

Facial Protective Equipment Fogging Solutions for Homecare Providers

VHA Home HealthCare
Research and Innovation | June 2021



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Background

36. Wearing a face shield makes it harder to do my job due to:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a) physical discomfort	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) difficulty seeing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) adverse skin reactions (e.g. skin rash or skin breakdown)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) anxiety due to having my face covered	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) face shield fogging up	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) difficulty communicating with clients, families, or colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) other barriers (please specify)	<input type="text"/>				

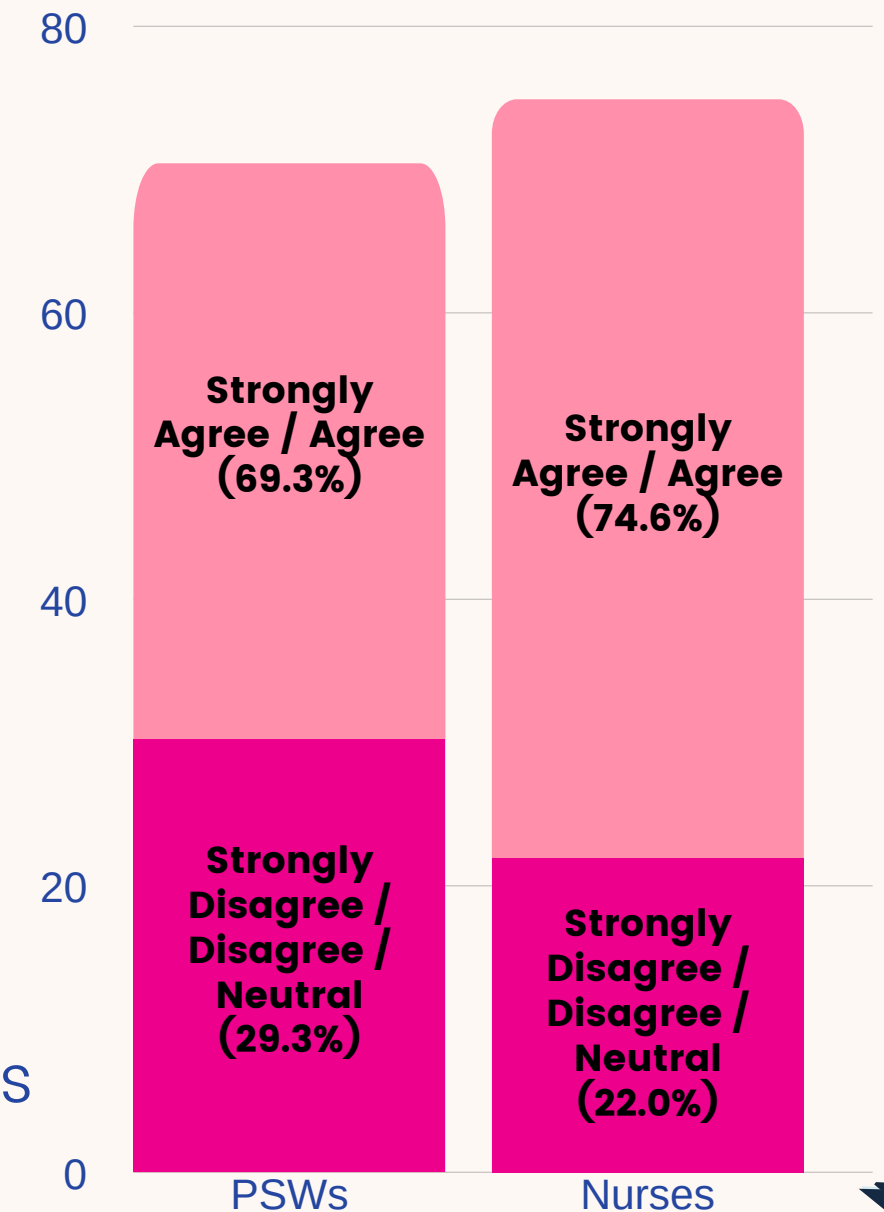
FPE survey

- A survey for barriers that providers face with their facial protective equipment (FPE) was done, with one questions specifically asking about the fogging of face shields

(pictured above)

- From 200 providers' response, about 70% answered they strongly agree or agree that wearing a face shield makes it harder to do their job

"Wearing a face shield makes it harder to do my job due to:
Face shield fogging up"



Potential Solutions



- Potential solutions were searched for online, and talking to athletes who experience fogging face shield in sports (hockey, ringette)
- Solutions range from common household items, glass cleaners, to specialized anti-fog lens solutions

Fogging Pattern



- To determine the baseline fogging pattern for a face shield, the bathroom was heated up by running a hot shower for 3 minutes
- The face shield was worn with a mask underneath
- Fog starts developing after about a minute of having the shower on
- After the first use of the face shield (before washing), fog only forms on the inside of the shield
- After sanitizing and washing the shield, fog accumulation decreases, but condensation begins to form on the inside of the shield





Figure 1. Clear (left),
Condensation (right)

