

They were cheap and available: prisoners as research subjects in twentieth century America

Allen M Hornblum

On 20 August 1947 Gerhard Rose, one of Germany's most respected physicians, stood in the prisoner's dock at the Palace of Justice in Nuremberg, Germany, awaiting his sentence for "murders, tortures, and other atrocities committed in the name of medical science." Dr Rose, the department head for tropical medicine of the Robert Koch Institute, was on trial along with 22 of his medical colleagues, for perpetrating "ghastly" and "hideous" experiments on concentration camp prisoners during the war.¹

At one point in the trial when the chief prosecution witness, Dr Andrew C Ivy of the medical school of the University of Illinois, underscored the basic principle "that human experimental subjects must be volunteers," Dr Rose and his defence counsel vigorously objected, arguing that the United States was guilty of similar medical practices and giving several examples to support this contention.¹

Early experiments on prisoners in US

The Nazi doctor's first example of American complicity concerned the medical experiments of Dr Richard P Strong, who performed a series of studies in 1906 with "cholera virus upon inmates of the Bilibid Prison in Manila." The Philippine Islands experiment on prisoners already sentenced to death resulted in 13 fatalities and was eventually attributed to a bottle of bubonic plague serum having been substituted mistakenly for a bottle of cholera serum.^{2,5} Strong, who later became professor of tropical medicine at Harvard University, was not deterred by the error and continued experiments on Philippine prisoners. His beriberi experiments six years later also resulted in death, but survivors were compensated with cigars and cigarettes.

Another German physician on trial for his life at Nuremberg, Dr Georg August Wetz, the chief of the Institute for Aviation Medicine in Munich, offered the name of another American doctor who used prisoners on behalf of medical science. Dr Joseph Goldberger, a public health official, sought to unravel the mystery of pellagra, a deadly and at times disfiguring disease that was particularly virulent in the southern United States. Goldberger parted company with medical colleagues who blamed the disease on everything from poor sanitation and personal habits to spoiled corn and flawed hereditary traits for the disease. He believed pellagra was due to the provincial and poor diet in the south, which supplied calories but not protein. Milk,

Summary points

From the early years of this century, the use of prison inmates as raw material for medical experiments became an increasingly valuable component of American scientific research

Testimony by American medical experts at Nuremberg allowed American physicians and researchers to believe that the Nuremberg Code was directed only at Nazi scientists

Postwar American research grew rapidly as prisoners became the backbone of a lucrative system predicated on utilitarian interests

Uneducated and financially desperate prisoners "volunteered" for medical experiments that ranged from tropical and sexually transmitted diseases to polio, cancer, and chemical warfare

vegetables, and fresh meat, he theorised, were the missing staples.

To prove his theory, Goldberger convinced Governor Earl Brewer of Mississippi to allow him to perform an experiment on a dozen inmates of Rankin Farm prison. His plan was simple: to "induce pellagra in white adult males, the one group in the population that statistics had shown was the least likely to contract the disease."⁶ The inmate volunteers—after a promise of a pardon—were gradually weened away from their normal diet and given a steady supply of cornbread, sweet potatoes, grits, and rice. Complaints grew as the men suffered from lethargy, dizziness, and pains in their backs, sides, and legs. Soon skin lesions began to appear and the "red flame" of pellagra was identified on each of the test subjects. The governor kept his promise and pardoned the men. One test subject said he had been through "a thousand hells," whereas another swore he would choose a "lifetime of hard labor" rather than go through such a "hellish experiment" again.⁶

As part of their defence strategy, the Nazi doctors on trial at Nuremberg named other examples of dubious human experimentation in American prisons, but those few cases paled in comparison to what transpired after Nuremberg. Though American doctors, lawyers,

Department of Urban Studies, Temple University, Philadelphia, PA 19122-2585, USA
Allen M Hornblum, instructor

Correspondence to: 7100 Bustleton Ave, Philadelphia, PA 19149, USA

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and justices at the Doctors' Trial excoriated Nazi physicians and denounced the German medical establishment for horrific and pseudoscientific experiments on prisoners, the American medical community disassociated itself from the implications of the trial and from the subsequent code of ethical research principles—the Nuremberg Code—that all doctors were supposed to observe. By the end of the war, America's rapidly emerging scientific dominance was not to be hamstrung by a code of medical conduct that was perceived by the American Medical Association to be directed specifically towards “the brutalities of Nazi physicians.”⁷ Moreover, even though American jurists enumerated 10 human rights principles to safeguard the lives of research subjects—and imposed the death penalty on seven members of the Nazi medical hierarchy for violating such principles—self interest, utilitarianism, and the aura of science militated against the adoption of the Nuremberg Code in the United States. Research subjects, particularly prisoners, were considered too valuable.

The realisation that incarcerated criminals had new utility as human guinea pigs did not emerge until the second world war. Earlier efforts at using prisoners were not embraced by the orthodox medical community, which thought such practices were the preserve of unsophisticated medical eccentrics investigating offbeat scientific theories. For example, between 1918 and 1922 a doctor in the state prison system in California was “transplanting testicles from recently executed convicts to senile and devitalized men.”⁸ By 1920, the procedure had been altered so that “animal glands were substituted for the human and were grafted to the recipient's testes.” Dr L L Stanley, the resident physician at San Quentin Prison (California), where the operations were performed, recommended that the material to be used was “best taken from a ram, goat or boar” aged between a year and 18 months. Hundreds of San Quentin inmates received injections of animal testicular substance; some received a piece of ram's testicle the size of a silver dollar, which was implanted into the scrotum or abdominal wall. The innovative researcher on prisoners was convinced that the procedures had a “decided effect” on everything from “general athenia” to renewed “sexual stimulation.” He also believed he was “fortunate” the operations—which he called “practically painless and

harmless”—could be carried out in a prison because of the regimented lifestyle of prisoners.⁸

One prewar experiment that was less dramatic than testicular transplants, but captured the public's attention due to extensive newspaper coverage, was the series of tuberculosis experiments at Denver's National Jewish Hospital in 1934. After years of trials on animals, Dr H J Corper claimed a tuberculosis vaccine he had been developing was “now ready for trial on human beings.”⁹ Two convicts from the Colorado Penitentiary were selected as the guinea pigs from the 800 who had volunteered for the risky experiment after Governor Edwin C Johnson offered executive clemency to the survivors. Carl Erickson, one of the lucky inmates chosen, said: “I don't want to die, I volunteered to help so I could get out of here.”¹⁰ Mike Schmidt, his partner in the experiment, was equally suspicious of his good fortune: “I don't exactly relish the idea of making an experiment out of myself.”¹¹ Though Schmidt became very ill during the course of the experiment, newspapers eventually proclaimed “Tuberculosis test a success” and the men were granted their freedom.¹² Interestingly, not all reviews of the Denver experiment were favourable. One critic, apparently more concerned about crime than disease, commented: “We fail to see any excuse for releasing upon the community two life term fellows because they didn't get tuberculosis when inoculated with a preparation of microscopic bugs.”¹³

For the most part, however, experiments on prisoners during the early decades of the century were uncommon medical oddities of dubious worth. Surprisingly, the practice received a big boost with the outbreak of the second world war. With American soldiers fighting and dying in Europe and the South Pacific, a whole new industry utilising “human material” was about to emerge that would shape researchers' behaviour for decades to come.

The second world war

By the summer of 1942, American prisoners in state penal systems had embarked on a series of dangerous medical experiments, including injections of blood from beef cattle as a new source of plasma, atropine studies, and experiments with sleeping sickness, sandfly fever, and dengue fever.^{14 15} Federal prisoners were recruited to participate in medical experiments that ran the gamut from exposure to gonorrhoea and malaria to induction of gas gangrene.¹⁶

One of the more widely publicised prison experiments during the war years, and one that was mentioned prominently at the Nuremberg Doctors' Trial, was the series of malaria studies at Stateville Penitentiary in Illinois. Over 400 prisoners were involved in this two year study investigating treatment and purported cure of malaria. One popular account of the experiment was Nathan Leopold's book, *Life Plus 99 Years*. An enthusiastic participant in the dangerous study, Leopold was one of the famous killers in the 1924 Leopold and Loeb case. He proudly proclaimed that even though the inmates had to contend with periodic mosquito bites, raging fevers, nausea, vomiting, blackouts, endless untested medicinal potions, and occasional relapses, “no one squawked. They all took it like men.”¹⁷ The highly pub-



At San Quentin inmates received testicular implants

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licised Stateville Prison malaria experiments received much public praise. An editorial in one newspaper proudly wrote that “these one-time enemies to society appreciate to the fullest extent just how completely this is everybody’s war.”¹⁸

The war years had become the transforming moment for human experimentation in America and particularly for penal institutions as a site of such scientific endeavors. What had once been a small, underfunded, unsophisticated cottage industry had blossomed into a well financed, broad clinical research programme investigating avant garde procedures, cures, and treatments. Human experimentation had been legitimised and prisoners had become the guinea pigs of choice for scores of inspired researchers. Public opposition to such medical initiatives was scant. The overriding goal was to win the war in Europe and Asia; everything else was secondary, including research ethics and the issue of consent. Millions of American fighters were risking life and limb daily; at the very least, lawbreakers could contribute to the war effort with similar commitment. And they did. One close observer described it as “another shining light in the galaxy of wartime achievement” by imprisoned Americans.¹⁹

Curiously, once the war was over, there was no decline of medical experimentation in prisons. Battlefield victories were replaced by medical triumphs as the focus of governmental concern, and prisoners were once again the subjects of choice for research. The eradication of disease had become the enemy, and postwar budgetary priorities supported this societal mission. For example, in the last year of the war, the National Institute of Health received about \$700 000, which had climbed to \$36 million by 1955, and over 10 times that just 10 years later. In 1970, \$1.5 billion was awarded to some 11 000 grant applicants, nearly a third of them performing experimentation.²⁰ Called “the gilded age of research” by Professor David Rothman, this new era of laissez-faire attitudes in the laboratory ushered in a frenzy for research on prisoners that lasted for over a quarter century.²⁰ Rothman argues that a “utilitarian ethic” was able to dominate the field of human experimentation because “the benefits seemed so much greater than the costs” and because “there were no groups or individuals prominently opposing such an ethic.”²¹

Postwar experimentation

One individual who contributed greatly to the postwar acceptance of prisoners as appropriate subjects for research was Andrew C Ivy, an eminent researcher and vice president of the University of Illinois Medical School. Asked by the American Medical Association to be its representative at the Nuremberg Doctors’ Trial and the prosecution’s key witness on American medical ethics, Ivy testified to the high ethical standards of American researchers during the war, including those working in penal institutions. No American prisoner, Ivy reiterated, had ever been experimented on against his will. Defence counsel strongly objected to Ivy’s sanitised portrayal of American prison research and peppered him with questions about numerous penal experiments both before and during the war.²² Dr Ivy remained intransigent; he did not believe that official coercion was necessarily inher-



Inmates received a dollar or two a day for participating in this skin study in the mid-1950s

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ent in a prison environment and restated his belief that prisoners in the United States had a choice as to whether they should participate in clinical experiments. Ivy articulated three “principles” for establishing ethical prison research: if “the consent of the subject was obtained”; if the experiment was based on “animal experimentation”; and if it was directed by “scientifically qualified persons” the medical procedure was acceptable.²² For American researchers anxious to utilise the thousands of potential subjects behind bars, Ivy’s emphasis on acquiring voluntary consent from experimental subjects represented a seal of approval. In fact, the seal of approval came less than a year after the Doctors’ Trial, when the journal of the American Medical Association published a “special article” that endorsed the “ideal” medical practice used in the Stateville malaria experiments, where Ivy claimed his principles had been implemented.²³

Although the Doctors’ Trial culminated in the establishment of the Nuremberg Code—whose first principle emphasised that the human subject “should have legal capacity to give consent ... exercise free power of choice, without the element of force ... constraint or coercion”—the American medical community either claimed ignorance of the document or ignored it.²⁴ The first principle of the code seemed to preclude the use of prisoners, but Ivy, America’s star witness on medical ethics, extolled the virtues of just such scientific practices. The muddy ethical waters that resulted from the dual codes allowed American medical researchers to follow their own moral guidelines or utilitarian interests.

The result was tremendous expansion in prison experimentation in postwar America. Federal prisoners, for example, were enlisted in a broad range of clinical studies that included athlete’s foot, histoplasmosis, infectious hepatitis, syphilis, and amoebic dysentery, and in additional malaria experiments.²⁵ State prisoners were considered to be equally valuable and were soon utilised for studies of syphilis, malaria, influenza, viral hepatitis, and flash burns “which might result from atomic bomb attacks.”²⁶⁻³⁰ Some of these postwar medical initiatives were scientifically unsound and placed prisoners at great risk. Louis Boy, for example, a prisoner in Sing Sing (New York), volunteered to

become a human blood cleaning agent for a young “girl dying of cancer.”³¹ For 24 hours the prisoner and the 8 year old girl were laid side by side, “their circulatory systems linked together with rubber tubing,” in the hope that her cancerous “poisoned blood” would be cleansed as it proceeded through his body. Unfortunately, the risky experiment proved unsuccessful and the girl died. However, public interest in the human drama resulted in the prisoner, a lifer, receiving a Christmas gift from the governor—his freedom.³²

In the 1950s, American prisons hosted an increasing variety of non-therapeutic medical experiments, some of which captured national headlines because of the perceived dangers of the tests. The Ohio state prison system, for example, allowed researchers from the Sloan-Kettering Institute for Cancer Research to inject over 100 inmates with live cancer cells. The study was designed to examine “the natural killing off process of the human body”; inmates were informed they faced “no grave danger. Any cancer that took would spread slowly ... and could be removed surgically.”³³ One physician intimate with the study four decades ago recently said that prisoners were a “stable group of people” that contributed to the “assurance of continuity.” Researchers, he argued, clearly found it “more difficult to work with unrestrained, unrestricted” test subjects (C Southam, personal communication).

