'Keefe M. Hand hygiene behavior in a pediatric emergency department and a pediatric intensive care unit: comparison of use of 2 dispenser systems. Am J Crit Care. 2005 Jul;14:304-11; quiz 312.

Description	TOUCH FREE	MANUAL		
REFILLS	LTX-7™ 700 mL	LTX-12™ 1200 mL	ADX-7™ 700 mL	ADX-12™ 1250 mL
Order No.	Order No.	Order No.	Order No.	Order No.
<b>PURELL BRAND</b>				
PURELL Advanced Hand Rub	1303-03-CAN00	1903-02-CAN00	8707-04-CAN00	8807-03-CAN00*
PURELL Advanced Moisturizing Foam Hand Rub	1313-03-CAN00	1913-02-CAN00	8709-04-CAN00	8809-03-CAN00*
<b>GOJO BRAND</b>				
GOJO Clear & Mild Foam Handwash	1311-03	1911-02	8711-04	8811-03
GOJO Pomeberry Foam Handwash	1316-03	1916-02	--	--
GOJO Botanical Foam Handwash	--	--	8716-04	8816-03
GOJO Antibacterial Plum Scent Foam Handwash Triclosan Liquid	1318-03-CAN00	1918-02-CAN00	8717-04-CAN00	8817-03-CAN00
GOJO Antibacterial Foam Handwash Triclosan Liquid	1319-03-CAN00	1919-02-CAN00	8710-04-CAN00	8810-03-CAN00
GOJO Citrus Ginger Foam Hand & Showerwash	--	--	8713-04	8813-03

\* 1200 mL

## C. difficile Prevention

in the next issue

## GOJO Handwashing Solutions