

# How Often Should Ventilator Circuits Be Changed?

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**A**s a nurse, care for my patients was guided by evidence-based research. When I became a ventilator user due to ALS, I expected to use the same principles to guide my home care. But I quickly discovered that no research-based standards or guidelines exist for the routine basic care we require. I searched for an answer to a question I thought was especially important: How often should I change my ventilator circuits?

According to the American Association for Respiratory Care *Clinical Practice Guideline: Long-Term Invasive Mechanical Ventilation in the Home – 2007 Revision & Update*, “Evidence is lacking to support an optimal plan for changing and processing ventilator circuits and ancillary equipment in the home.” However the guideline states that circuits need not be changed more often than once a week.

Next, I looked for direction from the Centers for Disease Control and Prevention (CDC). Based on research data from acute care hospitals, the CDC guidance on ventilator circuits states, “Do not change routinely on the basis of duration of use. Change the circuit when visibly soiled.” This guidance seems inadequate for home users.

Finally, I searched for best practices and trends from ventilator users themselves. I asked an online ventilator user discussion group, “How often do you change your ventilator circuits?” I received 20 responses – 16 from those using invasive ventilation and four from those using noninvasive ventilation.

One respondent with limb-girdle muscular dystrophy who has used a ventilator since 1994 changes the circuits once a month. Another respondent with spinal muscle atrophy changes the heated circuits once a month and the “chair circuits” twice a month.

A young man with nemaline myopathy used to change his circuits every three days but now changes them once a week. A respondent with a C2-3 SCI since 1985 changes the circuits three times a week. A man with Pompe disease who has used a ventilator for 12 years used to change his circuits every three days but now changes them once a week.

A man with spinal muscle atrophy who has used a ventilator since 1982 changes his circuits twice a week though he’s “heard one time per week is OK.” A post-polio respondent from New Zealand changes her circuits only when soiled. A man with a C2-3 SCI for 24 years changes his circuits three times a week, but two other individuals with SCI change their circuits once a week. A man with ALS who has used a ventilator since 1993 changes his circuits once a month. And I change mine once a month.

Two parents of young children using invasive ventilation responded differently. One changes the circuits once a month for her son who has Duchenne muscular dystrophy, the other parent whose son has cerebral palsy changes his circuits once a week or “when he coughs in it.”

Of the four noninvasive ventilation respondents, three were polio survivors. One changes his circuits every

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two months, another every month, and the third never changes her circuits, although she does wash her mask every second day and the mouthpiece only occasionally. Another respondent who has congenital myopathy cleans her circuits every six weeks.

Of the 20 responses, four people clean their circuits instead of disposing of them. The cleaning techniques also vary. One person washes them in warm soapy water, rinses, then soaks in Control III solution for ten minutes, rinses again, and hangs to dry. Another respondent soaks her circuits with a 1:4 ratio of vinegar and hot water, and after she has had a cold, she soaks them overnight in a 1:1 vinegar/water solution. A third respondent washes them with dish soap, rinses, then soaks in Control III solution for 15 minutes, rinses again, and hangs to dry. The fourth respondent uses Control III solution for 10 minutes.

I also asked the discussion group who instructed them on how often they should change the circuits since their practices were so diverse. Their responses were as different as their practices: no instruction given – 4, DME rep – 3, RT – 3, homecare

agency/nurse – 2, Medicare – 1, unknown – 7.

Considering that no standards or guidelines exist for home-based circuit changes, I wasn't surprised that practice varies so dramatically. But two trends did emerge from this informal search for answers. The first is that most invasive ventilator users change their circuits either once a week or once a month. And the second is that noninvasive users change their circuits less often than invasive users. Until a formal research study can be conducted to answer this important question, we ventilator users have to answer it ourselves. ▲

### Summary: How often do you change your ventilator circuits?

	Via Trach	Noninvasive
3 times a week	2	
2 times a week	2	
Every week	5	
Every 3 weeks	1	
Once a month	5	1
Every 6 weeks		1
Every 2 months		1
Only when soiled	1	
Never		1

### ***The Butcher's Daughter: The story of an Army nurse with ALS***

by Sandra Lesher Stuban, RN, has been published. Stuban, a ventilator user for 12 years (four years using noninvasive ventilation before converting to tracheostomy ventilator for the last eight years), is a frequent contributor to *Ventilator-Assisted Living*.

The book is 190 pages and available in paperback for \$13.95, plus shipping and handling, through [virtualbookworm.com](http://virtualbookworm.com), [Amazon.com](http://Amazon.com), and [Barnes & Noble](http://Barnes & Noble). [www.stubanbooks.com](http://www.stubanbooks.com)