Prison experiments during the 1960s

By the 1960s, new drug testing regulations mandated by the Food and Drug Administration permitted increased human experimentation as large pharmaceutical companies sought stronger relationships with penal institutions. Phase I drug testing now required larger pools of healthy subjects for non-therapeutic experiments, and using hospital patients was thought to be inadequate. Prisoners, on the other hand, were in abundance and, as one pharmaceutical company researcher commented, “guaranteed to show up” (G Wachs, personal communication).

The rush to acquire prison testing sites, combined with a relaxed ethical atmosphere and little governmental oversight, provided a financial opportunity for some opportunistic physicians, while at the same time jeopardising the health of the unsophisticated test subjects. One of the best examples of this unfortunate but all too common scenario was the controversial career of Dr Austin Stough. Claimed to have grossed close to \$1 million a year, Stough—and the pharmaceutical companies he worked for—profited handsomely, while the inmates he used were made ill and some even died in an extended series of drug tests and blood plasma projects in Oklahoma, Arkansas, and Alabama.³⁴ Stough’s high volume plasmapheresis programme attracted great commercial interest, but his poorly trained staff and shoddy operations resulted in inmate volunteers receiving the wrong blood type and as many as 30 inmates a month contracting viral hepatitis. “They’re dropping like flies out here,” wrote one alarmed inmate to the outside world.³⁴

Throughout the 1960s the use of prisoners as research subjects remained popular as prisons tested everything from tropical diseases and respiratory infections to infectious hepatitis and “pain tolerance studies.”³⁵⁻³⁹ In rare cases, some prisons became super-

markets of investigatory opportunity for zealous physicians representing aggressive private and public sector institutions. In Holmesburg Prison, for instance, a county facility in Philadelphia, an array of studies explored everything from simple detergents and diet drinks to dioxin and chemical warfare agents. The long list of sponsors included major pharmaceutical houses and diverse entities such as RJ Reynolds, Dow Chemical, and the United States Army.⁴⁰

The end of prison experimentation

By the early 1970s, social and political indifference to human experimentation had begun to shift. Events as disparate as drug scares (thalidomide), hospital embarrassments (the use of 22 senile patients for live cancer cell studies at the Jewish Chronic Disease Hospital in New York City), alarming articles in professional journals (Dr Henry Beecher’s analysis of unethical medical studies⁴¹), and popular books (Jessica Mitford’s *Kind and Usual Punishment*³⁹) contributed to a growing repugnance towards scientific experiments on unwitting and institutionalised populations. By 1973, with the controversial revelations surrounding the Tuskegee syphilis experiments, lawmakers and the general public had been chastened by the cavalier use of vulnerable populations for non-therapeutic medical studies. Legislation was beginning to be introduced “to limit the use of prison inmates in medical research”⁴²; prison administrators were voicing “serious doubts about the ability of prisoners to volunteer for any form of medical research”⁴³; and prison research programmes were being terminated, especially the more controversial ones such as the decade-long studies in Oregon and Washington that irradiated the testicles of prison inmates.⁴⁴

The pendulum that represented the public’s acceptance of human experimentation had not only swung, but had swung decisively. Even physicians who had been long time advocates of the practice were forced to concede that scientific investigators and drug companies could continue their work without the use of prisoners.⁴⁵ Some doctors—Dr Albert Sabin, for example—resisted the new ethical current and continued to argue that prisoners were “a stable, long-time permanent study group” perfect for medical research.⁴⁶ By 1975, only 12 state prison systems were hosting medical experiments, and their numbers were declining rapidly.⁴⁷ Less than a year later, the federal government announced the end of medical research on federal prisoners.⁴⁸

After a quarter century of unrestrained use of prison inmates as cheap and available raw material for medical experimentation, the once widely accepted practice had come to an end. Victims of scientific and social forces, prisoners were still shunned, but they were no longer seen as the human equivalent of laboratory guinea pigs. Though some researchers initially resisted this new medical ethic, it gradually encompassed the entire medical community and terminated any thought of “the wealth of test material that there is in penitentiaries.”⁴⁹

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1 United States v Karl Brandt et al. In: *Trials of war criminals before the Nuremberg military tribunals under control council law*. Washington, DC: Government Printing Office, 1949:718-10, 796:27-74.)

- 2 Taber SR. Recent scientific experimentation on human material. *J Zoophily* 1907;16:94.
- 3 Pappworth MH. *Human guinea pigs*. Boston: Beacon Press, 1967:61.
- 4 Strong RP. Vaccination against plague. *Philippine J Sci* 1906;181:186.
- 5 Cherin E. Richard Pearson Strong and the iatrogenic plague disaster in Bilbid Prison, Manila, 1906. *Rev Infect Dis* 1989;111:996.
- 6 Etheridge EW. *The butterfly caste*. Westport, CN: Greenwood, 1972:7.
- 7 The brutalities of Nazi physicians [editorial]. *JAMA* 1946;132:714.
- 8 Stanley LL. An analysis of one thousand testicular substance implantations. *Endocrinology* 1922;6:787-8
- 9 12 Convicts to risk lives in tuberculosis serum test. *New York Times* 1934 March 20.
- 10 Felons gather for test. *New York Times* 1934 March 26.
- 11 Two convicts picked for new serum test. *New York Times* 1934 April 16.
- 12 Tuberculosis test reported success. *New York Times* 1934 December 11.
- 13 Logan RR, ed. *The starry cross*. Philadelphia: February, 1935:19.
- 14 Wharton D. Prisoners who volunteer blood, flesh, and their lives. *The American Mercury* 1954;79:53.
- 15 O'Hara JL. The most unforgettable character I've met. *Reader's Digest* 1948;52:32.
- 16 United States Department of Justice. *Federal Prisons Year End Review* 1944:22.
- 17 Leopold N. *Life plus 99 years*. Garden City: Doubleday, 1958.
- 18 Laurence WL. New drugs to combat malaria are tested in prisons for army. *New York Times* 1945 March 5:1.
- 19 George J. Atlanta's malaria project. *The Atlantian* 1946;6:14.
- 20 Rothman DJ. *Strangers at the bedside*. New York: Basic Books, 1991:53.
- 21 Rothman DJ. Henry Beecher revisited. *N Engl J Med* 1987;317:1195.
- 22 United States v Karl Brandt et al. *Trials of war criminals*. Washington, DC: Government Printing Office, 1949:9114-228, 9141.
- 23 Ethics governing the services of prisoners as subjects in medical experiments: report of a committee appointed by Governor Dwight H Green of Illinois. *JAMA* 1948;136:457.
- 24 *Abridged transcripts of the Nuremberg Medical Trial*. Vol 1. Washington, DC: Government Printing Office, 1949:27.
- 25 United States Department of Justice. *Federal Prisons Year End Review* 1951:28.
- 26 Syphilis vaccine gains. *New York Times* 1954 December 9.
- 27 Convicts aiding science. *New York Times* 1953 July 20.
- 28 Kaplan M. Tests on convicts curb vaccine ills. *New York Times* 1947 October 11.
- 29 Women prisoners aid jaundice test. *New York Times* 1950 September 4.
- 30 Butterfield WJH. Memorandum on "Observations on Volunteers from Penitentiary" 1951 and letters to Richard W Copeland October 30, 1951 and Major WF Smyth, October 30, 1951. (Archives of Medical College of Virginia, Richmond, VA.)
- 31 Convict joins own blood stream to that of girl dying of cancer. *New York Times* 1949 June 4:1.
- 32 Sing Sing lifer freed by Dewey. *New York Times* 1949 December 23:1.
- 33 Cancer by the needle. *Newsweek* 1956 June 4:67.
- 34 Rugaber W. Prison drug and plasma projects leave fatal trail. *New York Times* 1969 July 29:1.
- 35 Prisoners help test drug for malaria. *New York Times* 1966 March 16.
- 36 Schmeck HM Jr. Scientists trace a sneeze's spread. *New York Times* 1966 April 14:72.
- 37 Sullivan W. Scientist reports isolating 2 strains of hepatitis. *New York Times* 1961 June 29.
- 38 Vaccination reported for infectious hepatitis. *New York Times* 1961 May 5.
- 39 Mitford J. *Kind and usual punishment*. New York: Vintage, 1974:172.
- 40 Hornblum AM. *Acres of skin*. New York: Routledge (in press).
- 41 Beecher H. Ethics and clinical research. *N Engl J Med* 1966;74:1354.
- 42 HR 16160, 93rd Congress, 2nd session, July 29, 1974.
- 43 Tyler HR Jr, Carlson NA. HR 3603. Use of federal prisoners in medical research projects. October 2, 1975.
- 44 Lee G. The lifelong harm to radiation's human guinea pigs. *Washington Post National Weekly Edition* 1994 November 28:33.
- 45 Testimony of Dr John Arnold. HR 3606, 94th Congress, 1st session, September 29, 1975:1.
- 46 Cohn V. Medical research on prisoners, poor defended, hit. *Washington Post* 1975 February 20.
- 47 Medical Research on Prisoners. *Clearinghouse to End Medical Experimentation on Prisoners* 1975 (No3) June:2.
- 48 Government to ban medical research on federal inmates. *New York Times* 1976 March 2.
- 49 Weidman F. Comments on "The pathogenesis of tinea capitis due to *Microsporum audouinii* and *Microsporum canis*" by Kligman, A. *J Invest Dermatol* 1952;18:246.

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To the point of farce: a Martian view of the Hardinian taboo—the silence that surrounds population control

Maurice King, Charles Elliott

We humans have problems controlling our population. We apply the "Hardinian taboo"—a refusal to consider or discuss population control—so as to prevent ourselves having to deal with the problem adequately. Our worst problem is demographic entrapment. If the Hardinian taboo on entrapment is not removed, there will be increasing slaughter and starvation throughout much of Africa and elsewhere (malignant uproar), as recently shown in Rwanda.¹ If it is removed, there will be intense discussion (benign uproar), followed—we argue—by behaviour change in the countries of the North (sustainable lifestyles) and of the South (reduced fertility). Which is it to be? Do we open the dialogue or don't we? The "foundations" of this taboo include the problems of one child families. The US State Department has, we believe, been orchestrating the global population debate to the point that it has corrupted critical aspects of academic demography, to the greatest possible disadvantage of trapped populations, presumably lest its own consumption of resources be criticised. We follow Hardin² in thinking that, with modern communications, the solution to "the population problem" could come quite quickly. The difficulty is removing the taboo sufficiently to get enough "benign uproar."

The problem seen from Mars

Lady M: Back home in Mars we have long been interested in you humans. We can measure Earth's rising

Summary points

The Hardinian taboo is a refusal to contemplate overpopulation as a problem

The choice is between the vigorous argument that will follow the lifting of the Hardinian taboo and the slaughter and starvation of letting it remain

The world wide web could be the key factor in lifting it

Lifting the taboo has important implications for the market economy

Lifting it would be a powerful agent for good

temperature and see your disappearing ice caps and your vanishing forests. We watch your television and subscribe to the *BMJ*. One thing especially mystifies us. Why is it that, when your population is increasing at 10 000 people an hour—and is set to double—you do so little about it, especially when it contributes so largely to your poverty, your hunger, your street children, and your slaughter? You seem to have extraordinary hangups in controlling your population.

University of Leeds,
Leeds LS2 9JT
Maurice King,
honorary research
fellow

Trinity Hall,
University of
Cambridge,
Cambridge
CB2 1TJ
Charles Elliott,
dean and chaplain

Correspondence to:
Dr M King, 1 bis
Rue du Tir, Geneva
1204, Switzerland
mhking@iprolink.ch

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How the “experts” avoid discussing entrapment

The “experts” avoid considering these five variables together: a specific area; its carrying capacity; its population (especially its projected future population); migration out of it; and its economy. If they consider these variables separately, they can assume that whatever they have not considered will solve the problem. For example, they can assume that economic development will provide sufficient exports, and therefore sufficient imports, especially food, even though there is no reasonable hope of this happening—in time.

Self: We do indeed. There is an ecologist in California called Garrett Hardin² who has been describing these hangups for many years. He calls them taboos. The other animals have their populations controlled for them by such mechanisms as predators and the competition between species. We try to avoid thinking about our population growth, or the methods we need to control it. For example, there was great hype over world population at the first Earth Day in 1970. Twenty years later, when the world had nearly 50% more people, the second Earth Day was almost completely ignored.² Interest in population is presently at a low ebb; funding is even lower³; and family planning is being subsumed under reproductive health.

Let me give you a recent trivial example. I had described the Hardinian taboo to one of the participants at a conference of paediatricians in Kampala. She saw it in operation the following day. She described how her colleagues had broken up into small groups to discuss the causes of malnutrition in their parts of Africa. After some hesitation, they all had reluctantly put “overpopulation” at the bottom of their lists. When the reports of the small groups were eventually summarised, overpopulation had somehow disappeared. This happens not only in our little conferences but also in our big ones. Our population conference in Cairo in 1994 failed to address adequately the issue of rapid population growth, which many poor countries consider their first priority⁴—and which should have been its major task. Our food conference in Rome in 1996 failed even to notice that in percentage terms the rate of growth of the grain yield of our fields is now less than that of our population.⁵ The grain available to the average human is now steadily falling.

