OVERVIEW

THE SHRINKING COSTS OF WAR

PART II OF THE

HUMAN SECURITY REPORT 2009 (Forthcoming)

Challenging a number of widely held assumptions about global trends in wartime violence, this report reveals that nationwide mortality rates actually fall during most wars.

Several interrelated long-term changes have been driving this counterintuitive development:

i) The average war today is fought by smaller armies and impacts less territory than conflicts of the Cold War era. Smaller wars mean fewer war deaths and less impact on nationwide mortality rates.

ii) Dramatic long-term improvements in public health in the developing world have steadily reduced mortality rates in peacetime—and saved countless lives in wartime.

iii) Major increases in the level, scope, and effectiveness of humanitarian assistance to war-affected populations in countries in conflict since the end of the Cold War have reduced wartime death tolls still further.

These findings stand in sharp contrast to the images of contemporary warfare presented in the media that focus primarily on a relatively small number of wars that have huge reported death tolls—Iraq, Darfur, and the Democratic Republic of the Congo (DRC) are cases in point.

The high death toll estimates in Iraq and Darfur have become a source of intense controversy. But, the survey-based claim by the International Rescue Committee (IRC) that an astonishing 5.4 million people have died as a consequence of the fighting in the DRC has attracted almost no public criticism. However, in what is the most comprehensive analysis to date of the IRC's methodology, we demonstrate that the IRC's 5.4 million estimate is far too high.

We further argue that estimating *excess* war deaths—which include those from war-exacerbated disease and malnutrition, as well as war-related injuries—is a task so fraught with challenges that it can rarely succeed.

The Paradox of Mortality Rates that Decline in Wartime

Claims that national mortality rates in poor countries mostly decline during periods of warfare are deeply counterintuitive. Yet, the facts are indisputable. Between 1970 and 2007, under-five mortality rates declined overall during periods of warfare in some 80 percent (14 out of 18) of the conflict-affected sub-Saharan African countries in a review undertaken by the Human Security Report Project.

A major World Bank study published in 2008 revealed that these findings were not limited to under-five mortality rates—nor to Africa. Its analysis indicated that the median adult mortality rate for war-

affected countries around the world also declined during periods of warfare. The World Bank's study indicated that infant mortality rates exhibited a similar rate of decline.[1]

These findings seem paradoxical. Common sense suggests that because wars kill people, the extra deaths should cause national mortality rates to increase. But, as Chapter 2 points out, the explanation for this unexpected finding is straightforward enough.

No one of course is suggesting that war causes mortality rates to decline. The reality is simply that today's armed conflicts rarely generate enough fatalities to reverse the long-term downward trend in peacetime mortality that has become the norm for most of the developing world. Three interrelated developments account for the decline.

Wars Are Smaller and More Localized

Today, wars generate far fewer deaths on average than they did in the past. The deadliest year for war deaths since World War II was 1950, mostly because of the huge death toll in the Korean War. The average conflict that year killed some 33,000 people; in 2007, the average toll was less than 1,000.[2]

If we look at the average number of people killed per conflict per year by decade, the decline in the size of the death toll is still remarkable. The average conflict in the new millennium kills 90 percent fewer people each year than did the average conflict in the 1950s.

This dramatic decline is due in large part to the changing nature of warfare. Compared to the Cold War years, relatively few of today's conflicts involve intervention by a major power, or prolonged engagements between huge armies equipped with heavy conventional weapons.

The low-intensity insurgencies of the post-Cold War era are almost always fought within, not between, states. Rebel armies are typically small, ill-trained, mostly equipped with small arms and light weapons—and rarely keen to engage in major battles. The death tolls generated by these conflicts are much smaller than those of the Cold War years.

Obviously not all post-Cold War conflicts fit this pattern. There are some exceptions to the rule—the war in Iraq following the US-led invasion in March 2003 is an obvious example, as is the World War I-style conventional war between Eritrea and Ethiopia from May 1998 to June 2000. But, these cases are rare.