- On the right side, there are droplets on the shield, and the face is not clear

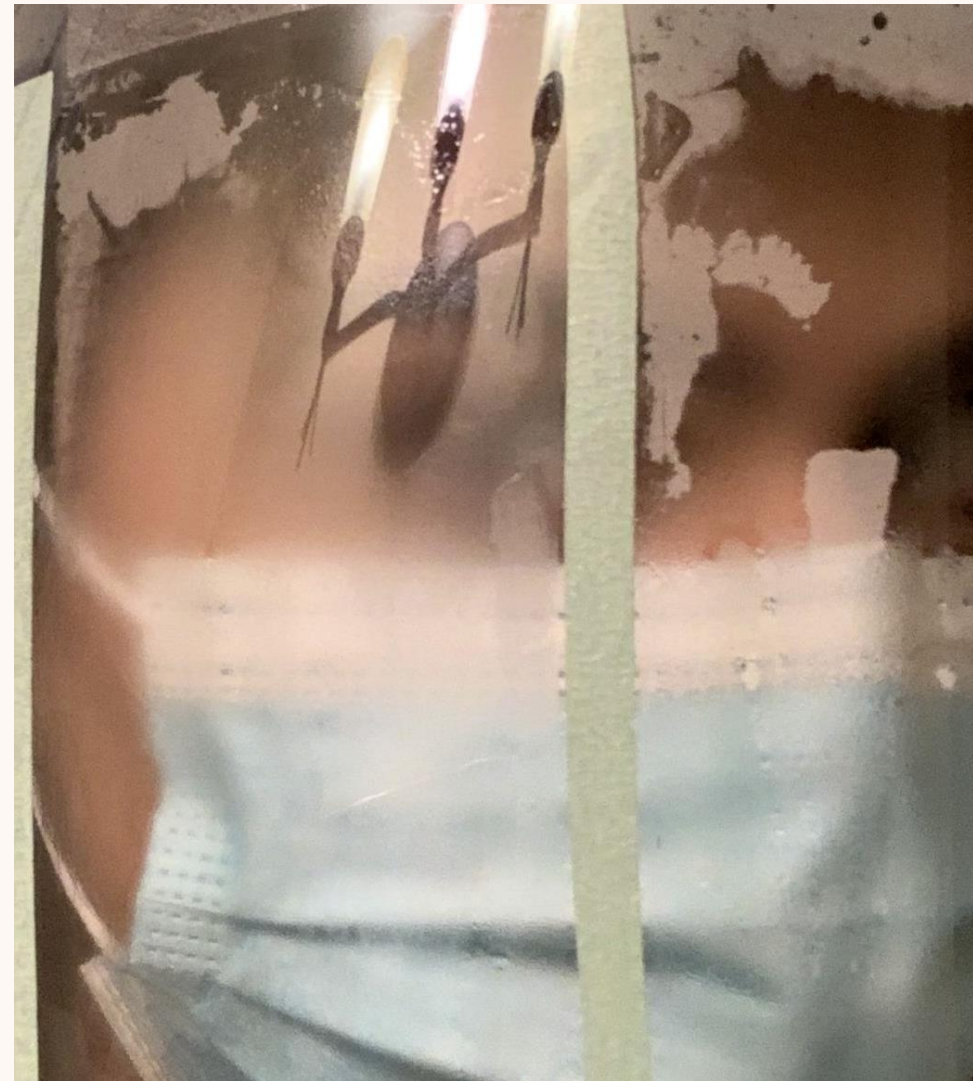


Figure 2. Fog

- Individual droplets of water can't be seen, but the shield is blurry, and less clear

