



**Who Gets the Ventilator?—  
A “distribution of scarce resources” problem**

Facts

- A ventilator is a machine that artificially induces respiration in patients who have extreme difficulty breathing or cannot breathe at all on their own, e.g., premature newborns, adults with respiratory diseases, patients under surgical anesthesia, and PVS patients.
- According to a 2006 study, there are 105,000 ventilators in the United States.<sup>1</sup> Of these, approximately 100,000 are in use during the regular flu season.
- In the event of a worst-case scenario flu pandemic, a 2006 Bush administration report estimates that 742,500 ventilators would be needed in the United States.<sup>2</sup>
- In 2006, the estimated population of Columbia, Mo. was just over 94,000.<sup>3</sup>
- “A typical hospital ventilator costs \$30,000, and hospitals, operating on thin profit margins, say they cannot afford to buy and store hundreds of units that may never be used.”<sup>4</sup>

<sup>1</sup> We can assume that neonatal and anesthesia respirators are excluded from this total.

<sup>2</sup> National facts based on 2006 McNeil study cited by Lea Brandt, David Fleming, et. al., “Who Gets the Ventilator?” Third Annual Meeting of the Midwest Ethics Society, Columbia College, April 11, 2009.

<sup>3</sup> <http://quickfacts.census.gov/qfd/states/29/2915670.html>

<sup>4</sup> “Hospitals Short on Ventilators if Bird Flu Hits,” *New York Times*, March 12, 2006.

Hypothetical Scenario

Suppose all of the following:

- A new strain of influenza has reached pandemic proportions and has affected Columbia’s population, so that at any given time during the crisis, at least 10% of the population is ill with the virus (est. 9,400 people).
- On average, 10% of those affected by this virus will be ill enough to require a ventilator for a period ranging from a few hours to a few days (est. 940 people).

Consider the following:

- If there were 5,000 ventilators available nation-wide during an average (non-pandemic) flu season and if Columbia were the only city in the nation in need of those ventilators, then 20% of the nation’s ventilators could conceivably be diverted.
- However, the definition of a “pandemic” is an epidemic of global proportions, so Columbia would be just one of hundreds of locations in which ventilators were needed.

So suppose further:

- You have been randomly chosen in a process similar to jury selection to serve on a committee that will decide how Columbia’s ventilators will be used.

<http://www.nytimes.com/2006/03/12/national/12vent.html>

- This committee has access to experts in medical and other fields to provide additional information as needed.
- There are 15 adult ventilators in the city of Columbia, 10 of which are already in use and 3 of which are in use by patients in persistent vegetative states.

Let the following serve as our definition of the utilitarian principle:

That act is morally correct which we can reasonably expect will produce more long-term benefit than harm for those who will be affected by the act.

(1) *Using the utilitarian principle*, how would you recommend that these 15 ventilators be distributed among the estimated 940 people who need them?

What additional information, if any, would you need in order to make that recommendation? Does it matter to making the utilitarian decision exactly who is waiting for the ventilator? Why or why not?

(2) Once you have established how to address this problem as a utilitarian, you should then *evaluate the utilitarian solution*.

Is it a good one? If so, why is it? If not, what specific alternative solution would you propose in its place? What would be the justification for that alternative solution?

## Shift No. 1—Committee Decision Data Sheet

The first round of ventilator assignment decisions need to be made in the next hour. If your committee is unable to reach a decision, then according to yesterday's emergency vote by the citizens of Columbia, assignments will be made by lottery.

### Current Ventilator Use (10 of 15 units)

Unit	Name	Gender	Age	Occupation and Additional Info	Recovery Probability—	
					w/ventilator	w/out ventilator
Vent 01	Patient 001	M	72	Retired, in PVS since Dec. 2008	< 1%	0%
Vent 02	Patient 002	F	45	Accountant, in PVS since Nov. 2008	< 1%	0%
Vent 03	Patient 003	F	19	Student, in PVS since Feb. 2009	1%	0%
Vent 04	Patient 004	M	37	Restaurant manager, father of 2	85%	50%
Vent 05	Patient 005	F	48	Psychologist, mother of 1	90%	55%
Vent 06	Patient 006	F	22	Waitress, potential organ donor	95%	55%
Vent 07	Patient 007	M	81	Retired minister, grandfather of 9	25%	< 1%
Vent 08	Patient 008	M	56	Nuclear physicist, single	95%	60%
Vent 09	Patient 009	F	30s	Indigent, auto-immune disease	60%	< 5%
Vent 10	Patient 010	M	51	Lawyer, divorced, manic-depressive	95%	55%
Vent 11	available					
Vent 12	available					
Vent 13	available					
Vent 14	available					
Vent 15	available					