The Hardinian taboo

Self: Curiously, the taboos that we have in dealing with population have only recently been given an overall name. I sent a paper⁶ on demographic entrapment to Paul Demeny, the editor of our most respected

What is demographic entrapment?

A community is demographically trapped if its population exceeds three criteria: the carrying capacity of its ecosystem; its opportunities for migration; and the ability of its economy to produce sufficient goods or services that can be exchanged for food and other necessities from elsewhere in the world. A community is also trapped if, because its population is increasing, it is expected to be in this unhappy state before long. A trapped community faces starvation or slaughter, or both (malignant uproar).



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demographic journal, the *Population and Development Review*. He replied that “the Hardinian taboo is already well known in the literature.” It turns out that the term “Hardinian taboo” isn’t listed in the standard demographic database POPLINE so it can’t be traced in the literature. The taboo has been so powerful and so well hidden that we haven’t needed to name it. By naming it, Demeny took the first step towards finally abolishing it. By rejecting our paper, he was applying the taboo to his own discipline in his own journal. This is remarkable, since the *Population and Development Review* is an organ of the Population Council, which should be clarifying population issues, not obfuscating them.

Lady M: That’s odd. Demography is the key science for your UN population agency, UNFPA. It seems to me that demography is now gravely flawed as one of the sciences on which your agencies base their population programmes; one might say that certain parts of it are now grossly corrupt.

Self: Exactly! The head of one “centre for population studies” told me that he could not investigate demographic entrapment because all he had was demographers. The head of one “institute of development studies” told me that he could not investigate it because he had no demographers.

Lady M: In that case, both disciplines have reached the point of farce.

“Disentrapment”

Lady M: If this is the demographic trap, how does a community get out of it?

Self: Theoretically, it would be possible for a population to escape the demographic trap in one of four ways: increasing the carrying capacity of its ecosystem sufficiently—making its fields grow more; providing enough opportunity for migration; developing an economy which would produce sufficient

exports which could then be exchanged for the necessary imports; or reducing the birth rate, if necessary to one child only. In practice, although everything possible should be done to make the most of the first three of these options, it seems that the reduction of fertility has to be the major one.

Demographic momentum

Lady M: Surely, if every female were to have only two children from now on, one to replace herself and one to replace her husband, this would immediately stop the population growing?

Self: Yes—but only if there are the same number of people in each age group. If a population is young, with many people in the younger age groups, even instant two child families would allow the population to continue growing for several generations, although at a progressively slower rate. This is demographic momentum—the motion you give a ball when you kick it. African communities are very young indeed, with about half the population under 15. African mothers still have about six children. The unhappy fact is that, on average, as much population growth occurs after the number of children per couple has fallen to 2 (strictly 2.2) as took place before it.⁷ There is thus an enormous amount of population growth to come. If communities really want to disentrap themselves, mothers need have to have one child only, for a generation or more, until the population stabilises.

Foundations of the Hardinian taboo

Lady M: You humans aren't half screwed up by this Hardinian taboo thing. Just why should the Hardinian taboo be so difficult for you people?

Self: On earth, as I expect on Mars, everything is linked to everything else. The Hardinian taboo seems to be linked to at least a dozen other factors, which we have called its foundations.

Lady M: Let me be sure I've got it straight. Do you mean that these "foundations" have got to change, or at least be under great stress, if the taboo is lifted?

Self: Yes. Our reluctance to think through the necessary changes in the foundations and to introduce those changes, is what holds the Hardinian taboo in place. Let me discuss one of them.

China's one child families

Self: In the 1970s China's population was rising so fast that the country became worried about its "grain problem"—its population looked like exceeding the carrying capacity of the country. It had realised that it was demographically trapped, although it did not use this term. To slow its population growth it started its one child family programme. It provided various incentives and disincentives to encourage mothers to have one child only. The choice facing China was either one child families—or starvation and slaughter. China could do this only because Chinese culture is largely independent of the rest of the world, so that the Hardinian taboo does not operate there. Unfortunately, the world has many more trapped communities, which do not have the cultural independence from the Hardinian taboo—or the courage—that China has. Few

Foundations of the Hardinian taboo

- The fear of uproar—both benign and malignant
- The economic foundations of the global society—its materialist, consumerist, market economy, driven as this is by diabolical processes of advertising and marketing to promote ever more luxurious and unsustainable lifestyles
- The means of employment that the Northern lifestyle provides, in that to alter it (unless other radical and difficult changes are also implemented at the same time) is likely to increase unemployment
- Northern food habits, which are integral to this economy and lifestyle
- Current notions of human rights, particularly as they relate to human reproduction
- The Holy See's attitude to abortion and most methods of family planning
- The cultural attitudes of the South that favour high fertility
- The "starting line taboo" (see website)
- The high status of "the child" in Western liberalism
- The metaphysical position of late capitalist man ("What are we here for anyway?")
- A dread of "the future" in that abolishing the taboo acknowledges that "the population future" now approaching us at nearly a billion a decade, is already upon us
- Self interest, peer group disapproval, inertia, hopelessness, and "loss of face"
- The political interests of the US State Department (see website)

people in these countries know they are trapped, and the demographers dare not tell them so.

Lady M: It seems to me that you humans now have a choice. Either you can lift the Hardinian taboo and face up to the heated argument that will certainly follow as you adapt to one child families and changed Northern lifestyles—or you can continue to close your eyes to reality, hold the Hardinian taboo tightly in place, and allow a continent (Africa), and more, to continue its drift into starvation and slaughter, while a minority of you enjoy unbelievable luxury. Inequity is now such that 500 of you now own as much wealth as half of humanity. Are you going to make this choice or aren't you?

Orthodoxy really does seem to be out on a limb. Have we reached the very bottom of entrapment?

Self: Not quite. In the end it seems that the distinction between benign and malignant uproar is quite simply whether one cares—about the world and its people, and about Africa and India in particular, and about the other creatures in this marvellous Creation; whether one loves them, or whether one doesn't.

Lady M: So in the end it is either love—or tragedy—and farce. Tell me, are you hopeful?

Self: Yes, abundantly, provided there is *enough* benign uproar, and provided we get down to it *quickly!* See you at our website!

"Lady M" continues her discussion at http://www.leeds.ac.uk/demographic_entrapment

We welcome comments at mhking@iprolink.ch, which will keep these discussions updated.

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- 1 King MH, Elliott CM. Unicef's call to greatness—an open letter to Carol Bellamy. *Nat Med J India* 1996;9:130.
 - 2 Hardin G. *Living within limits*. New York: Oxford University Press, 1993.
 - 3 Donor fatigue hits family planning in the developing world. *Lancet* 1997;349:1530.
 - 4 McIntosh CA, Finkle JC. The Cairo Conference on Population and Development: a new paradigm? *Popul Dev Rev* 1995;21:223-60.
 - 5 King MH, Elliott CM. Averting a world food shortage: tighten your belts for CAIRO II. *BMJ* 1995;313:995-6.
 - 6 King MH, Elliott CM. Away with the Hardinian taboo. www.leeds.ac.uk/demographic_entrapment
 - 7 Cassen R, Bates LM. *Population policy: a new consensus*. Washington, DC: Overseas Development Council, 1994. (ODD policy essay No 12.)
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*Personal paper***Africa in the 21st century: can despair be turned to hope?**

Dorothy E Logie, Solomon R Benatar

Medical Action for
Global Security,
London N19 4DJ
Dorothy E Logie,
general practitioner

University of Cape
Town, 7925 Cape
Town, South Africa
Solomon R
Benatar,
professor of medicine

Correspondence to:
Dr Logie
delogie@aol.com

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The free flow of trade and money around the world has brought economic growth for the fortunate in the largest and strongest economies but has also created widening gaps in wealth and health between, and within, countries. These polarising forces have intensified in the past decade, creating a hundred million poor within the rich "core" in addition to the 1.3 billion people in the "periphery" who exist on \$1 a day or less.¹

Afro-pessimism

Sub-Saharan Africa is the most dramatic loser. Here poverty is at its most stark and marginalisation from the global economy most pronounced. The continent contains 33 of the world's 50 poorest countries. Improvements in health, education, and living standards have reversed in the past two decades, and standards continue to fall. By the end of the decade, two thirds of Africans will live in "absolute poverty."² More than half still lack safe water and 70% are without proper sanitation; 40 million children are not in primary school. Infant mortality is 55% higher than in the rest of the world's low income, developing countries, and average life expectancy, at 51 years, is 11 years less.³ Malaria and tuberculosis are increasing, and in parts of central, southern, and eastern Africa 30-40% of pregnant women are now HIV positive.²

Poverty causes ill health, but ill health also imposes immense economic costs on individuals, their families, and society. African productivity could increase by 15% if illness and disability were attacked more strenuously.⁴ The economic cost of malaria is estimated at 1% of gross national product, while AIDS strikes adults in their most productive years (figure). In families with AIDS, the children are forced to leave school early to work, weakening their long term financial prospects. New ways of coping with the cost of illness (selling cattle or land) cause further long term economic hardship (J Tumwine, personal communication).

Where does blame lie?

Many of Africa's setbacks have been associated with global economic policies over the past two decades which, in a complex way, reinforce the legacies of colonialism and imperialism and exacerbate Africa's internal problems. These external forces include:

- A crippling debt of \$300 billion which soaks up one fifth of Africa's savings and drains the continent of more than it receives in aid or loans.⁶ More money is spent on debt servicing than on health and education. In Uganda, which has one of the highest maternal and infant mortality rates and an AIDS epidemic, the government spends \$2.50 (£1.69) per head of the population annually on health—and \$15 per head on debt servicing.⁷ In Zambia, where for every \$1 spent on health care \$4 is spent on debt servicing, infant mortality is rising in the face of collapsing provision of health care, clean water, and sanitation⁶

Summary points

Two thirds of people living in sub-Saharan Africa are desperately poor

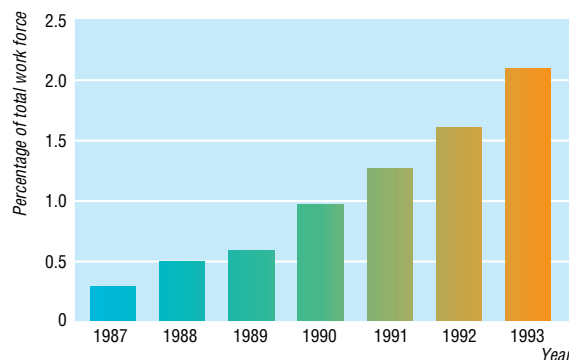
Health and education standards continue to deteriorate

More money is spent on debt servicing than on health and education

Within Africa, corruption, wars, and lack of commitment to health (especially women's health) have contributed towards the appalling health indices

The role of the industrialised countries in destabilising Africa needs to be openly debated

- The World Bank's economic adjustment policies, which have restricted social spending and encouraged export manufacture at the expense of food production. User fees have excluded poor people from health and education and have especially affected women, contributing to their lack of empowerment to restrict the number of children they bear,⁸ while the population of the continent grows at 3% a year³
- Trade protectionism, which has played a large part in the region's stagnation. Low commodity prices have lost Africa \$45-55 billion between 1980 and 1992⁹
- Falling foreign aid. Aid from rich countries has fallen to a trickle, well short of the UN target of 0.7%, and the trend is downward. Foreign aid has failed to bear economic fruit, entangled as it is with promoting trade and arms sales and sustaining the opulent lives of despots. Donors' experience of investing in health is also disappointing where there are low levels of health financing; inappropriately targeted aid can fragment a fragile health service; projects collapse after investment ceases because of inadequate empowerment of local



Mortality in 20 Zambian companies. Reprinted with permission⁵

personnel; donors demand quick and measurable results to satisfy their funding sources¹⁰

- The brain drain; encouraged by active recruitment by some northern countries, this is causing an exodus of Africa's ablest professionals, engineers, scientists, physicians, and technical workers

- War—in the 1980s an almost invisible war, waged by South Africa and the United States, destabilised much of southern Africa. History will record the terrible scars: "A million and a half or more dead, millions displaced from their homes, with economies in ruins, millions facing starvation and disease."¹¹

But Africa too must bear responsibility for its current state. Poor governance, tribalism, pervasive corruption, and a lack of democracy have caused social and political tensions resulting, in extreme cases, in collapse of states, with devastating humanitarian consequences. Weakness of political commitment to fund better health and social services, accompanied by a disinclination to develop preventive and primary health, has meant that few people (mainly those in cities) have benefited from health expenditure.⁴ Failure to value women's contribution to society and the denial of women's rights has had a huge negative impact on the health of African women and their families.⁸

Can Africa's relentless slide be halted?

However, these generalisations are only part of Africa's reality and it is neither fair nor objective to overlook the resilience of the African people or their achievements. For example, after independence, Zimbabwe's primary education increased from 36% of school age children enrolled in 1960 to 79% in 1980, and child mortality halved.¹² More recently, peace has returned to Angola, Ethiopia, Eritrea, and Mozambique. In South Africa, apartheid and its evil legacy has been dismantled without civil war, which brings hope that fundamental shifts can occur through thinking and acting in the best interest of future generations.