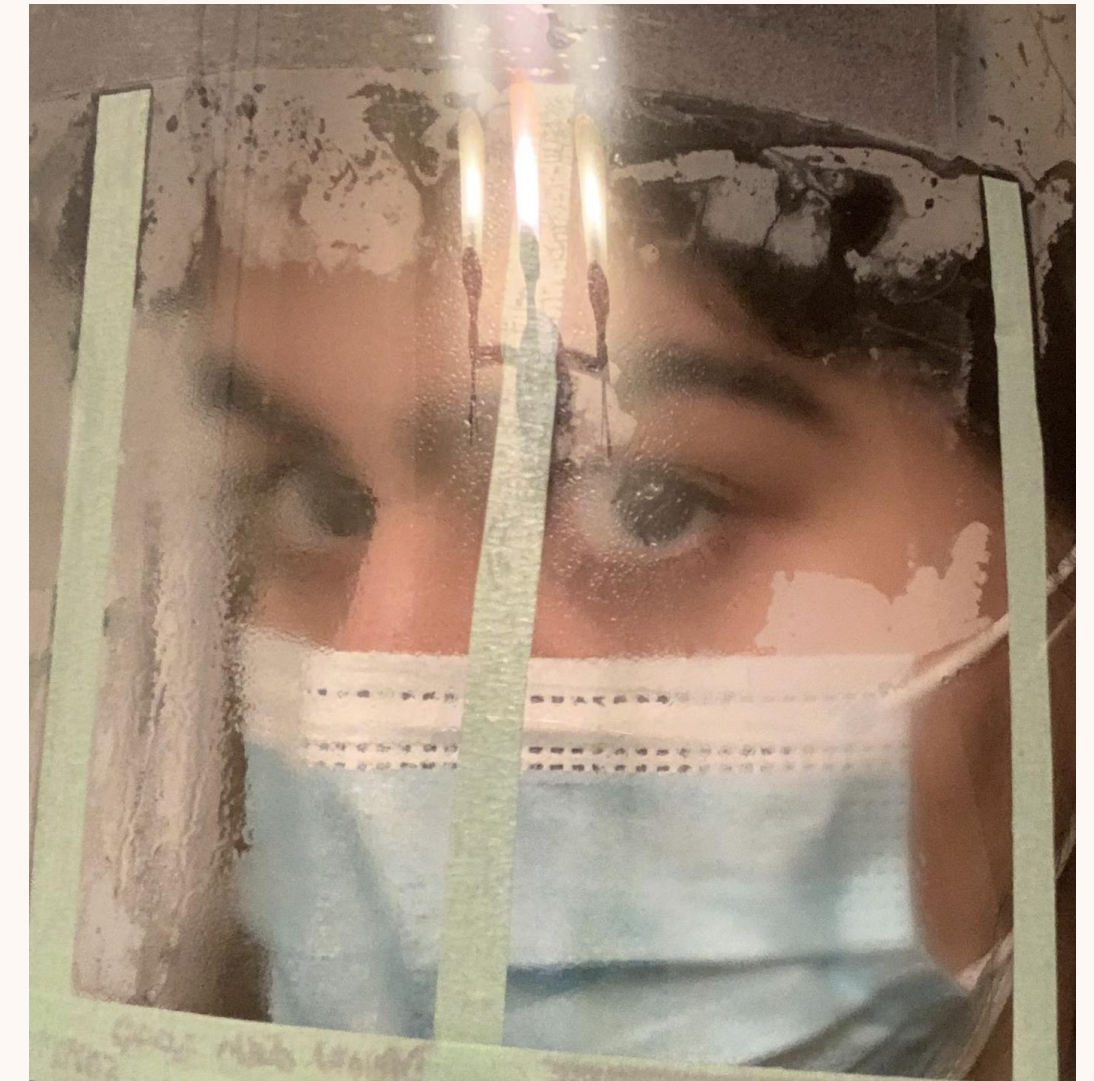
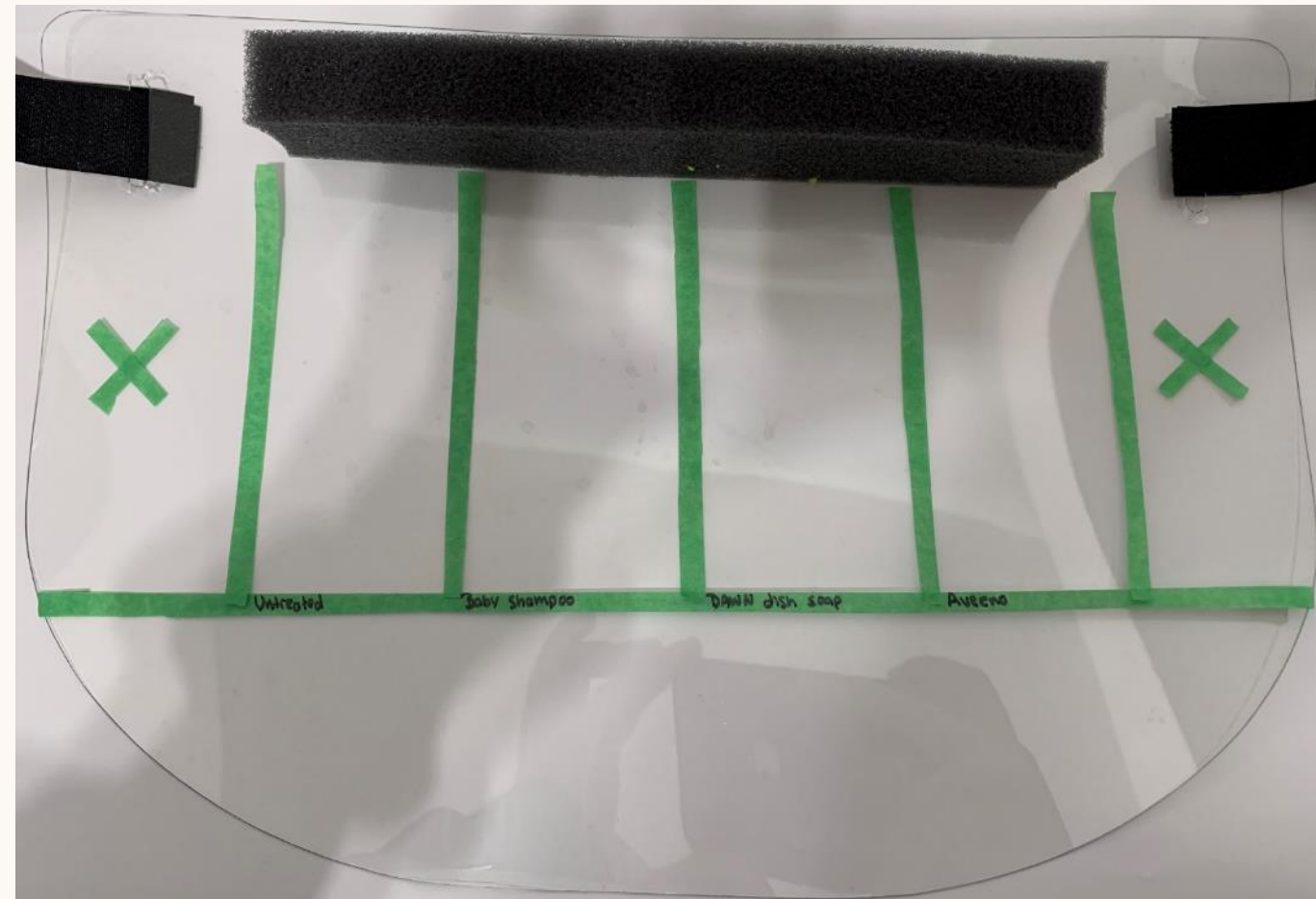