In today's low-intensity wars, rebel organizations—and government forces—often kill civilians and flout international humanitarian law in other ways. But, the horrific nature of much of the violence has tended to divert attention from the fact the actual death tolls are relatively small—and have been decreasing.

These wars also tend to be highly localized, which again tends to reduce their human cost. This trend arises in part because armies, as noted above, are a lot smaller on average than those of the Cold War years, but also because rebel organizations rarely have the capacity to project military power over long distances.

In wars in Sudan (Darfur), Uganda, Sri Lanka, India, Indonesia (Aceh), the DRC, and elsewhere, warfare directly impacts relatively small areas of the national territory. Indeed, a recent review of 11 conflicts in sub-Saharan Africa found that, on average, serious violence affected only 12 percent of the territory of the country in question. In the areas not impacted by serious violence, the provision of basic health services may continue and livelihoods can remain largely unaffected—especially in subsistence economies. This in turn reduces the nationwide health impact of the conflict.

The Worldwide Decline in Peacetime Mortality

More than three decades of highly successful international efforts to promote public health in developing countries have led to a steady reduction in peacetime mortality rates. But, as this report makes clear, the enduring effects of these efforts have also led to another—largely unnoticed—change, namely the saving of large numbers of lives in wartime.

Drives to increase immunization coverage, which have saved some 20 million lives worldwide over the past two decades, have sharply reduced child mortality rates—in times of war, as well as times of peace.

The extent of the worldwide increase in immunization coverage over the past 30-plus years has been remarkable. Between 1974 and 2006, coverage for the six major vaccine-preventable diseases rose from less than 5 percent to more than 75 percent.

Children who have not been immunized are far more likely to succumb to disease in wartime. Immunization in peacetime, in other words, saves children's lives in wartime.

Children under five typically have a wartime mortality rate that is double that of adults. According to the IRC, nearly 50 percent of those who died from the effects of the war in the final survey period in the DRC were children under five. So, any reductions in child mortality in conflict zones will clearly have a considerable impact on the overall excess death toll.

Since serious violence rarely affects a large proportion of the territory of countries at war, immunization drives often continue—and sometimes even increase—during periods of conflict. In the DRC, for example, immunization coverage for measles, and the diptheria, pertussis, and tetanus (DTP3) vaccine increased from around 20 percent at the beginning of the war in 1998 to over 85 percent in 2007.

This remarkable change may help explain why the 2007 Demographic and Health Surveys (DHS) carried out in the DRC revealed that under-five mortality rates had been falling since the war began.

Nonmedical health practices like breastfeeding that are instituted in peacetime can also save lives in wartime. In sub-Saharan Africa, exclusive breastfeeding rates, though still low, more than doubled between 1990 and 2004, in part as a consequence of international and national advocacy campaigns. Breastfeeding strengthens the immune systems of infants, reducing the risk that they will die from two of the deadliest threats to children in wartime—diarrheal diseases and acute respiratory infections (ARIs).

It is critical to note that while these peacetime changes reduce the number of deaths from disease during periods of warfare, they have little impact on the death rate from wartime injuries.

Two Decades of Increased and Increasingly Effective Humanitarian Assistance

There has been a remarkable increase in the level and scope of humanitarian assistance since the end of the Cold War. Aid per displaced person in war-affected countries has more than tripled over the past two decades. It has also become more cost-effective, benefiting in many cases from peacetime developments in public health programs.

A major focus of humanitarian assistance has been the four disease clusters—ARIs, diarrheal diseases, malaria, and measles—that are major killers in wartime. As Chapter 1 points out, all are preventable and/or treatable at very low cost.

In addition to preventing and treating disease, a significant share of humanitarian aid budgets is devoted to treating severe malnutrition, a condition that increases the vulnerability of individuals to disease and is a cause of death in its own right. Here too there have been major improvements in the past

two decades. Fatality rates for severely malnourished children have plummeted because of better treatment protocols and greatly improved emergency feeding rations.