Cautious Afro-optimism

In the past year, three international events have given rise to cautious optimism that Africa's health, and economy, can be improved. Firstly, the World Bank's new president, James Wolfensohn, has staked his reputation on alleviating poverty.¹³ Secondly, the United Nations has embarked on a joint venture (the special initiative for Africa), pooling the expertise of all its agencies and those of the World Bank.¹⁴ Thirdly, there has been an important movement on debt relief (the highly indebted poor countries initiative).¹⁵

The UN Special Initiative for Africa

In March 1996, the UN agencies launched a 10 year, \$25 billion initiative for Africa to reduce poverty and to coordinate follow up from the global conferences of the 1990s (box). Eighty five per cent of this money (controlled by Africans themselves) will go to expanding basic education and health. Social development cannot take place without peace, so transparent governance and conflict prevention are high on the agenda. The health plans (box) emphasise cost effective packages of basic health care and more equitable use of public funds, but



South Africa's fast growing population puts pressure on housing, education, and health

many are disappointed that charges imposed at the point of delivery of care are still promoted, with their detrimental effect on health seeking behaviour and their potential for weakening preventive health.¹⁶

What makes this programme different from other high profile efforts to help Africa? Firstly, it has not been imposed from the outside but is based on home grown themes reflecting Africa's own development priorities. Secondly, there is a commitment to listen not just to governments but to ordinary people, including non-governmental organisations. And thirdly, there are none of the conditions (meaning that "if you don't adopt our priorities you don't get the money") which have so dominated Africa's development over the past decade. Even so, African organisations are concerned that the annual allocation of \$2.5 billion will not be "new" but redirected money. "The people of Africa," says President Rawlings of Ghana, "will know it [the special initiative] is successful when we see schools where there were no schools, when we have health services where those services were inadequate before, when households have access to safe water."¹⁷

Highly Indebted Poor Countries Initiative

1996 brought an unprecedented opportunity to diminish the debt crisis of the poorest countries (box). The World Bank and International Monetary Fund accepted that some debts cannot be repaid and that the

Key goals of the UN Special Initiative for Africa

- 1 Primary education for all children within 10 years, with emphasis on girls
- 2 Basic health for all, with improved quality of and access to primary health care
- 3 Improved security of food and water
- 4 Safe water for drinking and cooking
- 5 Improved irrigation, drought management, soil nutrition
- 6 Improved sanitation
- 7 Transparent, responsible government by improving an independent judiciary and the electoral process and making public administration more accountable
- 8 Improved public information, particularly radio broadcasting
- 9 Support for women in food production (African women produce 80% of the continent's food supply)

UNSIAs health plan

- Targeting the commonest preventable diseases
- Promoting the essential drugs programme
- Increasing and strengthening Africa's existing 40 000 primary care centres
- Decentralising health planning and administration
- Integrating the delivery of reproductive health care
- Giving women a say in decisions on health
- Improving health promotion

flow of money from poor to rich countries must be stopped. Although there are problems in the design (slow implementation, thresholds of debt sustainability too high, and debt relief not adequately set into a broader programme of human development), the initiative provides new thinking.

But already the initiative has received a setback. Uganda, with an excellent economic track record and six years of adjustment programmes, was to be the first to benefit (followed by the Ivory Coast and Burkina Faso), but relief was blocked for one year by political in-fighting among donors. This delay means Uganda will receive £119 million (\$193 million) less than hoped for (and six times Ugandan government spending on health)—money the Uganda government had already planned to use for health and education.¹⁸

The harsh requirement of six years' adherence to adjustment programmes means that Ethiopia will not qualify till the end of 2000 (despite drought and post-war reconstruction); Mozambique, Tanzania, Niger, and Zambia will not qualify till 2002 or later; and Rwanda may not qualify at all despite its desperate post-genocide reconstruction.

There is an increasing groundswell of demand for a one-off debt cancellation of the poorest countries to mark the start of the new millennium.¹⁹ This "once only" gesture would not set a precedent for repeated cancellation—the "moral hazard" so feared by the international financial institutions—but would accept that both creditors (like the Swiss banks accepting the illegal booty of dictators) and debtors have made mistakes. Starting the new millennium by such a gesture, and structuring new loans with greater accountability, could remove a great barrier to progress and justice.

Afro-pragmatism: on a knife edge?

South Africa represents the continent's problems in microcosm. The apartheid regime borrowed to oppress and kill people; now, those who suffered are

being asked to repay the debt. Like the rest of Africa, South Africa has a fast growing population (swollen by illegal immigration) which puts pressure on over-stretched housing, education, and health and swells unemployment—which, in turn, unleashes violence and crime. Like the rest of Africa, the country faces a balancing act between achieving economic growth by participating in globalised free markets (with their potential to enrich some people at the expense of others) and redistributing resources through paradigm shifts in approaches to health, education, housing, and other socioeconomic inequalities.²⁰

A mixture of hope and fear underlies the call for a "new push for Africa": hope that internal reconstruction, with greater focus on democracy and new visions of external support, can create sustainable development; fear because Africa has been marginalised and eliminated from the foreign policy agenda of most wealthy nations, and the window of opportunity to achieve these goals will not remain open indefinitely. As has been recognised in South Africa, policies which exclude peoples, nations, or continents have only limited potential and must eventually be replaced by longer term visions.

But no more should be expected of Africa than can be delivered by wealthy nations, who in turn must set an example through reform of their consumption patterns and energy expenditure. It is vital that industrialised countries acknowledge the adverse role they play in Africa. Pessimism, based on economic considerations, should be countered by an understanding that the cost of eradicating poverty is less than people imagine, about 1% of global income.¹ Effective debt relief for the 20 poorest countries is even cheaper, with a price tag of \$5.5 billion—the cost of building Euro-Disney.²¹

- 1 United Nations Development Programme. *Human development report*. New York, Oxford: Oxford University Press, 1997:9, 116
- 2 Bergstrom S, Mocumbi P. Health for all by the year 2000? *BMJ* 1996;313:316.
- 3 United Nations. *Implementation strategy for the health sector. United Nations Special Initiative for Africa*. New York:United Nations, 1996.
- 4 World Bank. *Better health in Africa: experience and lessons learned*. Washington, DC: World Bank, 1994:24.
- 5 AIDS and the work place. *South African Economist* 1997 April 15:7.
- 6 Oxfam. *The Oxfam poverty report*. Oxford: Oxfam, 1996.
- 7 Oxfam. *Poor country debt relief: false dawn or new hope for poverty reduction?* Oxford: Oxfam, 1997. (International position paper.)
- 8 Harrison K. The importance of the educated healthy woman in Africa. *Lancet* 1997;349:644-7.
- 9 Flanders S. New ways for Africa. *Financial Times* 1997 April 14:13.
- 10 LaFond A. Sustaining primary health care. London: Earthscan, 1996.
- 11 Gervasi S, Wong S. The Regan doctrine and destabilisation of Southern Africa. In:George A, ed. *Western state terrorism*. Cambridge: Quality Press, 212-52.
- 12 Cornia GA, ed. *Africa's recovery in the 1990s*. Florence: Unicef, 1992:19.
- 13 The World Bank, listening and learning [editorial]. *Lancet* 1996;347:411.
- 14 *The UN System-wide Special Initiative for Africa*. UN. New York: United Nations, 1996.
- 15 Pettifor A. World Bank/IMF proposals for comprehensive debt relief for the Poorest Countries. London: Debt Crisis Network, 1996. (Available from PO Box 100, London SE1 7RT)
- 16 Woodward D. User charges for health services in developing countries: an approach to analysing the effects on utilisation and health outcomes. Discussion paper prepared for the Department for International Development, May 1997. (Available on the internet: <http://cichich.ucl.ac.uk>)
- 17 Novicki M. A new impetus for African development. *Africa Recovery* 1996 May:12.
- 18 Oxfam. *Debt relief and poverty reduction: new hope for Uganda*. Oxford: Oxfam, 1996.
- 19 Jubilee 2000. *A debt cutter's handbook*. London: Jubilee 2000, 1996.
- 20 Benatar S. Towards social justice in the new South Africa. *Medicine, Conflict and Global Survival* 1997;13:229-39.
- 21 Brittain V, Elliott L. Dollar-a-day losers in the global economy. *Guardian* 1997 June 12:12.

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Highly Indebted Poor Countries Initiative: principles

- All creditors (bilateral and multilateral) will work together for comprehensive debt reduction
- Debt will be approached from a completely different angle—namely, the ability of the debtor to pay, as opposed to meeting the creditor's claims
- In judging the economic performance of countries, note will be taken of their performance in social indicators such as health, education, and sanitation
- The International Monetary Fund, in a major policy shift, has agreed, in some cases, to provide grants for the payment of debt service as opposed to loans

Pitfalls of tuberculosis programmes in prisons

Hernán Reyes, Rudi Coninx

Among its other activities, the International Committee of the Red Cross visits prisoners in countries all over the world, essentially in countries at war or affected by conflict. As part of its work aimed at ensuring that prisoners receive adequate care, it has had to deal with the issue of tuberculosis.

Recent experience in countries of the former Soviet Union has given us an insight into how complicated the treatment of tuberculosis can be in prisons. There are pitfalls that must be avoided if the disease is to be treated in accordance with the directly observed treatment, short course (DOTS) strategy drawn up by the World Health Organisation and the International Union against Tuberculosis and Lung Disease.¹

Directly observed therapy is designed to ensure, by means of direct observation, that patients actually take their full course of treatment. Prisons are, however, particularly difficult environments for applying such a strategy. Prevalencies five to ten times the national average are not uncommon and can be up to 50 times the reported national average.^{2,3} Tuberculosis may be a, or even the, major cause of death in prisons in developing countries, with mortality rates as high as 24%.⁴ In the case of tuberculosis, it is better to do nothing than to do something badly—and failure to complete courses of treatment can have disastrous results, leading to the development of multidrug resistant strains of *Mycobacterium tuberculosis*.

The problems described here apply essentially to countries where problems of low income are accompanied by a high prevalence of the disease. Prisons are full beyond capacity, with prisoners from impoverished unhealthy backgrounds living in an even unhealthier environment. Prison health services suffer serious shortcomings, and the internal violence of prisons also has its influence. The setting is perfect for tuberculosis to develop and thrive.

This is an unacceptable situation. As prison commissioner Alexander Paterson said in the 1930s: "Men are sent to prison as punishment, not for punishment."⁵ Contracting tuberculosis in prison is most certainly not part of a prisoner's sentence.

Power structures in prisons in the former Soviet Union

In the countries that made up the former Soviet Union a caste system exists in establishments for sentenced prisoners. Inmates are stratified into four groups. The "bosses" (*blatniye*) are the upper caste—professional criminals. Then comes the silent majority of "blokes" (*muzhiki*), non-professional criminals just in to serve their time, with no power. The third caste is the "collaborators" (*kozly*), who are shunned because they work for the prison administration. At the bottom are the "untouchables" (*petukhi*), the despised members of the prison society: homosexuals, sex offenders, outcasts from the other groups, and anyone who has contravened the unofficial laws of the prison hierarchy.

Summary points

An emerging issue in the care of prisoners in poor countries is treatment of tuberculosis

Prisoners and prisons present difficulties for healthcare staff trying to implement directly observed short course therapy for tuberculosis

These difficulties include poor conditions in the prisons, overcrowding, demoralised and underfunded prison health services, and the unofficial power structures that flourish in all prisons

It is better not to implement tuberculosis treatment at all than to do so if courses of treatment cannot be completed since this simply encourages the development of multidrug resistant tuberculosis that is then transmitted from inside the prison to outside, as prisoners have contact with their families and are released

International Committee of the Red Cross, Geneva
Hernán Reyes,
medical coordinator
for detention related
activities
Rudi Coninx,
medical coordinator
for training

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Prisons are bad for tuberculosis

Most prisoners come from underprivileged sectors of the general population. High risk factors for the disease, such as malnutrition, poor hygiene, inadequate living conditions, and generally poor health conditions are all present in their normal environment. These people are more likely to have contracted tuberculosis before their arrival in prison.

Prisons as neglected institutions

Health care in prisons is usually the responsibility of the ministry in charge of prisons and almost never the ministry of health. This explains why national statistics on tuberculosis seldom include figures on the prison population. Prisons are never regarded as a priority for health care. Even when tuberculosis inside prisons is recognised as a specific prison health hazard, often nothing is done about it.

Prison health services have a duty to identify prisoners with the disease and to treat them. Prison health not being a priority, budget allocations are usually hopelessly insufficient and there is a general lack of interest in the issue. Diagnostic facilities for tuberculosis are often inadequate and not based on (recommended) sputum microscopy. Medical records may be scanty outside prison hospitals. Prison medical staff are poorly paid, poorly trained, and therefore often poorly motivated. The inefficiency of the medical services may also lead to delay in diagnosis and thereby late case finding, making treatment of patients more difficult. The overall result is in many cases therapeutic chaos.

Medical services in remand prisons may be reluctant to diagnose and hence have to start treatment

Peru

The International Committee of the Red Cross participated in a tuberculosis programme for prisoners in Peru in 1986, treating them with the same regime used by the national tuberculosis programme. The patients were both common law and security (Shining Path guerillas) prisoners. The guerillas turned out to be very cooperative: as soon as their internal, quasimilitary, hierarchy had understood the reasons for complying with treatment, clear orders were given to all members of the group, and their compliance rate was close to 100%.