Figure 3. Fog and Condensation

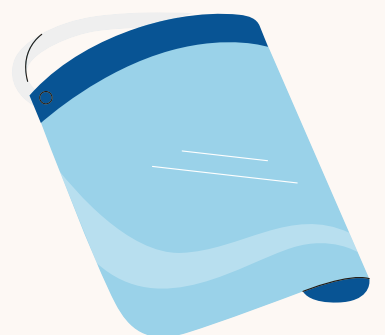
- Patches of fog and droplets of condensation are both present, and the shield is blurry

Preparation



Sectioning of the Face Shield

- The face shield was sectioned to adjust to the fogging pattern, and to allow for 3 solutions and 1 control section (far left)



Solution process

Application of solution

- Using a microfiber cloth, the solution was buffed into the face shield for 1 minute, on both the inside and outside surfaces
- With the help of a spray bottle of water, the solution was wiped off until the shield was completely clean of any product and clear
- The shield was left to air dry

Running the shower

- The bathroom was heated for 15 minutes with a heater
- The shield was worn for 5 minutes, along with a mask, while the shower was running at a warm temperature

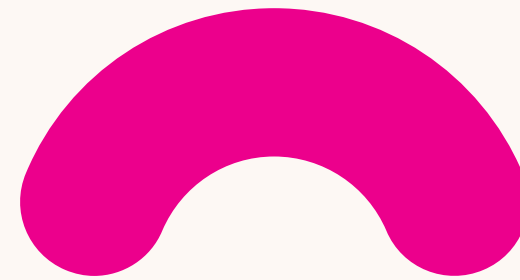


Results

From left to right: DAWN dish soap, Head & Shoulders, Baby shampoo, Control



Trial 1



Trial 2



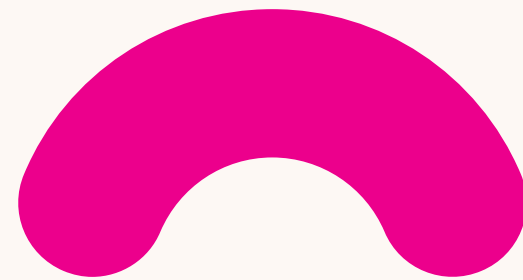
Trial 3

From left to right: Gear AID, Rain-X, DAWN dish soap solution, Control

Results



Trial 1



Trial 2



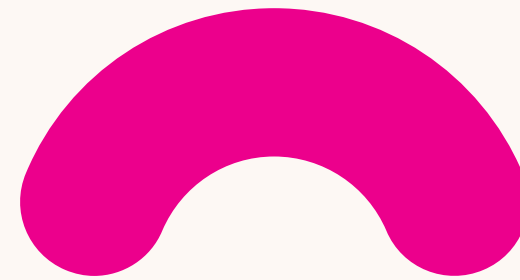
Trial 3

Results

From left to right: Cat CRAP, JAWS Quick Spit, ATTITUDE Hand Soap, Control



Trial 1



Trial 2



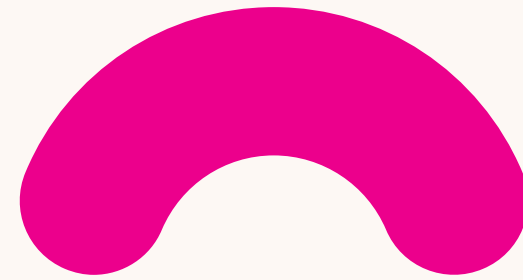
Trial 3

From left to right: Dove beauty bar, Aveeno Body wash, Speedo Anti-fog goggle spray, Control

Results



Trial 1

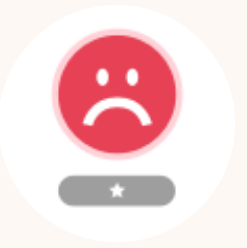
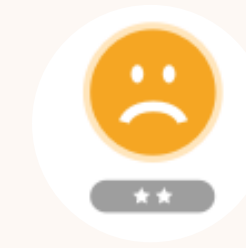
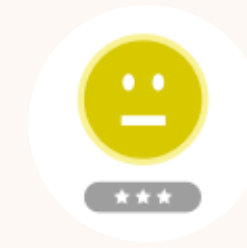


