



Birth of a Ranking: Which Hospitals Are Best at Delivering Babies?

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Most of the roughly 4 million [babies](#) born in the U.S. each year are delivered in hospitals, the vast majority without significant incident to the infant. But hospital choice matters. Depending on her choice of hospital and, of course, provider, an expectant mother may be much more or less likely to undergo induction of [labor](#), surgery, or other interventions intended to assist delivery and ensure a healthy child.

Her providers, moreover, may include a midwife (or not) and may be highly experienced—or not. They may or may not have a specialists in neonatal care at their disposal, if need for such expertise arises. These and other differences among hospitals might affect the costs and medical consequences of delivery, even one that produces a healthy infant.

U.S. News has never assessed hospitals in obstetrics; to date, our Best Hospitals rankings have focused on complex and difficult areas of care, which routine labor is not. As we look to [expand our reach](#) to include routine conditions and procedures, obstetrics is one of our targets.

How should U.S. News evaluate hospitals in obstetrics? Obvious data points to include in a methodology would be infant and maternal deaths. But a hospital's role in infant mortality—which is defined as death in the first 12 months—may be just one of many contributing factors, and maternal mortality is so rare that it generally has little statistical power to differentiate one hospital from another.

Rates of Cesarean sections offers more promise. Nearly one-third of of U.S. births—well over 1 million a year—are by C-section. Women who deliver by C-section have more complications and longer hospitalizations, and run up almost twice the [medical expense](#) on average, than those who deliver vaginally. And once a woman delivers by C-section, it's likely that future deliveries also will be by C-section; vaginal births after Cesarean (VBACs) are the exception, not the rule. Substantial research suggests that many C-sections are unnecessary. So which hospitals keep down their C-section rates is worth knowing.

Virginia makes C-section rates and certain other obstetric data from hospitals in the state publicly available through Virginia Health Information, a state-chartered nonprofit. VHI's data is freely available at [vhi.org](#). The data below are from 2006, the most recent year available, and cover all hospitals that performed any deliveries during that year. ([Skip table and continue reading.](#))

Live Births and C-Section and Episiotomy Rates by Hospital in Virginia, 2006						
Hospital	Births	C-section rates (%)				Episiotomy rate (%)
		Observed primary	Expected primary	Observed repeat	Expected repeat	
Augusta Health	1,111	24.5	26.7	92.7	88.7	9.5
Bedford Memorial Hospital	207	20.7	16.5	89.5	n/a	4.6
Bon Secours DePaul Medical Center	974	14.3*	17.8	69.9	84.2	2.5
Bon Secours Mary Immaculate Hospital	944	20.3	21.4	92.0	86.0	15.2
Bon Secours Maryview Medical Center	1,012	19.6	18.1	89.7	88.2	11.6
Bon Secours Memorial Regional Medical Center	1,804	21.0	21.2	83.0	90.6	10.7
Bon Secours St. Francis Medical Center	1,077	23.3	22.4	89.9	90.8	16.2
Bon Secours St. Mary's Hospital	2,726	27.6	25.8	88.7	91.3	19.6
Carilion Franklin Memorial Hospital	253	20.0	23.4	97.4	92.3	7.5
Carilion Medical Center	3,305	23.0*	25.9	84.5	86.5	24.1
Carilion New River Valley Medical Center	1,027	26.9	27.5	90.1	89.2	34.0
Centra Health	2,318	18.6*	21.1	83.0	89.2	7.7
Centra Southside Community Hospital	393	13.6	12.9	91.1	87.1	8.8
Chesapeake Regional	3,100	25.8	25.4	96.3	89.0	16.5