Among common law prisoners, however, the story was very different. Either individually, or under coercion from gang bosses, these patients invented stratagems so as not to swallow their pills and smuggle them back to their cells, from where they entered the commercial prison circuit. This turned out to be impossible to control, as local staff were often also under pressure to look the other way. It was here that we realised for the first time that management of a tuberculosis programme for prisoners was much more difficult than for outside populations.

of a chronic disease such as tuberculosis for prisoners who may well be released. This should not be an issue, as any such patients should be referred to a national tuberculosis treatment programme outside the correctional system.

Prison as a factor for contagion

Prisons are usually overcrowded, sometimes extremely so, with poor hygiene and inadequate ventilation creating ideal conditions for airborne contagion. (Even where there are windows, prisoners in countries with cold winters may never open them because of lack of heating.)

There is often no medical screening on admission, and prisoners contagious for tuberculosis may be put into a crowded cell with others. In the prisons of low income countries, malnourishment has a deleterious effect on prisoners who are most prone to disease in these ideal conditions for contagion: the weakest, the unhealthiest, the underdogs.

Prisons as violent societies

Prisoner culture obviously varies between countries, and prison populations are anything but homogeneous, even within a single establishment. One common denominator in all prisons, however, is the existence of power structures parallel to the official administration. In many cases this unofficial hierarchy is more powerful than the official authority, and prison administrations often condone these parallel systems as they help to maintain order. The type of prison society that results will of course depend on many factors (see box).

The rules and laws of this unofficial hierarchy have direct implications for the management of tuberculosis, in terms of unfair selection of patients for treatment and of trafficking of medicines.

Prisoners understand that tuberculosis is a dread disease, having seen fellow inmates die for lack of treatment. Newly introduced medicines, such as rifampicin, will be very desirable. The bosses will want to get hold of the pills for their monetary value. This will automatically create an incentive to be included in tuberculosis treatment programmes. Influential prisoners may thus

try to get on a tuberculosis treatment programme whether they have tuberculosis or not. Poorly paid prison doctors may turn a blind eye to exchanges of sputum, after taking bribes from wealthy prisoners. They may even put pressure on laboratory technicians to find bacilli in negative sputum samples. In addition, patients lower down the hierarchy receiving medicines within a tuberculosis treatment programme may be pressurised by the bosses to deliver up their pills.

Internal hierarchies can influence tuberculosis programmes in other ways. In prison hospital wards it is unrealistic to try to mix prisoners of different status in the same room. Any doctor who tries to put underdog patients in a room with other inmates will find that during the night the prisoners have sorted themselves out again according to the unofficial hierarchy.



BOB STARRETT

Ethiopia

In January 1995 the Red Cross started supporting a tuberculosis programme in six prisons in Ethiopia. The prisoners, all common law, were mostly from impoverished, high risk backgrounds for tuberculosis. The prison environment, with severe overcrowding, poor hygiene and ventilation, was ideal for contagion. Directly observed therapy was implemented inside the prisons, supervision ensured by expatriate nurses.

The programme had to be discontinued because of an unacceptably high number of defaulters, both within and without the prison system. Unfortunately the national tuberculosis programme for the general population was unable to provide treatment. Government decrees freed great numbers of prisoners, many of them under treatment for tuberculosis, who disappeared into the countryside. Even if they could have been traced, there was no medical structure to continue treatment. Furthermore, even within the prison system, many prisoners were transferred to other prisons without follow up being possible, or left the programme to "melt back" into the prison population, and medical staff were not able to trace them. The overall defaulter rate thus being high, up to 62% in Addis Ababa prison, it was decided at the end of 1996 to discontinue the programme after having completed full course treatment for all prisoners still on medication.

The Baku Declaration and its origins

The healthcare system in the former Soviet Union is in chaos following the collapse of the USSR in 1991. Assessments in the transcaucasian republics report nothing less than a collapse of national tuberculosis programmes, a paralysis of tuberculosis dispensaries, and a shortage of both diagnostic supplies and medicines.

Diagnostic and treatment practices in the former Soviet Union do not follow the recommended WHO guidelines. Too many diagnoses are still done by radiology instead of sputum smear microscopy. Treatment regimens vary widely, and drug supplies are often interrupted.

In most republics a bleak picture of multidrug resistance (resistance to both rifampicin and isoniazid) has started to emerge: up to 4% in Armenia, 7.3% in Russia (Ivanovo Oblast), 11.7% in Estonia, and 22.1% in Lithuania. Rates of resistance in patients who have received treatment, generally considered to reflect recent case management, reach 19.2% in Estonia, 54.5% in Latvia, and 27.3% in Russia.

Throughout the world rates of tuberculosis in prisons are 10-50 times higher than in the general population. Even though HIV does not play a major role in the current epidemics in the former Soviet Union, mortality rates in prison are high and related to late diagnosis and erratic treatments. In some prisons mortality from tuberculosis is as high as 24%, and tuberculosis is the commonest cause of death, accounting for 50-80% of deaths.

This situation goes largely unreported, because prisoners are not included in department of health statistics. The World Health Organisation, for example, estimates that there are 3550 cases of tuberculosis in Azerbaijan, but the International Committee of the Red Cross estimates that at least another 700 cases in prisons go unreported. In one study in Baku, Azerbaijan, 89% of the patients whose sputum did not convert after they had received first line antituberculosis treatment were found to have drug resistant strains of *M tuberculosis*. In

consecutive patients admitted to the tuberculosis programme 24% of the strains were multidrug resistant.

A workshop held in Baku, Azerbaijan, in July 1997 by the WHO and the International Committee of the Red Cross together with prison health authorities from Russia and Georgia and with medical non-governmental organisations working in the region highlighted this situation and led to the adoption of the Baku declaration.

Baku Declaration

We, the participants at the Baku Tuberculosis in Prisons meeting,

Recognising that tuberculosis has become a major health threat to prisoners, and

Observing that often incurable multidrug resistant forms of tuberculosis are increasing in prisons, and

Further observing that the spread of HIV within prisons increases the risk of death from tuberculosis, and

Noting that tuberculosis in prisons easily spreads into the community form infectious prisons and infectious prison staff, and

Acknowledging that adequately funded and staffed prison health services are essential to address the problem of tuberculosis in prisons

call upon

- Governments, ministries of justice and interior and state security and health to work together towards providing prisoners with adequate health care and the means to cure tuberculosis, and Prison health services to implement DOTS (directly observed treatment, short course), and

- Ministries of health to strengthen national tuberculosis programmes through the DOTS strategy

and warn

That if there is no response to our call for action, incurable tuberculosis will increase death among prisoners and their families and prison staff and their communities.

Moreover, individual prisoners in poor countries will also try to hoard pills for their own use. They may sell the medicines to the guards, give them to their relatives during family visits, use them as currency for gambling, or use them to pay their debts, rather than having to use more distasteful methods of obtaining ready cash (H Reyes, Corrections Health Service Conference, Sydney 1997).

Education of patients, so essential normally, is often hopeless in prisons. Prisoners have more immediate worries than the dangers of not receiving a full course of treatment. Others may want to take their medicines but are prevented from doing so. The public health argument relating to the danger of creating multidrug resistance will probably have no impact on inmates incarcerated for long terms in a violent world.

For all these reasons medical teams working in prisons have a hard time if they want to comply with the strict recommendations of directly observed therapy. Nurses will be faced every day with new tricks invented by prisoners to avoid taking all their pills (see box). Prisoners who have actually taken the treatment may try to substitute the sputum of an infectious patient for their own, so they can stay on the programme and continue to receive better food and more medicines.

Conversely, and paradoxically, there may be disincentives for staying on a programme. This

happens if a prisoner thinks that showing signs of still active tuberculosis somehow hinders his release. These patients will try to present negative sputums they have obtained from other prisoners. If their ploy works, and they are taken off the programme, they become automatic defaulters.

Tuberculosis is bad for prisons

The uncontrolled spread of tuberculosis is also bad for a prison. Apart from the medical implications for the patients themselves, other prisoners soon realise that the disease cannot be controlled, which could result in serious rioting and other security problems.

If patients receive incomplete doses of medicines the conditions for the development of multidrug resistant strains of tuberculosis bacilli will be present. The results of the Red Cross study in Azerbaijan show that the problem of multidrug resistance already exists among prisoners entering the tuberculosis programme (R Coninx et al, unpublished data).

Contrary to popular belief, prisons are not hermetically sealed institutions. Unlike their hosts, the prisoners, the tuberculosis bacilli thriving in a prison will not be contained by the prison bars. If untreated, infectious prisoners may infect their spouses and children during family visits, as well as prison guards.

Moreover, if prisoners infectious with tuberculosis are freed, not having received a full course of treatment, and are not referred to an outside tuberculosis centre for follow up, this will also create a risk for transmission outside (see box).

The possibility that multidrug resistant strains of *M tuberculosis* that develop within a malfunctioning prison tuberculosis treatment programme will eventually spread to the outside community is not merely theoretical. In the Russian Federation, for example, there is evidence from tuberculosis control programmes in the community that a high proportion of patients have served time in prisons, and that having been in jail is a major risk factor for the development of multidrug resistant strains of *M tuberculosis* (A Khomenko, personal communication; Médecins sans Frontières, personal communication).

For all these reasons, prisons must be included in national tuberculosis programmes; otherwise a major breeding ground for the disease will be overlooked, with possibly disastrous consequences for both prisoners and the general community.

Could prisons be good for tuberculosis?

If tuberculosis management is properly planned and implemented, and if all the adverse factors relating to the prison environment are effectively countered, there might be ways in which prisons could be an ideal environment for treatment. Tuberculosis might in this sense even be “good” for prisons, if the dangers inherent in the disease made health officials aware of the public health time bomb inside prisons. If concern for

prison health and adequate funding resulted from tuberculosis, this would be achieved.

Conclusions

Knowledge of the many pitfalls associated with tuberculosis programmes in prisons is essential if directly observed therapy is to succeed in curbing the disease in poor countries. Special measures must be taken to implement a prison tuberculosis programme. Prison health care should be integrated into the health priorities of ministries of health. Sufficient funding for prison medical facilities and decent salaries for staff should be provided to ensure adequate care. Prison conditions must be improved and the crucial issue of overcrowding addressed urgently. Neglecting to take such measures may result in disaster, as prisons are not only breeding grounds for the disease but also sources of transmission to the outside and could lead to an increase in the prevalence of tuberculosis in the general population. Finally, if the issue of erratic and incomplete treatments is not addressed urgently the incidence of multidrug resistant tuberculosis could rise in those countries that can least afford expensive second line treatments.

- 1 World Health Organisation. *Report on the tuberculosis epidemic. Stop TB at the source*. Geneva: WHO, 1995:183.
- 2 Drobniowski F. Tuberculosis in prisons: a forgotten plague. *Lancet* 1995; 346:948-9.
- 3 Martin V, Gonzalez P, Cayla JA. Case finding of pulmonary tuberculosis on admission to a penitentiary center. *Tubercle and Lung Disease* 1994; 74:49.
- 4 Coninx R, Eshaya-Chauvin B, Reyes H. Tuberculosis in prisons. *Lancet* 1995;346:1238.
- 5 Morris N, Rothman DJ. *Oxford history of the prison*. Oxford: OUP, 1995:151.

Abhorrent weapons and “superfluous injury or unnecessary suffering”: from field surgery to law

Robin M Coupland

Health Operations Division,
International Committee of the Red Cross, 1202 Geneva, Switzerland
Robin M Coupland, *surgeon*

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Weapons: a surgeon's view

Buried or “point detonating” antipersonnel mines are the only conventional weapons which cause specific and severe injury resulting in specific and permanent disability. The treatment of the injury requires, on average, twice as many operations and four times as many blood transfusions as injury from other weapons. This is a surgeon's view.

There was no particular point at which I became interested in the global problem of antipersonnel mines: I was just confronted with people injured by mines. From 1987 to 1991 I worked in hospitals set up by the International Committee of the Red Cross on the borders of Afghanistan and Cambodia, two of the most heavily mined countries in the world. During those last years of the cold war the full extent of the impact of mines on whole societies was yet unknown. New international legislation to ban the devices was not being discussed; I simply found myself dreading the radio call announcing that another mine injured person was on his or her way to hospital. The dread was generated by the knowledge that my team would

Summary points

Antipersonnel mines are an example of weapons that cause more injury than is necessary militarily to disable a soldier

The Geneva Conventions prohibit the use of weapons that cause “superfluous injury or unnecessary suffering”

The SirUS project, run by the International Committee of the Red Cross, uses the nature of the injury it causes to deem a weapon illegal

Individual doctors and medical organisations are asked to endorse the SirUS project

be faced with a long and difficult operation which entailed excising large amounts of damaged tissue or amputating a limb. This quickly turned into abhor-



Injury from a buried "point detonating" antipersonnel mine. Is this necessary to put the soldier hors de combat? Is this injury not superfluous if it is the foreseeable effect?

RED CROSS, GENEVA

rence for the weapons which caused such injury as a function of their design. In brief, my own reason for finding these weapons abhorrent was the nature of the injury they caused: it was appalling and somehow excessive (see figure).