Trial 2



Trial 3

Results



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Solution	Trial 1	DISINFECT AND AIR DRY	Trial 2	DISINFECT AND AIR DRY	Trial 3
Baby Shampoo	4		4		4
Head & Shoulders	3		2		1
DAWN Dish Soap	4		4		4
DAWN Dish Soap Solution	4		3		1
Rain-X Anti-Fog Glass Treatment	5		3		1
GEAR AID Anti-Fog Gel	2		1		1
ATTITUDE Hand Soap	3		3		1
JAWS Quick Spit Antifog Gel	3		4		1
EK USA Cat Crap Anti-Fog Spray	3		2		1
Speedo Anti-Fog Goggle Spray	3		2		1
Aveeno Body Wash	4		4		4
Dove Beauty Bar (Soap Bar)	2		2		1
Portable Neck Fan	5		5		

- After trials 1 & 2, the shield was wiped down with a disinfectant wipe, rinsed, and left to dry

Top Anti-Fog Solutions

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Baby Shampoo

\$4.87 for a 300 mL bottle

\$0.0162/mL



DAWN Dish Soap

\$2.77 for a 479 mL bottle

\$0.0057/mL



Aveeno Body Wash

\$8.97 for a 532 mL bottle

\$0.0169/mL

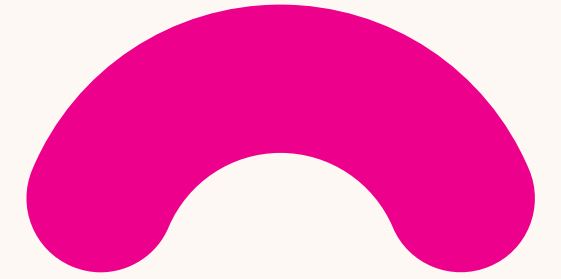


Portable Neck Fan

Average price: \$20.502

Removed from
consideration due to
IPAC concerns

Further Testing



Top 3 solutions

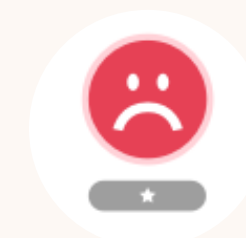
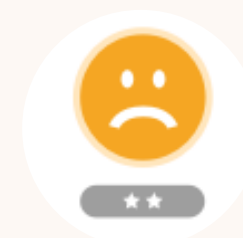
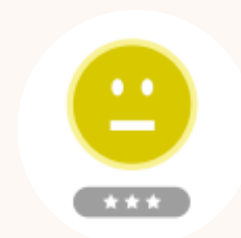
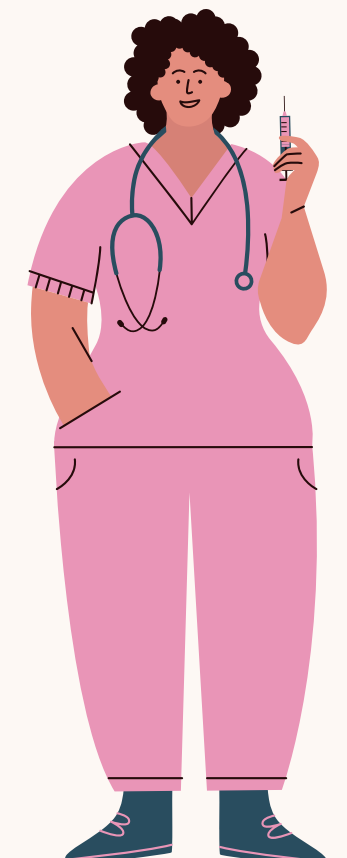
- The top 3 solutions were tested again after the preliminary testing

Solution	Trial 1	Trial 2	Trial 3
Live clean Baby shampoo	4	4	4
DAWN Dish Soap	4	3.5/4	3.5/4
Aveeno Body Wash	4	4	4

30-minute testing for top 3 solutions

- A new face shield was prepared with the top 3 solutions, and was tested for 30 minutes of showering

Solution	Initial	5 mins	10 mins	15 mins	20 mins	TURNED SHOWER OFF	30 mins
Live Clean baby shampoo	5	4.5	4.5	4	4		4
DAWN Dish Soap	5	4.5	4.5	4	4		4
Aveeno Body Wash	5	4.5	4.5	4	4		4



Further Testing (cont.)

Dilutions of DAWN dish soap

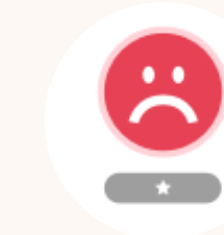
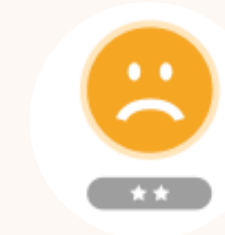
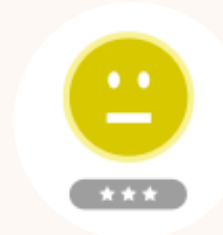
- Further testing was done by diluting the DAWN dish soap to 60% and 30%

Solution	Trial 1	Trial 2	Trial 3
Full strength DAWN dish soap	5	5	3.5/4
60% dilution	4.5	4	2.5
30% dilution	3.5	3/2.5	1.5

