

RIDING IN STYLE:

HEPA BABY BUGGY


A Stroller with a Twist!



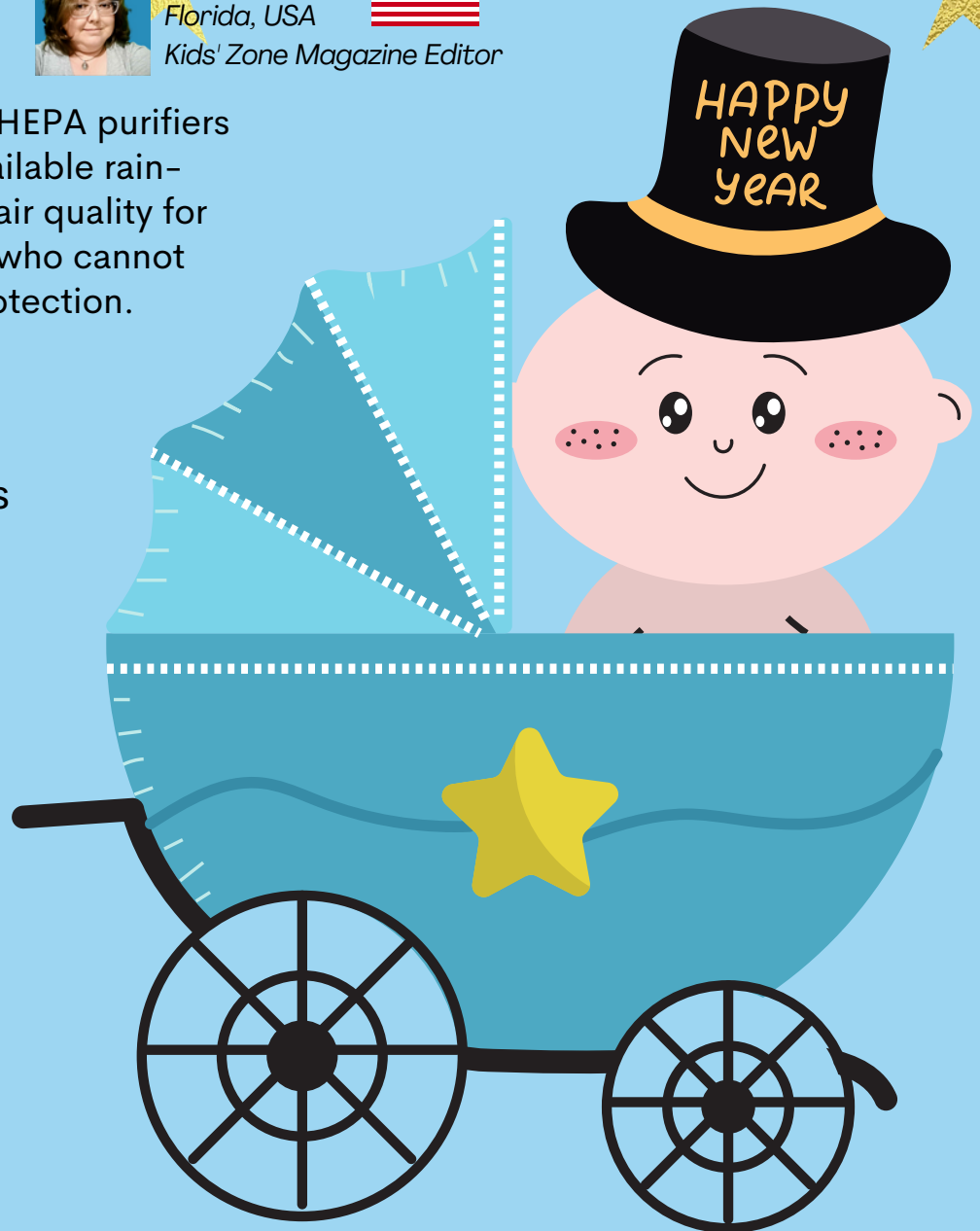
by Shea O'Neil,
Florida, USA
Kids' Zone Magazine Editor



HEPA buggies involve using HEPA purifiers underneath commercially available rain-covered strollers to improve air quality for babies and children under 2 who cannot wear a mask, as a layer of protection.

 Tongue twister: Can you say "Rubber baby buggy bumper" 5 times fast?

Rubber baby
buggy bumper,
Rubber baby
buggy bumper,
Rubber baggy...
Buddy...
bunkzer???.
ahhh!!!



... We think you'll find making this a lot easier. This online excerpt of Issue 06 of Kids Zone Magazine takes a closer look at HEPA baby buggies.

Universal Stroller Rain Cover



Universal stroller covers are easy to find commercially in most places, and come in a variety of styles at affordable prices. The one pictured above is available on Amazon from Vaxaape Brand).

As a key reminder, parents should only use commercially-sold rain covers that include outgoing air vents.

HEPA Purifiers

HEPA purifiers come in a variety of sizes and powers. Avoid ionizers. These are examples of small portable, battery-operated purifiers:



Pure Enrichment PureBaby On-the-Go (CADR 4 cfm); Comes with a clamp.



SmartAir's QT3 (CADR 21 cfm); Has a handle you can use to secure.

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BUGGY

Rubber baby buggy bumper!



A Stroller with a Twist!