The life-saving impact of humanitarian assistance is evident from health surveys taken in refugee camps. These reveal that mortality rates among displaced people who receive access to basic assistance—health services, nutritional supplements, shelter, and clean water and sanitation—decline rapidly, often falling to the pre-war rate, or even lower, within four to six months.

Treating disease and malnutrition is far more cost-effective than treating injuries in terms of lives saved per dollars spent. For every US$1 million spent on treating disease or malnutrition, many more lives are saved than if the same US$1 million were to be spent on treating injuries.

Peacetime immunization drives, plus nonmedical health practices like breastfeeding, together with the life-saving impact of humanitarian assistance, have all contributed to reducing wartime mortality from disease and malnutrition. These developments have minimal impact mortality rates from *injuries* in wartime.

Indeed, contrary to the views of some scholars, the evidence suggests that indirect deaths from disease and acute malnutrition have declined at a greater rate than "direct" deaths from war-related injuries.

The Death Toll in the Democratic Republic of the Congo

The fact that mortality rates generally decline during periods of warfare not only appears deeply counterintuitive but also stands in sharp contrast to the findings of the most ambitious and comprehensive survey-based study ever undertaken to estimate excess war deaths.

Data from a series of five surveys undertaken by the IRC in the DRC over a period of some eight years indicate that the nationwide mortality rate in the country jumped dramatically after the war started in 1998, and has remained greatly elevated ever since, despite declining substantially as of late 2001 and more gradually thereafter.[3]

By 2007, according to the IRC, some 5.4 million people had died who would have lived had there been no war. More than 90 percent of these excess deaths were the result of disease and malnutrition, not violent injuries.

To estimate the excess death toll, the IRC's researchers used standard epidemiological survey methodology to determine the overall mortality rate during the periods surveyed. They took the average mortality rate for sub-Saharan Africa as their measure of the baseline mortality rate.

The excess mortality rate is the difference between the average survey-derived mortality rate and the baseline rate. But, while the latter is critically important, it is also extremely difficult to determine accurately. And, if the baseline rate is too low, then the excess death rate, and hence the excess death toll estimate, will be too high—and vice versa. As Chapters 3 and 4 demonstrate, getting the baseline mortality rate wrong can make a huge difference to the final excess death estimate.

This report argues the IRC's choice of the baseline mortality rate for the DRC was far too low—a fact also noted by a number of the experts who have reviewed the IRC's findings.[4] Far from being an average sub-Saharan African country, the DRC languishes at the bottom of most development measures for the region.

The impact of changing the IRC's baseline estimate to a more appropriate figure is remarkable. As we demonstrate below the excess death toll drops dramatically.

The results of the IRC's first two surveys, which covered a period between August 1998 and March 2001, were restricted to the violence-wracked eastern part of the country. They indicated that the war had generated approximately 2.5 million excess deaths.

But, the IRC's researchers did not select the areas to be surveyed in a way that ensured they were representative of the region as a whole. This failure to follow standard survey practice means no confidence can be placed in any excess mortality estimates from this period—although no one doubts the death tolls in parts of the region were very high.

But, even if this critical misstep is ignored, other methodological errors, including reliance on the too-low baseline mortality rate, led to large and unwarranted inflations of the excess death estimates. For example, when the Human Security Report Project's research team corrected for a series of erroneous assumptions in one of the IRC's calculations for the period covered by the first survey, the excess death toll fell from 1.6 million to just 678,600—a decline of almost 60 percent.

The excess death estimates for the final three surveys, the only ones to cover the entire country, were not affected by the methodological errors evident in the first two surveys. Here, the major problem, as mentioned above, lay with the inappropriately low baseline mortality rate. The impact of changing this rate to a more appropriate one was dramatic. The estimated excess death toll dropped from 2.8 million to less than 900,000. This is still a huge toll, but it is less than one-third of the IRC's original estimate for the period.