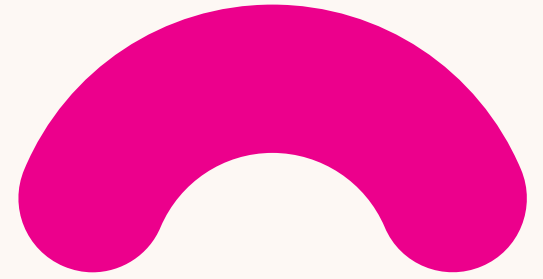
Alternative Dish soaps

- 2 other major dish soap brands (PalmOlive and Sunlight), were tested alongside the DAWN dish soap

Solution	Trial 1	Trial 2	Trial 3
DAWN dish soap	4.5	4	3.5
PalmOlive	4.5	4	2.5
Sunlight	4.5	4	2.5



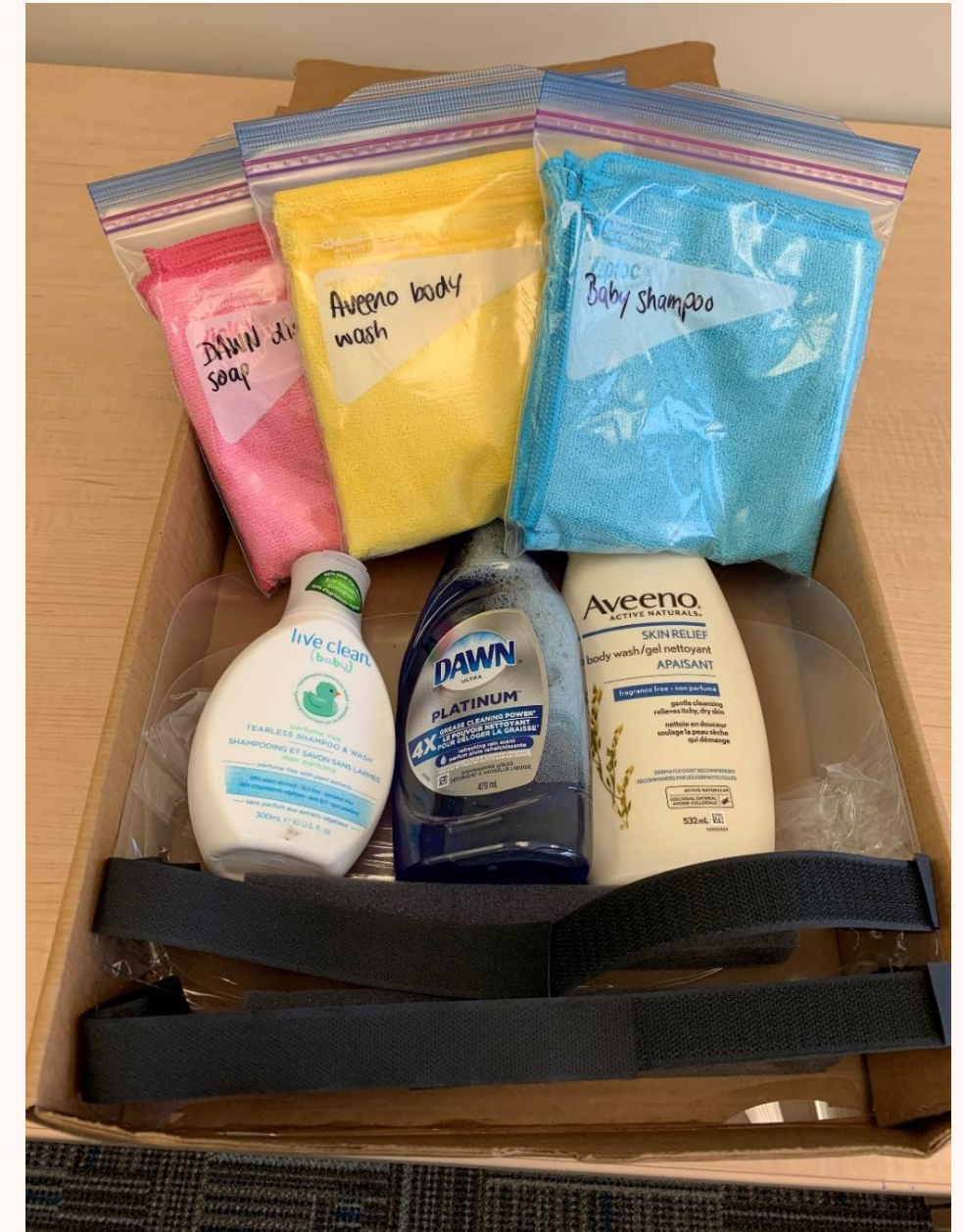
Provider Field Testing



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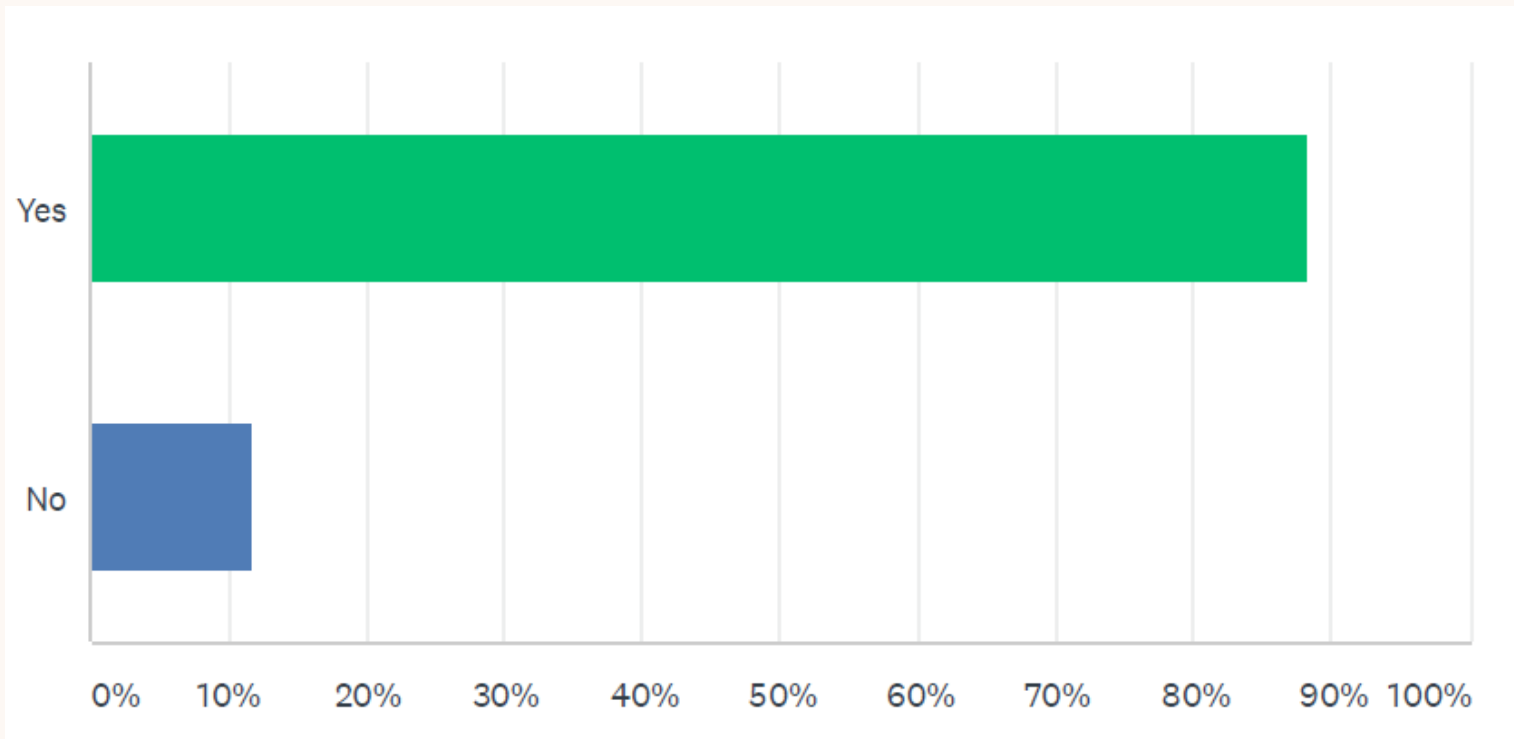