The HEPA buggy is not a perfect isolation space. Because COVID-19 is highly contagious and can spread through the air like smoke, it is best to avoid bringing babies and children who are not able to mask into public spaces that do not have universal masking and good air quality. However, for essential visits, HEPA buggies may reduce risks by creating air quality better than that of hospital operating rooms!

How It Works

The HEPA purifier filters the air in the rain-covered stroller. The rain covers have vents and open to the bottom of the stroller to allow stale air to leave.

HEPA purifiers may be battery-operated, or you can use a small portable power source.

In any version, you will want to ensure it is **secured well**, taking care **not to block airflow vents**. It may be helpful to use bungee cords or adjustable clamps to secure it. As a safety reminder: **never leave child unattended** in the stroller.

You can secure a small or personal HEPA purifier to the stroller handle or frame. For a larger HEPA purifier, you can secure it in the undercarriage if there is an opening for the purifier to blow into the baby seating area. You can also use a double stroller and secure it on one side, with the baby on the other.

“Even a small HEPA purifier can provide considerable air filtration for a “room” as small as a stroller.”

Michael Hoerger, Tulane University (2023).
<https://doi.org/10.21203/rs.3.rs-2430680/v1>

A LOOK INTO THE RESEARCH: HEPA BUGGIES

Can a Small Purifier Really Help?

By using a commercial rain cover, you create a small "room" which even small purifiers can filter efficiently. Below is a simplified chart from [Hoerger's 2023 Study Table 3](#) using the numbers for a 6 cubic foot rain-covered stroller enclosure (See [Hoerger's Table 3](#) for other sizes). The U.S. Centers for Disease Control and Prevention (CDC) stipulates that hospital operating rooms should maintain at least 15 air changes per hour (ACH). We can compare our rain-covered buggy to these high air quality standards.

Air Changes per Hour (ACH) for a 6 cubic foot buggy rain cover enclosure based on the Clean Air Delivery Rate (CADR) of the HEPA purifier

Note: 1 cubic feet/minute= 1.69901 cubic metre/hour, converter [here](#)

| | CADR of HEPA Air Filter as cubic feet per minute (cfm) (ft3/minute) | | | | | | | | | |
|--------------------|---|---------|---------|---------|---------|----------|----------|----------|----------|----------|
| | 5 cfm | 10 cfm | 25 cfm | 50 cfm | 75 cfm | 100 cfm | 150 cfm | 200 cfm | 250 cfm | 300 cfm |
| 6 cubic foot buggy | 50 ACH | 100 ACH | 250 ACH | 500 ACH | 750 ACH | 1000 ACH | 1500 ACH | 2000 ACH | 2500 ACH | 3000 ACH |

As you can see from this chart, even a purifier with only 5 cfm CADR (clean air delivery rate) gives more than 3 times the number of ACH of a hospital operating room for a 6 cubic foot buggy. CADR is listed by purifier manufacturer as cfm or cmh, with most able to meet or exceed the amount needed to reach operating standards in a rain-covered stroller.

Hoerger also found the sound intensity was similar to a normal conversation or office noise. HEPA purifiers vary in sound based on the speed they are run at. You can check the sound in decibels for your specific unit and adjust the speed to find the best setting for your baby. He also noted that, as expected for a commercially-sold stroller rain cover, CO2 levels plateaued at ordinary, safe levels, similar to what is commonly observed in indoor settings, like homes and businesses (under 1000 ppm). You can purchase a [CO2 monitor](#) if you would like to check the CO2 levels in your particular set up. See the [study](#) for more details. He concluded:

“HEPA buggies provide 3.8–63.4 times the clean airflow of operating rooms, which can help unmaskable young children during essential activities of the ongoing airborne COVID-19 pandemic. Families can choose among several reasonable and low-cost options for PAPR and HEPA buggies and are encouraged to share photos on social media to increase dissemination.”

Michael Hoerger, Tulane University (2023)
<https://doi.org/10.21203/rs.3.rs-2430680/v1>

RECENT INNOVATIONS

Laminar Flow Air Purifiers

Laminar flow air purifiers work by blowing a steady stream of purified air into your breathing zone. They can work in a HEPA buggy. They can also add a layer of protection to reduce risks in essential situations where the baby or young child needs to come out of the buggy. It is important to keep them at the correct distance.

One example of a commercial laminar flow purifier is the Air Fanta 4 Lite. It is portable and battery-operated. It has three fan speed settings designed for different distances from the person:

Low (L): 1 foot (30 cm)

Medium (M): 1-1.5 feet (30-50cm)

High (H): for over 1.6 feet (over 50cm)

It is equipped with an HEPA H11 filter, which gives a 98% filtration rate for particles as small as 0.3 microns or 99.4% for 1 micron. For optimal performance, the filter should be replaced every 150 to 200 hours of operation.

Pediatric Home Visits and Virtual Visits

For non-emergency medical appointments, you can search online for places that offer pediatric home visits, and/or mobile urgent care services in your area. Many have a wide range of services they can offer in virtual or during home visits. When scheduling the appointment, let them know what precautions you would need them to take. For instance, **"we require staff to be masking with an un-valved N95 or higher respirator that offers protection from diseases that travel through the air, like COVID-19."**

Laminar Flow Purifier



Laminar purifiers work by blowing a steady stream of highly purified air into your breathing zone. Pictured above: Air Fanta 4 Lite. It is available on Amazon as well.