Passing through Geneva in 1990, I heard that the International Committee of the Red Cross had been alerted to the development of blinding laser weapons, a development founded on the notion that it would be better to blind an enemy soldier than to kill him or her. Expert opinion informed us that even in the best ophthalmological centres there was no effective treatment for laser induced retinal haemorrhage. Here we had another weapon system which, as a function of its design, would produce a severe permanent disability. (Fortunately, such weapons were banned by a UN Convention in 1995; unfortunately, this ban came after the first blinding lasers had been produced.) It was becoming clear to me that however bad the effects of bullets or fragmentation munitions, there existed weapons which were, in some indefinable way, worse. This was the first time I heard of "superfluous injury or unnecessary suffering" in relation to weapons. Nobody could tell me what it was, but I was sure I had seen it caused by antipersonnel mines.

Deeming a weapon illegal

The stigmatisation of antipersonnel mines as abhorrent and much of the subsequent thrust of the campaign to ban them have quite rightly been based on the argument that they kill or injure both combatants and non-combatants without distinction and continue to do so long after the conflict has ended. However, I urge those who have worked hard on the mines campaign not to lose sight of the nature of injury as a means of deeming a weapon illegal. This is important because, if the injury or suffering resulting from a weapon's nature or technology could be proved to be excessive compared with the military advantage

gained from its use, the weapon would be illegal whoever its victims—soldier or civilian.

This legal concept exists to protect the combatant from injury or suffering greater than that necessary to put him or her hors de combat. It originated in the St Petersburg Declaration of 1868, which prohibited the use of exploding bullets. Military and political leaders had become concerned about the effect such munitions would have on their troops. It was also the rationale behind the prohibition of poison gas in the Geneva Protocol of 1925. This concept has been given a more modern expression in the 1977 Protocol I additional to the 1949 Geneva Conventions. Upholding this element of international humanitarian law is in the interests of combatants.

Weapon development continues. Other technologies are appearing on the horizon such as beams and waves that could produce specific effects on the central nervous system, including depression and convulsions. Do armies really need these? Are they "abhorrent"? What can or should doctors do about them? Lawyers tell me that they cannot give governments and their military advisers a definition of what constitutes "superfluous injury or unnecessary suffering."

Doctors trying to understand this phrase step into the no man's land between the effects of weapons on health and the international law of war. I can see only one way to navigate this no man's land and that is to translate a field surgeon's concept of abhorrent weapons into a legal determination of "superfluous injury or unnecessary suffering." Taking its name from "superfluous injury or unnecessary suffering" (SIrUS), a project is now under way to do just such a translation.

The SIrUS project

The medical profession has a responsibility to use health related data to help the international community define objectively which weapons are inherently abhorrent and which weapons cause "superfluous injury or unnecessary suffering." This was one of the major findings of a symposium on "The medical profession and the effects of weapons" organised by the International Committee of the Red Cross in Montreux, Switzerland, in March 1996. This symposium represented the start of the SIrUS project, which has addressed this responsibility by drawing together data and expert opinion in the domains of weapons, medical ethics, trauma surgery, law, and communications.¹

The project is not "anti" anything other than the extraordinary and incomprehensible human urge to find more and more sophisticated ways of killing and wounding members of our own species. In particular, it is not antimilitary; many military people agree with its aims and have given sound advice. The SIrUS project

1977 Protocol I additional to the Geneva Conventions of 1949

Part III. Section I—methods and means of warfare. Article 35—Basic rules

- (1) In any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited.
- (2) It is prohibited to employ weapons, projectiles and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering.

Executive summary of the S_IrUS Project

An important legal concept in laws and treaties relating to the conduct of war is that a weapon should not cause "superfluous injury or unnecessary suffering" beyond the military advantage of the user. There has never been an objective means of determining what constitutes "superfluous injury or unnecessary suffering"; some weapons have been deemed "abhorrent" or "inhuman" but exactly what these terms mean has not been defined either.

The twentieth century has seen enormous human suffering caused by weapons and there is no sign of any decrease. This suffering results from a combination of factors dependent on the design of weapons and factors which are user dependent. Any use of any weapon against human beings carries an intent to cause bodily harm. Understanding and quantification of that bodily harm can help to limit more effectively the suffering caused by weapons, both current and future. In relation to policy and law, considering the real effects that weapons have on human beings before the weapons' nature or technology is logical, but at the same time is a reversal of current thinking.

Conventional weapons—for which there is no formal definition—utilise projectiles or (non-nuclear) explosions and, as a function of their design, inflict physical injury by imparting kinetic energy but not foreseeably to a specific part of the body. Treatment requirements for such injury are well defined. The ICRC has a database containing information on 26 636 war wounded admitted to hospital. This database has been analysed to measure the collective effects of different conventional weapons—ie the effects measured as a proportion of all people injured by a certain type of weapon. The parameters whereby these collective effects are measured include: the proportion of large wounds, mortality, the relative proportion of central and limb injuries, the duration of hospital stay, the number of operations required, the requirement for blood transfusion, and the extent of severe and permanent disability in the survivors. The data relating to "point detonating" antipersonnel mines show how the measured effects represent the foreseeable effects resulting from their design; these effects distinguish them from other conventional weapons. (In this document, therefore, the term "the effects of conventional weapons" does not include the effects of antipersonnel mines.)

By collating these data with data from military publications,

certain effects of conventional weapons have been quantified and are used as a determination of what is not "superfluous injury or unnecessary suffering." A clear and objective distinction is then drawn between the effects of conventional weapons and the effects of all other weapons; this distinction can be expressed in terms of four criteria. The S_IrUS project comprises a group of experts who have worked to define the four criteria and who propose them as a means of determining what constitutes "superfluous injury and unnecessary suffering."

The proposal is that what constitutes "superfluous injury and unnecessary suffering" be determined by design dependent, foreseeable effects of weapons when they are used against human beings and cause:

- (1) Specific disease, specific abnormal physiological state, specific abnormal psychological state, specific and permanent disability or specific disfigurement, or
- (2) Field mortality of more than 25% or hospital mortality of more than 5%, or
- (3) Grade 3 wounds as measured by the Red Cross wound classification, or
- (4) Effects for which there is no well recognised and proved treatment.

One or more of these criteria apply to all weapons which have already been prohibited. Blinding as a method of warfare, "point detonating" antipersonnel mines, and the possible effects of new weapons are examined with these criteria in mind.

Endorsement of the S_IrUS Project will have two major implications. First, it will give recognition to the distinction between the effects of conventional weapons and the effects of other weapons; second, it will promote the criteria as an instrument for determining the meaning of "superfluous injury or unnecessary suffering" in the context of law. Endorsement may also provide an objective and precise means of substantiating the public notion of "abhorrent" or "inhuman" weapons.

The S_IrUS Project does not propose any new laws. It is not intended as a substitute for arms control and disarmament negotiations; but if endorsed by a significant body of professional opinion it may act as a supplement to those processes.

simply seeks to place on an objective and comprehensible basis what is already obvious: that the effects on human beings of weapons commonly used by armies now are bad enough, and that if possible, anything worse should be prevented.

Why endorse the S_IrUS Project?

One of the major turning points of the campaign to ban antipersonnel mines came when military officers reassessed the real utility of these weapons and found them to be of limited value. This military reassessment was prompted by the emergence of objective data about the human cost of deploying these weapons, strongly reinforced by public pressure from a coalition of non-governmental agencies (who received the 1997 Nobel Peace Prize for their work). The data substantiated the indiscriminate nature of mine warfare, the specific nature of the injury caused, and the resulting disability.

The policy being created by the "Ottawa process" (the move by governments towards a prohibition on the production, transfer, stockpiling, and use of antipersonnel mines) is thus founded on data. If weapons can be regarded as a health issue, can the principle of the "data-to-policy link" not be applied to weapons whose effects may constitute "superfluous injury and unnecessary suffering"?

The days when health professionals said that the issue of weapons was not their affair are past. Many professional associations, such as the World Medical Association and the International Society of Surgery, have registered their concern about antipersonnel mines. They can register their concern about the effects of other weapons, present or future, by endorsing the S_IrUS project. Only a unified body of opinion within the international medical and academic communities will encourage governments to recognise the grave implications of continued research and development of new means of warfare.

How to endorse the S_IrUS Project is clearly set out in the full document.¹ Essentially endorsement, by individual doctors and medical organisations, involves writing to the S_IrUS Project at the International Committee of the Red Cross in Geneva. With enough endorsements, governments may come to recognise the proposed criteria as a means to determine which weapons cause "superfluous injury or unnecessary suffering." Endorsement, in its simplest form, is an attempt at preventive medicine in the domain of weapons.

1 The S_IrUS Project: towards a determination of which weapons cause "superfluous injury or unnecessary suffering." Geneva: International Committee of the Red Cross, 1997. The document can be found at <http://www.icrc.org> or ordered from the ICRC Publications Department, 19 Ave de la Paix, 1202 Geneva, Switzerland (fax +41 22 733 2057).

Antipersonnel landmines: facts, fictions, and priorities

Chris Giannou

Over 100 million mines are buried in over 70 countries. Most victims are civilians. A lack of money prevents us adequately dealing with the problems created by antipersonnel mines. These are all fictions. What then are the facts?

Firstly, no one knows how many anti-tank or anti-personnel landmines there are in the old and current battlefields of the world, together with unexploded cluster bombs and other ordnance—all a danger to non-combatants. Yet the absolute number of mines is of little consequence. Whether a square kilometre of rural Angola contains 10 mines, 10 000, or 10 000 000 is not important: it is one square kilometre of farmland that cannot be used to grow crops to feed families. That is what is important.

Secondly, during most contemporary conflicts most victims of antipersonnel mines are military; some casualties, to varying degrees in different countries, are civilians. After a conflict is over, however, most if not all mine victims are civilians and those engaged in clearing mines.

Thirdly, it is not simply a lack of money that prevents us dealing with the problems caused by mines. To begin with we do not know the full extent of the problem to solve in any given country. These problems are so wide ranging, they need an equally wide ranging approach.

A pandemic of landmine injuries

Antipersonnel mines have disabled individuals, handicapped families, and mutilated entire societies. Their effects are widespread and continue long after a conflict has ended. The mining of agricultural land results in a severe loss of income for farmers; many families go into debt to pay for medical care for a wounded relative; malnutrition increases¹; people are forced from their homes because families cannot eke out an existence²; there is an increase in casualties among returning refugees³; repatriation of displaced persons or refugees may be delayed or totally compromised; and if roads are affected rural immunisation campaigns by mobile teams, the provision of emergency relief supplies, and the resumption of normal commercial activity are blocked.

These socioeconomic repercussions can destabilise the fragile economies of postwar societies and thus exacerbate political tensions after a civil conflict. Scarce funds must be used for mine clearance, mine awareness, and tertiary curative medicine. The treatment of amputees from antipersonnel blast mines makes greater demands on hospital resources, blood supplies, and long term rehabilitation (including the fitting of artificial limbs, vocational training, and social reintegration) than does that of other war wounded, including those injured by fragmentation mines.³ These funds are then not available for infrastructure reconstruction, economic rehabilitation, or preventive primary health care.

There is a pandemic of landmine injuries, and like all epidemics, in their causes and consequences, the

Summary points

Landmines not only injure individuals; by rendering agricultural land unusable and roads unpassable they also damage the fragile economies of nations trying to recover after conflicts

The problem is therefore not simply one of treating and rehabilitating people injured by landmines

For each area affected, the priorities—mine clearance, education, health services, repairing economic infrastructure—need to be identified and action targeted

The International Committee of the Red Cross has devised a mines information system to enable the many agencies involved to assess the priorities and coordinate their efforts

Division of Health Operations,
International Committee of the Red Cross, CH
1202 Geneva, Switzerland
Chris Giannou,
medical coordinator of
ICRC campaign to ban antipersonnel mines

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landmine pandemic is a social, economic, health, and political event which particularly targets the innocent, the weakest, and the least prepared. The response must therefore also have social, economic, health, and political aspects and it must include preventive, curative, and rehabilitative measures.⁴ The political response was negotiated in Oslo in September, and a new international humanitarian treaty will be open for signature in Ottawa in December. This is the beginning of prevention: a conscious decision on the part of states no longer to use antipersonnel mines, and a commitment to clear those sown in the fields.

And yet we do not even know exactly how many casualties there are. One of the first victims of war is the health system. Destruction, disorganisation, dislocation



Socioeconomic issues need to be considered ...

MARC SCHLOSS/WPANDOS PICTURES

of services; dispersal of health professionals; poverty; and, therefore, non-payment of salaries—all conspire to render a health system incapable of facing the demands of care for any wounded or sick. Access to the wounded, proper first aid, evacuation, transportation of patients, and the existence of functioning hospital infrastructure with qualified staff can be compromised, or simply non-existent. Statistics, in such a situation, do not exist.

A mines information system for collecting data

Using statistics gathered from hospitals and limb fitting workshops in several countries, internal reports, and extrapolating from published epidemiological reports,⁵⁻⁷ the International Committee of the Red Cross has arrived at an estimate of 24 000 people killed and wounded per year on average world wide. We believe that this is a conservative figure. We do not know the total number of casualties.

Data in general are lacking and, without statistics and facts, priorities cannot be established, policy articulated, and programmes planned. This is the first major obstacle to dealing with the problems that mines pose. To respond to this dearth of data, the International Committee of the Red Cross has proposed an organisational tool for promoting synergy among the various actors concerned and who are the sources of different types of information: political, military, and administrative authorities; non-governmental organisations; United Nations agencies; the International Committee of the Red Cross and national Red Cross and Red Crescent societies.