These are not the only reasons for questioning the IRC's extraordinarily high excess death toll. There is also a question mark over the accuracy of the overall mortality rate revealed by the survey itself.

In 2007 the well-regarded DHS carried out an independent nationwide population health survey in the DRC and reported an under-five mortality rate that was just over half that recorded by the IRC for the same period. Both estimates cannot be correct.

Calculating Excess War Death Tolls: An Impossible Undertaking?

Estimates of war death tolls can be extraordinarily controversial, as the intense and often highly politicized debates about war death estimates in Iraq remind us. Population health surveys remain a critically important source of data for governments and international agencies working in war-affected countries, but many conflict epidemiologists are concerned the recent controversies over survey-derived excess death tolls threaten the credibility of population health surveys more generally.

Part of the problem is the appropriateness of using retrospective mortality surveys to estimate excess war deaths has never been validated, and the findings of the small number of surveys that have been used for this purpose show troubling inconsistencies.

In post-invasion Iraq, retrospective mortality surveys taken over similar time periods have revealed sharply divergent mortality rates. For example, the post-invasion mortality rate estimated by one survey was more than twice that of another survey taken over the same period. And, as noted above, the IRC's estimate of the under-five mortality rate in the DRC was almost twice that of the 2007 DHS.

When major surveys produce such sharply divergent nationwide mortality rates over the same time period, it is clear that something is seriously wrong.

The causes of these major discrepancies in findings remain both contested and unresolved. But, they are far from being the only troubling issue. Chapter 4 addresses a quite different problem—one that also challenges the very idea that population surveys can be a reliable method for estimating excess deaths in wars in poor countries.

A major challenge with using retrospective mortality surveys to estimate excess death tolls is that it is almost never possible to obtain reliable data on pre-war mortality trends in poor countries. This information is, however, critical.

If mortality rates in a country are declining before a war, and there is no reason to assume that they would not have continued to decline had there been no war, the declining trend must be taken into account when estimating the excess death toll.

In practice, this is rarely done. Researchers usually take a single point estimate of the mortality rate immediately before the war and assume that, had there been no war, it would have remained constant.

But, in reality, mortality rates are rarely static over time, and failing to take into account pre-war trends can lead to serious errors. Excess death tolls will be underestimated if mortality rates had been declining before the war, and overestimated if they had been increasing. The resulting errors can be very large—and they increase over time.

To demonstrate how much excess death estimates can change when the pre-war trend in the mortality rate is taken into account, we revisited the IRC's calculations for the DRC. We found that taking into account the pre-war decline in mortality increased the HSRP's excess death estimate by more than 70 percent over the period of the last three surveys.

Our original calculations had indicated that the IRC's estimate was more than three times higher than it should have been. When the previously ignored decline in the pre-war mortality rate was taken into account, new calculations suggest that the IRC's estimate was now just double what it should have been.

However, while this exercise clearly demonstrates the importance of taking pre-war mortality trends into account when calculating excess deaths, there are too many uncertainties in the data to take the actual estimate at face value.

Indeed, Chapter 4 argues that, in practice, the use of population surveys to generate estimates of nationwide excess war death tolls raises data and methodological issues so challenging that they can very rarely be overcome. It details these challenges and argues there are more appropriate—and less error-prone—means of measuring the impact of warfare on population health.

The Need for a More Appropriate Measure of the Human Costs of War

Given the practice of estimating the number of excess deaths via retrospective mortality surveys is so prone to error, and given that some of these errors become greater the longer wars last, a strong case can be made for seeking alternative approaches to estimating the human costs of war.

Nationwide excess death toll estimates are mostly used for advocacy. But, if the accuracy of these estimates is subject to further damaging critiques, their value for advocacy purposes will be diminished. And, there are, as Chapter 4 points out, more appropriate ways for advocates to communicate the deadliness of warfare.

