# COMPARATIVE EFFECTIVENESS: MORE DOCUMENTATION AND DETAILS

By Roger Stenson

Comparative Effectiveness is the determination, and the methods used for the determination, of who gets health care, and what kind of health care. The health care systems of Canada, very much of Europe, and many other parts of the world, are publicly run and publicly funded. Generally, these single-payer systems operate within what are called "global budgets," pre-set amounts nations are allowed to spend on health care. That could mean, if America adopts the same system, we would have X dollars to spend on health care in a particular year. Not X+1 dollars.

Thus, decisions would be made concerning who would get "bumped" to keep us within X, the global budget. It also means which diagnostic technologies would be used less, which treatments, including drugs, would similarly be diminished, and how long we'd all have to wait for care. The latter is commonly referred to as "Wait times" in the U.K and Canada.

We've seen how the World Health Organization has used ideological measurements, such as the progressivity of tax systems and the freedom to use health savings accounts, to rate the United States 37th in a category it calls "Overall health system performance."[1] This is referred to by single-payer system advocates like Nancy Pelosi and Chris Dodd. The criteria, though, are not health care outcomes. They are measurements of a political ideology.[2]

We have also seen that the United States is actually ranked number one by the same W.H.O. in outcomes, timely care, and responsiveness to patients' needs.[3] That is not ideology; it is health care and America is number one by W.H.O.'s own contradiction. This is not frequently heard in the news media.

We have seen disaster after disaster in previous issues of NRL News in the delivery of health care in countries that have single-payer, or nationalized, systems.

We have seen statements from Health Ministers and other officials in countries with nationalized health care that should give us pause before even thinking about

restructuring the American health care system into a publicly provided or partly publicly provided mechanism.

The Health Minister of France said, "Our system has gone mad."[4]

The Canadian Supreme Court excoriated that "Access to a waiting list is not access to health care."[5]

The Health Minister of the Netherlands wants to get rid of the management in the managed competition system and make it market driven.[6]

The German Health Minister stated that no longer are prescription drugs approved because they're effective, they now "must be cost effective as well."[7]

That statement should disconcert.

Comparative effectiveness includes such terminology as cost effectiveness, quality adjusted life years (QALY), health related quality of life (HRQL), and thresholds. What do these terms mean? How do they fit into comparative effectiveness? How does it all come together in a nationalized health care system? How does it threaten you and those you love? This article will tie them all together for you and give you an example you can share with others to demonstrate the rationing component in comparative effectiveness.

Comparative effectiveness is generally applied in two manners. First, which of two treatments may be used for a particular patient? Second, which patients or groups of patients are allowed to receive a particular treatment?

It may be best to start with thresholds. Thresholds are what they appear to be – cutoffs. In health care they represent the maximum amount of money that may be spent on a patient for a quality adjusted life year (QALY). Let's say President Obama's proposed Federal Health Board sets the threshold at $150,000 per quality adjusted life year. That number is quite high compared to what they're doing in the United Kingdom,[8] but their National Health Service (NHS) is corroded from rationing. (See NRL News, June, 2009)

One hundred fifty thousand dollars is clear, but what does it mean to say $150,000 per QALY? What is a life year, and what is a life year that is quality adjusted? Simply, a life year is a year of life. A quality adjusted life year is a year of life multiplied by a number between 1.0, for great health, and 0.0 for being dead. The score between and

including 1.0 and 0.0 represents health related quality of life (HRQL). That score would be determined by President Obama's Federal Health Board or a similar body. It is based on the perceived quality of life of a patient. The perception may or may not be shared by the patient and the patient's family.

A person in pretty tough shape might be assigned an HRQL score of, say, 0.5; not in great health and not dead.

Now, here's the first assembly of the concepts HRQL and QALY and actual years of life remaining for an individual or all individuals. The simplest equation for QALY is: QALY = Time X HRQL, or quality *adjusted* life years equals number of years left (or expected) times the health related quality of life score. A person with ten years life expectancy who is in great health would have a QALY of 10 X 1.0 = 10. That's ten quality adjusted life years. It may seem silly, but it's not, to explain that a person with an HRQL of 0.0 is going to always have a QALY of zero. Any number of years times zero equals zero. Store this last bit aside for a moment.

Applying this equation to a hypothetical situation illuminates the concepts.[9]

There are four groups of patients for whom a one million dollar surgery would extend their lives by ten years. Group A is in great health and, of course, has an HRQL of 1.0. Group B walks with a limp and are assigned an HRQL score of 0.75. These numbers are for illustration purposes only, but they do represent the fact that HRQL scores descend as one's perceived degree of disability becomes more challenging.

Group C uses crutches and is scored at 0.5. Group D uses wheelchairs and gets tagged at 0.25 HRQL. Notice again that the greater the disability, the lower the quality of life assigned.

Now for the determination of the QALY for each group, after which the products of the factors will be used to figure out if any of the groups are under the threshold (remember, we set it at $150,000/QALY) and, thus, worth being treated.

QALY = Time X HRQL. The time for all groups is 10 years. So,

Group A (Walk) is QALY = 10 X 1.0 = 10 Quality Adjusted Life Years

Group B (Limp) is QALY = 10 X 0.75 = 7.5 Quality Adjusted Life Years

Group C (Crutches) is QALY = 10 X 0.5 = 5.0 Quality Adjusted Life Years

Group D (Wheelchairs) is QALY = 10 X 0.25 = 2.5 Quality Adjusted Life Years.