This tool is a mines information system.⁸ This should be used as part of a cooperative effort to standardise and systematise the collection of relevant data, then centralise and analyse them. Priorities could then be determined and programmes planned in any country, one province and one district at a time. For it is at each of these levels—village, district, province, and nation—that priorities must be decided and programmes planned and implemented.

What constitute the relevant data to collect? What determines the severity of the mine problem in a village (see box)? How to choose then among vying needs: mine clearance; mine awareness programmes to warn of the danger of mines for populations at high

Factors that need to be determined in a given area

- Mortality and morbidity
- Capacity of the health system to deal with the needs
- Civilian mined areas: residential, agricultural, industrial
- Percentage of civilian population affected socioeconomically
- Public or community programmes disrupted because of mines
- Population density compared to density of mines laid
- Transportation infrastructure affected
- Indigenous mine clearing capacity
- Security concerns
- Method of laying mines

risk; health care of the wounded? Sufficient funding for a particular country may even be present, but without priorities it cannot be efficiently invested.

It is the human consequences that one must look at—the socioeconomic and humanitarian repercussions—to determine a coherent strategy for assessing the priorities. The International Committee of the Red Cross has defined a tentative list of factors which help to determine the gravity of the mine problem in a given region (see box).

Clearly a continuing conflict, with new mines being laid, poses security problems of an entirely different character from a postwar scenario. This difference must be addressed by any aid programme. The existence of widespread banditry, especially among newly demobilised combatants, creates special restraints. Were mines placed by a classical, well trained army or by irregular forces? Are minefields marked and fenced off? Do maps exist? Were mines delivered by air or by artillery, or were they hand placed?⁹ What types of mines were used: plastic or with a minimal metal content? These are some of the factors that determine the difficulty of mine clearance.

Determining how most efficiently to use national and foreign funding and setting proper operational priorities according to humanitarian criteria depend on the systematic collection of standardised data and a coherent analysis. As part of a coordinated approach, a mines information system, using the above factors to determine the gravity of mine infestation of an area is essential if all the agencies involved are to prevent more victims falling to mines and better helping those who do.



... as well as medical ones

- 1 Kakar F, Bassani F, Romer CJ, Gunn SWA. The consequences of land mines on public health. *Prehospital and Disaster Medicine* 1996;11:13-21.
- 2 Stover E, Keller AS, Cobey J, Sopheap S. The medical and social consequences of land mines in Cambodia. *JAMA* 1994;272:1245-9.
- 3 Coupland RM, Korver A. *Injuries from anti-personnel mines: the experience of the International Committee of the Red Cross*. *BMJ* 1991;303:1509-12.
- 4 International Committee of the Red Cross. *The worldwide epidemic of landmine injuries*. Geneva: ICRC, 1995.
- 5 Andersson N, Palha da Sousa C, Paredes S. Social cost of landmines in four countries: Afghanistan, Bosnia, Cambodia and Mozambique. *BMJ* 1995;311:718-21.
- 6 Jeffrey SJ. Antipersonnel mines: who are the victims? *J Accid Emerg Med* 1996;13:343-6.
- 7 Ascherio A, Biellik R, Epstein A, Snetro G, Gloyd S, Ayotte B, et al. Deaths and injuries caused by landmines in Mozambique. *Lancet* 1995;346:721-4.
- 8 Coupland RM. *Assistance for victims of antipersonnel mines: needs, constraints and strategy*. Geneva: ICRC, 1997.
- 9 International Committee of the Red Cross. *Anti-personnel landmines: friend or foe? A study of the military use and effectiveness of anti-personnel mines*. Geneva: ICRC, 1996.

Universal Declaration of Human Rights

On 10 December 1948, the General Assembly of the United Nations adopted and proclaimed the Universal Declaration of Human Rights. Following this historic act, the Assembly called on all member countries to publicise the text of the Declaration and to cause it to be disseminated, displayed, read, and expounded principally in schools and other educational institutions, without distinction based on the political status of countries or territories.

Article 1—All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.

Article 2—Everyone is entitled to all the rights and freedoms set forth in this declaration, without distinction of any kind such as race, colour, sex, language, religion, political, or other opinion, national or social origin, property, birth, or other status. Furthermore, no distinction shall be made on the basis of the political, jurisdictional, or international status of the country or territory to which a person belongs, whether it be independent, trust, non-self governing or under any other limitation of sovereignty.

Article 3—Everyone has the right to life, liberty, and security of person.

Article 4—No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms.

Article 5—No one shall be subjected to torture or to cruel, inhuman, or degrading treatment or punishment.

Article 6—Everyone has the right to recognition everywhere as a person before the law.

Article 7—All are equal before the law and are entitled without any discrimination to equal protection of the law. All are entitled to equal protection against any discrimination in violation of this declaration and against any incitement to such discrimination.

Article 8—Everyone has the right to an effective remedy by the competent national tribunals for acts violating the fundamental rights granted him by the constitution or by law.

Article 9—No one shall be subjected to arbitrary arrest, detention, or exile.

Article 10—Everyone is entitled in full equality to a fair and public hearing by an independent and impartial tribunal, in the determination of rights and obligations and of any criminal charge against him.

Article 11—(1) Everyone charged with a penal offence has the right to be presumed innocent until proved guilty according to law in a public trial at which he has had all the guarantees necessary for his defence. (2) No one shall be held guilty of any penal offence on account of any or omission which did not constitute a penal offence, under national or international law, at the time when it was committed. Nor shall a heavier penalty be imposed than the one that was applicable at the time the penal offence was committed.

Article 12—No one shall be subjected to arbitrary interference with his privacy, family, home, or correspondence, nor to attacks upon his honour and

reputation. Everyone has the right to the protection of the law against such interference or attacks.

Article 13—(1) Everyone has the right to freedom of movement and residence within the borders of each state.

(2) Everyone has the right to leave any country, including his own, and to return to his country.

Article 14—(1) Everyone has the right to seek and to enjoy in other countries asylum from persecution.

(2) This right may not be invoked in the case of prosecutions genuinely arising from non-political crimes or from acts contrary to the purposes and principles of the United Nations.

Article 15—(1) Everyone has the right to a nationality.

(2) No one shall be arbitrarily deprived of his nationality nor denied the right to change his nationality.

Article 16—(1) Men and women of full age, without any limitation due to race, nationality or religion, have the right to marry and to found a family. They are entitled to equal rights as to marriage, during marriage, and its dissolution.

(2) Marriage shall be entered into only with the free and full consent of the intending spouses.

(3) The family is the natural and fundamental group unit of society and is entitled to protection by society and the state.

Article 17—(1) Everyone has the right to own property alone as well as in association with others.

(2) No one shall be arbitrarily deprived of his property.

Article 18—Everyone has the right to freedom of thought, conscience, and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others and, in public or private, to manifest his religion or belief in teaching, practice, worship, and observance.

Article 19—Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive, and impart information and ideas through any media and regardless of frontiers.

Article 20—(1) Everyone has the right to freedom of peaceful assembly and association.

(2) No one may be compelled to belong to an association.

Article 21—(1) Everyone has the right to take part in the government of his country, directly or through freely chosen representatives.

(2) Everyone has the right of equal access to public service in his country.

(3) The will of the people shall be the basis of the authority of government; this will shall be expressed in periodic and genuine elections which shall be by

universal and equal suffrage and be held by secret vote or by equivalent free voting procedures.

Article 22—Everyone, as a member of society, has the right to social security and is entitled to realisation, through national effort and international co-operation and in accordance with the organisation and resources of each state, of the economic, social, and cultural rights indispensable for his dignity and the free development of his personality.

Article 23—(1) Everyone has the right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment.

(2) Everyone, without any discrimination, has the right to equal pay for equal work.

(3) Everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection.

(4) Everyone has the right to form and to join trade unions for the protection of his interests.

Article 24—Everyone has the right to rest and leisure, including reasonable limitation of working hours and periodic holidays with pay.

Article 25—(1) Everyone has the right to a standard of living adequate for the health and well being of himself and of his family, including food, clothing, housing, and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age, or other lack of livelihood in circumstances beyond his control.

(2) Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection.

Article 26—(1) Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education

shall be made generally available and higher education shall be equally accessible to all on the basis of merit.

(2) Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance, and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace.

(3) Parents have a prior right to choose the kind of education that shall be given to their children.

Article 27—(1) Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.

(2) Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary, or artistic production of which he is the author.

Article 28—Everyone is entitled to a social and international order in which the rights and freedoms set forth in this declaration can be fully realised.

Article 29—(1) Everyone has duties to the community in which alone the free and full development of his personality is possible.

(2) In the exercise of his rights and freedoms, everyone shall be subject only to such limitations as are determined by law solely for the purpose of securing due recognition and respect for the rights and freedoms of others and of meeting the just requirements of morality, public order, and the general welfare in a democratic society.

(3) These rights and freedoms may in no case be exercised contrary to the purposes and principles of the United Nations.

Article 30—Nothing in this declaration may be interpreted as implying for any state, group, or person any right to engage in any activity or to perform any act aimed at the destruction of any of the rights and freedoms set forth herein.

Walk in peace: banish landmines from our globe

Eoin O'Brien

In Memoriam: Diana, Princess of Wales

These words are dedicated to the memory of Diana, Princess of Wales. She, perhaps more than any other individual, in reaching out to the ravaged victims of landmines, advanced the growing demand for a total ban on these vile weapons. Her courage in exposing the hypocrisy of governments, her own included, and her compassion for the suffering in mine infested countries, must not be to no avail. Rather it is for us to continue and to accelerate the impetus she gave to banishing landmines from our globe, so that we can then begin to cleanse the 60 nations in which more than 100 million mines have been scattered, and permit the people—the children in particular, so much loved by Diana—to walk again in peace.

The sun, deepest red at first then shimmering to gold rising over the hills of the plains, casts the father,

his young son, and their dog into black relief against the sky brightening gently, imperceptibly, and reluctantly, from the dark of night to the gold of dawn. Their silhouettes slowly emerge from the darkness; the tall gaunt figure of the father, staff in one hand, a sackbag over his shoulder, the boy hopping lightly beside him holding his other hand, and the dog gambolling along between them. The father and his son are clothed scantily, both are barefoot, and their skeletal transparency betrays the hardship of chronic malnutrition. Yet the figures carry a dignity, an almost biblical majesty, as they move gracefully on their way. They are heading for a small plot from which they eke a frugal existence, that is when the crop does not fail, or war and strife does not force them to move onwards. But an uneasy stability in their region has allowed them to make this journey to their plot daily for some years.

Royal College of Surgeons in Ireland Medical School, St Stephen's Green, Dublin 2

Eoin O'Brien, consultant cardiologist

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A movement ahead attracts the dog, which darts suddenly from the man and boy to chase a field rat. The morning sky is rent with red as the body of the dog is sundered against the blueness, and the morning stillness of the plain is shattered by the blast. Before the father can react to the danger he knows so well, his son is running from the path to save his beloved dog and another ghastly blast rents the air. The father in anguish rushes headlong towards his boy, who lies moaning where he has been thrown, like a rag doll against the stump of a tree, one leg shattered. The third blast fells the father just as he reaches his son and shrapnel pierces the eyes of the boy.

As the smoke and dust settle the scene of carnage becomes clear to the gathering villagers clustered on the edge of the path from which the trio had departed. The dog's entrails and limbs are strewn over a wide area. The boy has crawled whimpering from the tree stump, leaving a trail of blood as he drags his shattered limb along the soil. But he has reached his unconscious father, both of whose legs have disappeared. Here they lie, pathetic crumpled vestiges of humanity.

One of the younger men from the village discusses with another the path the stricken pair had taken and then advancing inch by inch, probing the ground ahead and on either side with metal rods, they slowly reach them, and as slowly drag them back, probing the ground inch by inch in reverse until they reach the path. Both father and son are now unconscious. The father is losing blood rapidly from one of his shattered

legs, from which the bone protrudes obscenely. The son's leg oozes blood. The women wrap the stumps in rags moistened in a nearby rivulet from which cattle drink and in which the villagers wash. One of the men uses another piece of rag as a tourniquet to staunch the systolic ejaculations from the father's left stump.

A team of young men begin the journey to the only hospital 20 miles away. The boy is strapped to the back of one of the men and two others take the ends of a makeshift hammock on which the father is lain. This is better than a stretcher, even had such been available, as it allows them to ascend and descend the many hills between the village and their destination. Another two carry frugal supplies and some water. Ten hours later they reach the huts comprising the hospital that serves a region of some 400 square miles. The boy is in profound shock and the father is delirious.