- 10 providers (8 PSWs and 2 Nurses) tested out the top 3 products out in the field
- Testers were provided with microfiber cloths, a bottle of each of the 3 products, and their choice of face shields and/or goggles
- Testers shared their feedback through surveys, emails and group meetings



Provider Results

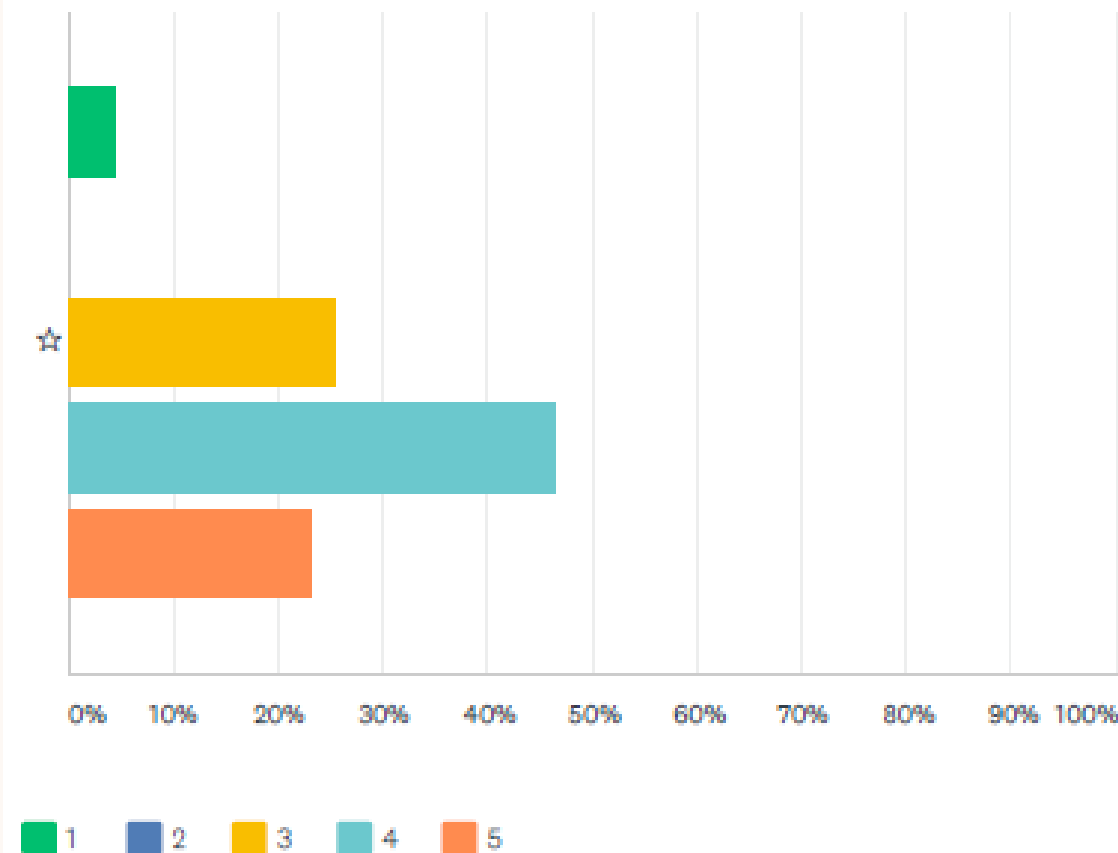
- Providers would recommend the solutions for Anti-fogging purposes