### Critical Patient List (20 of 940 patients)

Name	Gender	Age	Occupation and Additional Information	Recovery Probability—	
				w/ventilator	w/out ventilator
Patient 011	M	16	Student, auto-immune disease	70%	10%
Patient 012	F	78	Retired nurse, no living family	65%	< 5%
Patient 013	M	26	Veteran, student, married, no children	95%	65%
Patient 014	F	48	Family practice physician, mother of 1	90%	55%
Patient 015	F	36	Legal secretary, married, mother of 1	90%	55%
Patient 016	M	57	School custodian, divorced, father of 7	85%	50%
Patient 017	F	44	TV news anchor, breast cancer patient	80%	30%
Patient 018	M	36	Chemistry grad student, non-U.S. citizen	90%	55%
Patient 019	F	33	Civil engineer, unmarried	90%	55%
Patient 020	M	29	Convicted felon, drug addict, father of 2	85%	50%
Patient 021	F	31	Hotel housekeeping staff, non-U.S. citizen	90%	55%
Patient 022	F	68	Art professor, gay partner of 26 years	70%	20%
Patient 023	M	57	School bus driver, married, father of 9	75%	25%
Patient 024	M	97	Retired university president, liver disease	25%	< 1%
Patient 025	F	19	Student, diabetic, cancer patient	35%	< 5%
Patient 026	F	31	Stay-at-home mom of 4, unmarried	90%	55%
Patient 027	F	39	Social worker, divorced, mother of 2	90%	55%
Patient 028	M	43	Fire fighter, unmarried, alcoholic	85%	45%
Patient 029	M	23	Bank teller, high risk pregnancy	90%	40%
Patient 030	M	48	Bail bondsman, married, father of 3	85%	50%

## RESULTS OF COMMITTEE MEETINGS

“X” = patient to keep ventilator

Group 1	Group 2	Group 3	Lottery	P #
				001
			x	002
			x	003
x	x	x		004
x	x	x	x	005
	x	x		006
				007
	x		x	008
				009
	x	x	x	010

“X” = patient to receive ventilator

Group 1	Group 2	Group 3	Lottery	P #
x			x	011
x				012
			x	013
x	x	x		014
x	x	x	x	015
x		x		016
x			x	017
	x	x	x	018
	x	x		019
			x	020
		x		021
x			x	022
x	x	x	x	023
				024
				025
x	x	x	x	026
x	x	x		027
	x		x	028
x	x	x	x	029
x		x		030

Notes: groups 1 and 2 ran out of time before assigning the last ventilator; an extra (16<sup>th</sup>) lottery ticket was inadvertently issued.

Lottery results agreed with unanimous committee results 10 times out of 17 (59%) and agreed with majority votes 14 times out of 30 (47%).

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Vent 09	Patient 009	F	30s	Indigent, auto-immune disease	60%	<5%
Vent 10	Patient 010	M	51	Lawyer, divorced, manic-depressive	95%	55%

## New Critical Patient List (20 of 940 patients)

Patient 011	M	16	Student, auto-immune disease	70%	10%
Patient 012	F	78	Retired nurse, no living family	65%	< 5%
Patient 013	M	26	Veteran, student, married, no children	95%	65%
Patient 014	F	48	Family practice physician, mother of 1	90%	55%
Patient 015	F	36	Legal secretary, married, mother of 1	90%	55%
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Results if a simple majority of votes among the three committees were used to determine vent assignments:

3/3 to receive Patients 4, 5, 14, 15, 23, 26, 27, 29

2/3 to receive Patients 6, 10, 16, 18, 19, 30

2/3 not to receive Patients 8, 11, 12, 17, 21, 22, 28

3/3 not to receive Patients 1, 2, 3, 7, 9, 13, 20, 24, 25

for a total of 14/15 units assigned