	3,100	23.0	23.7	70.3	87.0	10.0
Chesapeake Regional Medical Center						
CJW Medical Center	3,263	25.6**	20.7	91.5	90.8	21.8
Clinch Valley Medical Center	478	21.3	19.5	98.0	88.4	49.1
Community Memorial Healthcenter	340	17.2	20.5	74.4	83.4	8.9
Culpeper Regional Hospital	444	14.6	18.4	75.9	89.1	19.1
Danville Regional Medical Center	1,055	13.9*	17.5	78.5	86.8	5.1
Fauquier Hospital	741	21.0	18.2	74.1	87.0	29.1
Halifax Regional Hospital	410	28.7	25.1	90.7	86.1	11.2
Henrico Doctors' Hospital	3,431	28.2**	23.6	95.9	90.4	23.0
Inova Alexandria Hospital	3,563	28.4**	26.1	93.2	90.1	20.0
Inova Fair Oaks Hospital	3,559	26.1	24.4	93.2	90.7	22.2
Inova Fairfax Hospital	11,673	30.1**	25.5	93.7	91.2	20.5
Inova Loudoun Hospital	2,227	19.2*	24.9	91.1	90.8	16.2
Johnston Memorial Hospital	638	17.1	19.1	98.7	91.1	36.2
LewisGale Hospital Montgomery	526	24.5**	18.5	93.8	92.7	8.5
LewisGale Medical Center	615	28.7**	21.9	87.3	88.9	53.3
Martha Jefferson Hospital	1,700	24.4*	27.2	90.5	89.9	5.1
Mary Washington Hospital	3,702	24.5	24.2	92.7	89.6	12.3
Memorial Hospital of Martinsville & Henry County	571	23.0**	14.3	98.7	90.8	30.0
Norton Community Hospital	453	18.5	20.8	100.0	90.0	16.6
Prince William Hospital	2,642	16.3*	24.6	78.6	88.3	20.1
Reston Hospital Center	3,014	33.5	31.5	93.8	92.3	18.1
Riverside Regional Medical Center	2,922	19.7*	21.9	88.4	89.7	16.8
Riverside Shore Memorial Hospital	566	18.8	18.6	86.9	86.2	12.5
Rockingham Memorial Hospital	1,760	19.4*	22.2	87.8	89.1	13.5
Sentara Leigh Hospital	2,602	24.1*	27.3	97.3	90.0	14.9
Sentara Norfolk General Hospital	2,717	31.9	33.0	84.0	88.7	6.4
Sentara Northern Virginia Medical Center	2,644	17.9*	21.4	84.3	88.5	16.8
Sentara Obici Hospital	1,289	18.7	20.7	85.6	89.5	6.8
Sentara Virginia Beach General Hospital	1,838	22.9	24.9	90.0	89.9	15.5
Sentara Williamsburg Regional Medical Center	958	16.5	19.1	92.8	89.0	10.9
Smyth County Community Hospital	304	22.5	21.6	100.0	91.1	31.9
Southampton Memorial Hospital	287	15.4	18.8	93.6	90.4	17.5
Southside Regional Medical Center	1,286	23.0**	19.4	95.1	90.6	29.8
Twin County Regional Hospital	400	20.1	16.9	100.0	90.0	30.0
University of Virginia Medical Center	1,712	22.6*	28.6	87.0	89.0	4.1
VCU Health System	2,135	23.0*	29.5	82.3	86.9	2.5

Virginia Hospital Center	3,248	30.7	29.8	87.9	90.8	20.3
Warren Memorial Hospital	259	21.3	20.4	86.8	90.2	19.0
Wellmont Lonesome Pine Hospital	268	18.6	13.7	100.0	88.8	37.2
Winchester Medical Center	2,197	25.6**	22.1	95.8	89.4	20.7
Wythe County Community Hospital	250	40.1**	27.0	100.0	91.2	26.8

*Observed rate significantly lower than expected rate

**Observed rate significantly higher than expected rate

Of the 94,938 deliveries reported for 2006, 32,544, or 34.3 percent, were by C-section. Individual hospital rates of primary C-sections (first-time C-sections) ranged from under 14 percent to above 40 percent, and repeat C-section rates ranged from slightly under 70 percent to 100 percent.

VHI developed a methodology for calculating "expected" rates of primary and repeat C-sections that considers each hospital's mix of obstetrics patients. "Expected" is not the same as "optimal"; the latter is a matter of debate among obstetrics experts, says VHI executive director Michael Lundberg. In VHI's methodology, the difference between observed and expected rates reflects how often the hospital intervened relative to other Virginia providers. An observed rate lower than the expected rate might identify a hospital that's relatively more conservative about C-sections.