Q23: Is this solution an option you would recommend to others



- On average, providers found the solution to be fairly convenient

Q17: How convenient was the application process? (1 being not convenient and 5 being very convenient)



Provider Results (cont.)

- Testers met to share their experiences with each solution and any tips for using them.
- 8/10 providers would recommend and plan to continue using the solutions
 - Most providers ranked Dawn dish soap and LiveClean Baby Shampoo as their top solutions
 - One provider preferred Aveeno bodywash, but the others found it stickier and more difficult to work with



In their own words

"The dish soap (Dawn) is so easy to use. I work in a retirement home and after applying it once it lasted for a full 8-hour shift with 4 showers. There were no problems, just a very light fog at the end of a hot shower." - Veronica Foisy



"The baby shampoo (Live Clean) is a great option and lasts for up to 2 client showers for me! This depends on how actively you are involved, the shower water temperature and the airflow in the shower." - Roma Liang



"I am happy to share with you the product that I have tried and tested in an extremely hot shower (feels like a sauna - closed door and window, with a fan and portable heater). The baby shampoo (Live Clean) gives clear vision for up to 3 clients." - Joie Francisco



Provider tips

"If you need to apply the solution quickly on the go, try using some diluted product (about 1 part product to 5 parts water) in a little spray bottle. It's convenient and takes 1/4 of the time – but you will need to reapply for each client"



Chrissy Froude

What's Next?

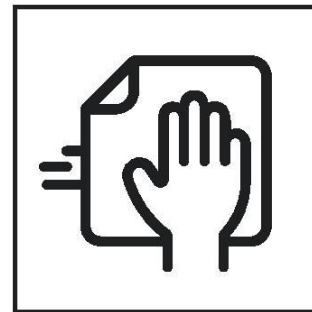
- Starter kits have been distributed to providers across all VHA offices, and include:
 - Microfibre cloths (one for applying the solution and a fine one for drying eye protection)
 - Sample size of DAWN dish soap
 - Instructional card on how to apply solutions

Stop face shield and goggle fogging with these five steps...

We lab tested 14 anti-fogging products for face shields and goggles then field tested the 3 most effective options. Our PSW and nursing testers recommend that you use **Dawn dish soap** or **Live Clean baby shampoo** to help you see clearly during client care.

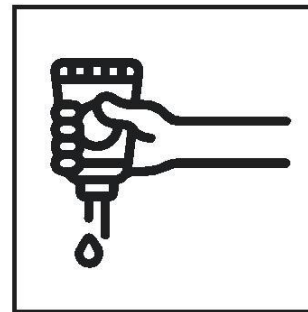
Instructions

Steps for applying the products to eye protection for anti-fogging:



Step 1

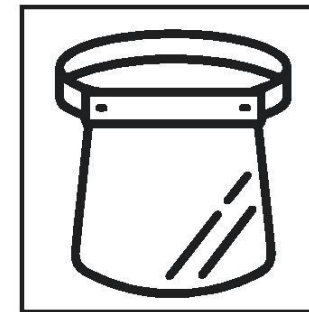
Wipe down eye protection with a clean microfibre cloth to make sure there is no dust.



Step 2

Rub the product onto each side thoroughly for about a minute using fingers or microfibre cloth.

Face Shield use a nickel-sized amount (½ tsp), and for **Goggles** use a dime-sized amount (¼ tsp)



Step 3

Let the product sit on the eye protection for about a minute.



Step 4

Rinse the eye protection with warm water until it is clear.



Step 5

Air dry eye protection or wipe lightly with a clean, fine microfibre cloth.

With proper disinfecting between uses, this application should let you see clearly for 2-4 client visits.

Questions? email askcovid-19@vha.ca.

Thank you to our Partners



For any inquiries, please email:
researchhelp@vha.ca



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