For humanitarian workers, nationwide excess death tolls are of little practical interest. Those working to bring assistance to people in war-affected countries need to know who is at risk of dying in the present, where, and from what causes, not how many people have died nationwide since the war began. They get the information they need from the small-scale needs-assessment surveys routinely carried out in war-affected areas. These surveys typically estimate local mortality rates (not excess mortality rates), and the proximate causes of death.

Our argument against the use of surveys to estimate nationwide excess deaths is emphatically not an argument against the utility of population health surveys more generally. These remain critically

important for creating an evidence base for humanitarian needs assessment, for monitoring, and for impact evaluation. Estimates of nationwide excess mortality tolls are not needed for any of these purposes.

Health as a Bridge for Peace?

The main focus of this report is the impact of war on population health, an area in which health professionals have played a key role in seeking more effective ways to reduce the wartime death toll from malnutrition and disease.

But, for some health professionals, the idea that their efforts should focus primarily on reducing the human costs of wars has not been enough. Proponents of the World Health Organization-affiliated "Health as a Bridge for Peace" program argue health professionals also have a role to play in conflict prevention via education, in seeking to stop ongoing wars via what the United Nations calls "peacemaking," and in post-conflict peacebuilding, where the key security goal is to prevent wars that have stopped from starting again.

The achievements—and challenges—of the "Health as a Bridge for Peace" movement are examined in detail in Chapter 5.

Conclusion

The Shrinking Costs of War demonstrates that three interrelated developments have been driving down conflict deaths for more than two decades. The impact of the changes brought about by these developments has been so far-reaching that today's wars rarely kill enough people to reverse the decline in peacetime mortality that has been underway in the developing world for more than 30 years.

- First, the nature of warfare has changed, with fewer and fewer wars being fought with very large armies, heavy conventional weapons, and major power intervention. A consequence of this change has been the dramatic reduction in war deaths.
- Second global health policy, particularly the drive to increase immunization coverage in poor countries, has been a major factor driving death rates from disease down in peacetime. The protection provided by the key vaccines also reduces death tolls in wartime.
- Third, humanitarian assistance has increased in level, scope, and effectiveness, increasing the number of lives saved in war-affected populations.

There are still many gaps in our understanding of exactly how the three developments noted above affect excess death tolls, not least, we have argued, because retrospective mortality surveys—the instruments of choice for measuring excess death tolls—appear to be far from reliable.

We have argued the evidence that deaths from war-exacerbated disease and malnutrition have declined is compelling, but clearly this is no cause for complacency. The 20-year decline in conflict numbers appears to have stalled, and tens of thousands are still being killed each year by war-related violence with an even greater—though uncounted—toll from war-driven disease and malnutrition. And, humanitarian assistance is often less than needed, distorted by politics, marred by turf battles, and delivered too late.

But, equally there is no reason for undue pessimism. The evidence is clear that international action can play—and indeed has played—a critically important role in reducing the human costs of war.

ENDNOTES

[1] References and further details are provided in the relevant chapters unless otherwise cited.

[2] Note these figures are for battle deaths in conflicts in which a government was one of the warring parties. They do not include death tolls from *nonstate conflicts*—those fought between nongovernment groups—nor do they include *indirect* deaths from war-exacerbated disease and malnutrition.

[3] Benjamin Coghlan et al., "Mortality in the Democratic Republic of Congo: An Ongoing Crisis" (New York: International Rescue Committee, 2008), http://www.theirc.org/sites/default/files/migrated/resources/2007/2006-7_congomortalitysurvey.pdf (accessed 14 January 2010), p.13.

[4] The World Health Organization (WHO)-affiliated Health and Nutrition Tracking Service (HNTS) undertook a review of the IRC's findings after they were strongly criticized by two Belgian demographers. Details of the Belgian study and the HNTS review appear in Chapter 3.