Thirteen of the state's 55 hospitals achieved primary C-section rates significantly lower, statistically speaking, than expected. [Prince William Hospital](#) in Manassas had the most dramatic difference, with an observed rate about two-thirds the expected rate calculated by VHI. A woman with no history of C-section, in other words, was one-third less likely to have a C-section if she delivered at Prince William rather than delivering at a typical Virginia hospital. Ten other hospitals had primary C-section rates significantly higher than expected.

None of the repeat C-section rates, despite variations of some 30 percentage points, were significantly higher or lower than the expected values. Relatively low volumes of patients with prior C-sections were part of the reason. Still, the observed differences were real, and a woman's likelihood of successful VBAC could differ noticeably from hospital to hospital.

As the table shows, Virginia also reports rates of episiotomy, a once-commonplace surgical incision made to widen the vaginal opening. The procedure has fallen out of favor (the American College of Obstetricians and Gynecologists rejects its "liberal or routine use"), making the rate another potential indicator of hospital quality. VHI doesn't perform risk adjustment on reported episiotomy rates. "There is no need," says Lundberg, "because there's no clinical justification for routine use of episiotomy."

Given the general disapproval surrounding the procedure, the variation in the Virginia data are striking. The lowest rate, of about 2.5 percent, was reported by [VCU Health System](#), a large teaching hospital in Richmond, and the [highest rate](#), in excess of 50 percent, at [LewisGale Medical Center](#), a large general hospital in Salem owned by the HCA hospital chain.

Perhaps tellingly, there is a clear relationship between C-section and episiotomy rates. Of the 13 hospitals with significantly lower than expected rates of primary C-section in 2006, 11 performed lower rates of episiotomies than the statewide mean of 17.2 percent. (Ten also had lower repeat C-section rates than expected, although the differences didn't achieve statistical significance.)

Of the 10 hospitals with primary C-section rates significantly higher than expected, nine also did episiotomies at rates above the 17.2 percent state mean; nine also showed a trend towards excessive repeat C-sections. For eight of the 10, the numbers suggested excessive use of all three interventions.

These are meaningful data, and every state could follow Virginia's example. It isn't as if the data aren't readily available, since all births and the nature of the delivery must be reported. Yet Virginia is one of the few states that has made a priority of translating the data into consumer-relevant form and then publishing it.

Granted, it is not a trivial task, as evidenced by the fact that Virginia has far to go—2006 data are vintage. Hospitals can improve or slip considerably in six years. Some may have even stopped delivering babies. Others may have started. (Lundberg says VHI is getting ready to release 2007 and 2008 data.)

Residents who live near the border, moreover, may have delivery options in other states (expectant mothers in northern Virginia who might choose a hospital in [Washington, D.C.](#), or [Maryland](#), for example), but can't find data on which to base their choice—reflecting more the need for broadly based data sources rather than any fault of Virginia's.

Suppose all states made labor and delivery data available for downloading. How would a sound methodology handle them? There's no robust dialogue among experts, let alone a consensus. One possible approach, admittedly simplistic, would be for U.S. News to recognize each hospital that meets three standards: a primary C-section rate significantly lower than expected after risk adjustment; a secondary C-section rate lower than the statewide mean after risk adjustment; and an observed episiotomy rate below the state mean.

If we applied such a methodology to the 2006 data, seven Virginia hospitals would rise to the top out of the 55 that delivered babies that year. In alphabetical order: [Bon Secours-DePaul Medical Center](#) in Norfolk, [Centra Health](#) in Lynchburg, [Danville Regional Medical Center](#), [Riverside Regional Medical Center](#) in Newport News, [Sentara Northern Virginia Medical Center](#) in Woodbridge, [University of Virginia Medical Center](#) in Charlottesville, and VCU Health System.

What alternative methodologies would you favor?

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Corrected 11/16/12: Michael Lundberg is Virginia Health Information's executive director, not its president.

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