Now we take those QALYs and apply them to the consideration of cost per quality adjusted life year, which is "cost effectiveness." Here is how.

Remember, the cost of the treatment or surgery is $1million. Remember, the threshold established by the new bureaucracy is, for illustration purposes, $150,000.

Let's just take Group A and Group D.

Cost per QALY = Cost Effectiveness.

Or, for Group A, $1,000,000/10QALY = $100,000. That figure of $100,000 is below the threshold and the people in that Group (Walk) qualify for the treatment.

But look at Group D (Wheelchairs): $1,000,000/2.5QALY = $400,000. Even though they have ten years of life expectancy after the surgery, their perceived QUALITY of life is such that the bureaucrats or medical economists consider their lives worth only two and a half years. The Cost Effectiveness (cost/QALY) for them is considered $400,000, way above the threshold of $150,000 per QALY. They get "bumped."

Outright denial of treatment is *one* of the ways health care will be rationed in a nationalized system. Rationing means involuntary euthanasia.

Apparently preparing us for the way life will be under the new health care restructuring, President Obama recently said, "Maybe you're better off not having the surgery, but taking a painkiller instead."[10]

The example above is based on the simplest formula for calculating QALY and estimating comparative effectiveness. Other problems arise when scales of measurement do not provide all-things-equal results. For example:

Let's measure the QUALITY adjusted life of a vacation. Just as in measuring QALY, we have two factors: Time and Quality. In this analogy, quality is the temperature during the vacation, and time is either one month or two months. It is given that the longer one spends on vacation, the better, and that the warmer the average temperature, the better. So, presented with the option of seventy-seven degrees average temperature for one month or forty-one degrees for two months, we find:
1 month X 77 degrees = 77 Quality Adjusted Life of Vacation versus a score of 2 months X 41 degrees = 82. Option 2 is slightly better than Option 1.

However, when the same two options are presented with a different scale for measuring the temperature, Centigrade, the results are:
One month X 25 degrees = 25 versus a score of two times 5 degrees = 10. This time, in the same conditions, Option 1 is eminently superior to Option 2. Even though the temperatures are actually the same.[11] Consider how QALY could be affected by scales of measurement. Would somebody get bumped because of a math error? Something as simple as body temperature in Centigrade?

Authors Duru et al. pointed out that the formulas get more complex and that, under certain assumptions, one, u(t,z)=av(z)+bw(t)+cv(z)w(t), could result in a preferred state of death for 20 years.[12]

Which brings us to something not at all funny. The medical economics literature includes HRQL scores outside the range of 1.0 to 0.0. Some enunciate scores of less than zero, negative scores such as –0.2. Less than zero. Worse than dead. Lives not worthy to be lived.

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[1] World Health Organization, World Health Report 2000 – Health Systems: Improving Performance, Annex Table 1 Health system attainment and performance in all Member States, ranked by eight measures, estimates for 1997, 152-55.
[2] Michael Tanner, "The Grass Is Not Always Greener: A Look at National Health Care Systems Around the World," Policy Analysis, No. 613, March 18, 2008, (Cato Institute), 4.
[3] World Health Organization, World Health Report 2000 – Health Systems: Improving Performance, Annex Table 6 Responsiveness of health systems, level and distribution in all Member States, WHO indexes, estimates for 1999a, 184-87.
[4] Yuval Levin, review of *Sick: The Untold Story of America's Health-Care Crisis and the People Who Pay the Price*, by Jonathan Cohn, *Commentarymagazine.com* (July/August 2007), http://www.commentarymagazine.com/viewarticle.cfm/sick-by-jonathan-cohn-10911.
[5] *Chaoulli v. Quebec (Attorney General)*, [2005] 1 S.C.R. 791 at para. 123, 2005 SCC 35.
[6] Alain Enthoven, "A Living Model Of Managed Competition: A Conversation With Dutch Health Minister Ab Klink," *Health Affairs Web Exclusives: Online Articles From Vol. 27, Nos. 3-4*, (8 April 2008), w198.
[7] Tseung-Mei Cheng and Uwe E. Reinhardt, "Shepherding Major Health System Reforms: A Conversation With German Health Minister Ulla Schmidt," *Health Affairs Web Exclusives: Online Articles From Vol. 27, Nos. 3-4*, (8 April 2008), w207.
[8] "In the British national health service, a government agency approves only those expensive treatments that add at least one Quality Adjusted Life Year (QALY) per £30,000 (about $49,685) of additional health-care spending," as written by Martin Feldstein, "ObamaCare Is All About Rationing," *Wall Street Journal Online*, August 18, 2009, http://online.wsj.com/article/SB10001424052970204683204574358233780260914.html?mod=djemEditorialPage
[9] Duru, G, Auray, J P, Beresniak, A, Lamure, M, Paine, A, & Nicoloyannis, N (2002). "Limitations of the methods used for calculating quality-adjusted-life-year values," Pharmacoeconomics, 20, 463-73, from

which the categories were taken. The values and examples are the manufacture of this author for illustration.

[10] Barrack Obama, "Remarks by the President: ABC 'Prescription for America,'" Office of the Press Secretary, The White House, June 24, 2009, http://www.whitehouse.gov/the_press_office/remarks-by-the-president-in-abc-prescription-for-america-town-hall-on-health-care-6-24-09/.

[11] Duru, G, Auray, J P, Beresniak, A, Lamure, M, Paine, A, & Nicoloyannis, N (2002). "Limitations of the methods used for calculating quality-adjusted-life-year values," Pharmacoeconomics, 20, 463-73.

[12] Ibid.