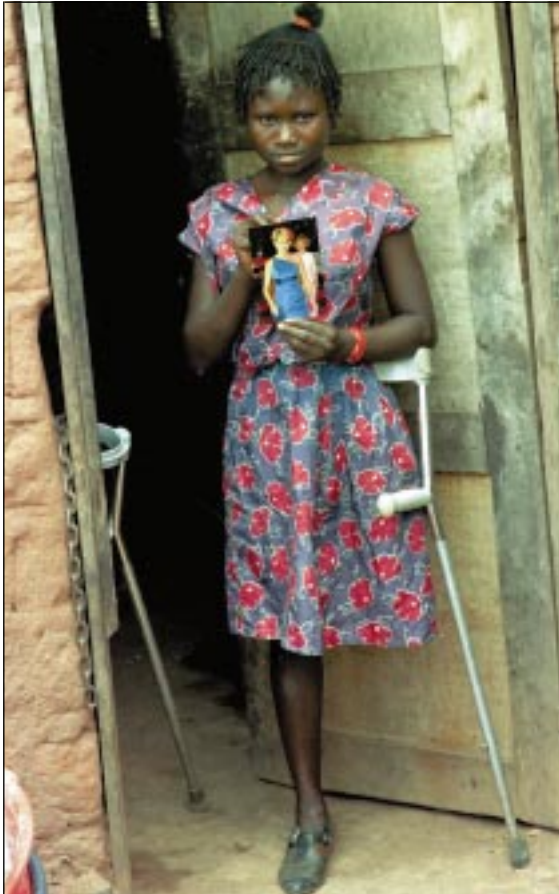
The only surgeon to the hospital decides the boy is the more critical of the two. Two nurses tend to the father. The left leg, which had been shattered in its lower third, is now gangrenous from the tourniquet, which had not been released, and this will have to be amputated from the thigh. It may be possible to perform a below knee amputation of the right leg. The genitalia have been badly wounded by ascending shrapnel and there are a series of infected puncture wounds along the right side of the thorax. Debridement will take many hours. A unit of blood is all that the hospital can spare for the man.

The surgeon takes the young boy to theatre and looks with sadness and anger at what he has seen so often. He thinks of his own son and begins to work. The boy is shocked and dehydrated and it can be taken for granted that the wounds are severely infected. There are no intravenous antibiotics, but out of date penicillin solutions kindly donated by a charity in a far away country of affluence is administered by nasogastric tube. The surgeon orders that two units of blood be given, even though the hospital ruling is that only one can be given in all save the most extreme emergencies: this he deems to be such. Anaesthesia like everything else being scarce, is given sparingly, and fortuitously is little needed at this stage. Apart from the shattered leg there are multiple wounds all over the frail frame. Both eyes are beyond salvage, but the shrapnel and soil must be removed. A penetrating wound like a stab wound from a knife on the left side of the jaw, on closer inspection, extends ominously into the palate and possibly further, leaving the surgeon to wonder whether, if he repairs this tragic wreck, all will be lost later from meningitis.

But he has to start and he does so with the facial and body wounds, probing for the plastic and metal components of these cruel weapons, made all the more deadly by the soil, grass, and grit which contaminates them. Finally, he gives his attention to the stump, deciding that such will be the advantages to this child in future life of having a prosthesis below the knee that the risks of saving the joint are worthwhile, though he does not like the look of the badly shattered tibia that extrudes beneath the coagulated contaminated tissue. As he works he thinks of the blind child's future as a cripple. He knows only too well that as the boy grows older, the bone of the amputation stump will grow more rapidly than the surrounding skin and soft tissues and he will need multiple reamputations. He



MARK OLDROYD



PETER GARRETTE

knows that frequent infection of the amputation stump with recurrent pain will render a prosthesis intolerable and add to the child's decrepitude. He asks the nurse to give more anaesthesia as he saws off the shattered bone to leave a clean sunken shaft around which he can mould the soft tissues and skin.

He has been operating for three hours. As he works he reflects that if this boy—What age could he be? No more than 10?—was to be granted a life expectancy of another 40 years, which might be about right for these parts, he will probably need 25 prostheses in his lifetime. But the child was not so destined and he died on the operating table an hour later.

His father survived. Let us use that word literally. He survived and returned to his wife and family without his son and dog in a straw chair with scant hope of receiving even a rudimentary prosthesis, the stumps protruding hideously, a constant memory of an awful moment, a legacy from a war that had ended 12 years earlier and one in which he had not been involved other than as one of thousands who, with his family, had had to flee from one district to the next, in the ethnic wave that had swept his land. He was destined now to an even more uncertain existence than before and without a son to support him in his old age. He never laughed again, or cried, as he suffered the pains of his wounds, but it was the inner pain that scorched his mind, where it burned so incessantly as to all but consume him in its intensity. Humanity in ruins but, alas, not annihilated.

Sudan: eating dust and returning to dust

Hans Veeken

Médecins Sans
Frontières, PO Box
10014, 1001 EA
Amsterdam,
Netherlands
Hans Veeken,
public health
consultant

hans_veeken@
amsterdam.msj

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In the early morning we drive out of the city. An asphalt road stretches like an endless ribbon, southwards into the desert. The wind is blowing, dust is seeping through every crack and cranny, entering the car but also my eyes, mouth, and ears. The area resembles a moon landscape: sand, rocks, and more sand.

After an hour's drive we turn off the road and see the camp. The land is dotted with small houses, shelters with mud walls, living spaces generally not much larger than 10 square metres. There is no shade. The place looks unfit for human habitation—but people have been living here for years.

Life in the camps

We drive to the clinic, a structure made of bamboo matting. It has a sheltered courtyard adorned in the centre with a real flowerbed. The clinic opens every day at 6.30 am; the three medical assistants see some 150 patients a day. An old woman is patiently waiting. It takes two interpreters to communicate with her. I ask my question in English; the medical assistant translates into Arabic for the old woman's companion; she, in turn, translates the Arabic into Dinka. The woman's answer is translated the other way round. It seems that she arrived in the city in 1993 with two of her four chil-

Summary points

About a fifth of the population of the Sudan has been displaced because of civil war

Most displaced people are living as squatters in slums around Khartoum

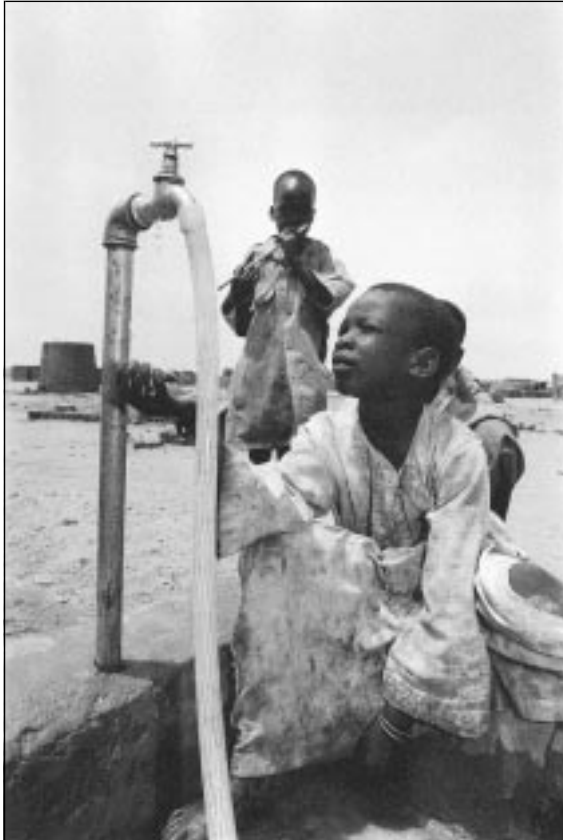
These slums are periodically razed and the inhabitants driven away

About 200 000 are living in four official camps in the middle of the desert

The water supply and the scarcity of food are pressing problems

dren. Her husband's fate remains unclear, the children left behind have died. She looks about 60 but is only 40. She has fled the war and says: "Here I can't find any rest either. I can't earn any money in the camp. I'm living from what people give me."

The fate of most people in the camp is to survive the day, to make it to the evening. To get food before



The camps are situated in the desert 40-50 km from Khartoum. Water is of vital importance

nightfall, that's what counts. The population seems to be resigned to its fate. It remains a mystery what these displaced people are living on. A nurse explains: "Some go and fish in the Nile, others go to Khartoum. They often work as day labourers in the building trade or they help unload trucks. But the camp is located far away from Khartoum and public transport is expensive. A ride on the bus takes 500 Sudanese pounds [1700 pounds=\$1] and daily wages total a mere 2000 pounds. Others are engaged in bootlegging alcohol, and prostitution is rife. It's the daily fight against hunger."

Medical assistants

I see a malnourished child on its mother's lap. The nurse picks up the card, which says that the weight is "right." According to the figures on the card, the child ought to be in good shape. It turns out that the assistant has wrongly interpreted the malnutrition criteria. The chart, with its Z scores and percentiles, is difficult to read. It's really important to stay alert and train the staff. The health workers at the post are displaced themselves and are living in the camp.

Simon is an older man. He is retired and recently joined his children, who had earlier fled to Khartoum. He comes from Equatoria, a province in the south. I ask him how he is doing. He replies: "There's nowhere rest, not there and not here. But I can't go back." How long has he been a medical assistant? "I was studying before you were born, young man," he answers somewhat haughtily. I don't believe him, but after some figuring must admit that he's right. He handles his otoscope and bloodpressure gauge with fastidious care.

No shade and no water

We drive on to Omdurman, across the Nile from Khartoum. As in Khartoum, thousands of people have descended on the edge of the city. We stop for breakfast at a roadside stand. The driver orders a large bowl of "fool," beans floating in fat. All three of us spoon the beans into our mouths with our hands. At 11 am I'm not surprised that we are unable to finish our meal to the last bean. We have barely risen from our chairs when three, four, five children pop up and fight over the leftovers. In 30 seconds flat the bowl is empty, there's not a breadcrumb left, and the boys are gone. They must have waited for this moment. You don't need a survey to conclude that there is hunger.

At the city's edge

We resume our journey, continuing on to Shekan, a district in Omdurman with a population of around 10 000. Some three months ago their dwellings were razed by the government. Suddenly the bulldozers came and reduced everything to rubble. However, the people are returning to their old dwelling places and, with sacks of mud and any other material, are building themselves shelters among the remnants of their former homes. It is a sad scene. This was not the first time such a thing happened here.

We talk to a family which has been "living" in Khartoum since 1992. The man has seven children. His wife has gone to the city to sell tea in the street. "How do you manage to survive?" I ask him directly. "I go to the city and work as a day labourer. I often stay away for a couple of days; travelling is expensive. I earn 4000 pounds [\$2.50] a day. Buying water at the donkey cart costs us 600 pounds for the 100 litres we use per day. I don't have work every day," says the man. The nurse explains that when she makes house calls, she often finds children alone, without parents. The mother has gone to the city hoping to find work and sometimes does not return for days.

Sudan and its displaced people

With a population of 30 million spread over an area 10 times the size of the United Kingdom, Sudan is thinly populated. A civil war has been going on since 1955 (with a period of peace from 1972 to 1983). The civil war, plus a prolonged drought and famine, have left the country destitute. One fifth of the population has been displaced.

The government of Sudan, which has its seat in Khartoum, is made up largely of Sudanese of Arab origin. The Muslim government does not want the displaced people to establish themselves permanently around Khartoum. They are mostly animists and Christians who have fled the civil war raging in the south of the country, and it considers them a threat to the Islamic image of the capital. Most displaced people are living as squatters in slum areas around Khartoum, and only 200 000 are living in the four officially recognised, temporary camps—which are located in the middle of the desert, far from the city and all economic activities.

For years the displaced people have been exposed to the whims of the government, which regularly orders slum areas to be razed and the inhabitants driven away to areas far from the city. MSF-Holland is operating in the displaced camps Jewel Awlia and Omdurman es Salaam, providing basic health care. The country is bankrupt, but even so, war expenditure is estimated at a total of one million dollars a day.

Displacement

Next we visit Omdurman el Salaam, a camp for displaced people. There happens to be a meeting of community health promoters. The participants are learning a song about tuberculosis, and we witness a rousing performance. I ask them what they consider the worst problems. One of the workers tells us that 200 families arrived at the camp this week without anything but the clothes they were wearing. We decide to have a look immediately. We drive to the far end of the camp; there is no real road. Round, igloo-like shelters made of sticks, burlap bags, and cardboard dot the area. Outside it's 45°C.

"Where are you from?" we ask a number of families who come walking up to us. An older man answers: "We were all living in the city, most of us near construction sites where we were working as day labourers or as guards. My wife and children were also sleeping there. Last week we were picked up without any explanation, our possessions were burnt, and we were dumped here at this camp." He asks: "Do you have anything for us to eat?" Another person interrupts him: "I've lost one of

my children. He was playing in the street when we were picked up. What can I do?" I'm dumbfounded. The community health promoter, who had come along with us, tells the people about our clinic.

Pressing problems

Water seems to be the most pressing problem. It would have to be trucked in. A water pump cannot be used because the level of the ground water is too deep—hardly surprising in a desert. But the scarcity of food, too, is taking its toll. The soil is unfit for cultivating crops, and people do not have money to buy enough food.

The situation in Sudan seems hopeless. The endless misery, the lack of any prospects of change or hope for future improvement make it imperative that Médecins Sans Frontières continues to support the people, even if our efforts are mere drops in a burning desert. At least that is what I feel. A mother in the camp, however, thinks differently. Looking at me reproachfully, she said: "If we do not get any food, we won't need your latrines either."

Tajikistan: no pay, no care

Hans Veeken

Médecins Sans Frontières, PO Box 10014, 1001 EA Amsterdam, Netherlands
Hans Veeken,
public health consultant

hans_veeken@amsterdam.ms.org

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"If I tell you all the problems, you will get scared and run away." The chief psychiatrist of the government can still joke, although the situation in Tajikistan gives no reason to do so. "But, if you insist: we lack specialists. They just ran away when we became independent in 1992 after the breakdown of the Soviet empire. Some of them studied in Russia; most were Russian anyway. Well, given the salaries in our country, a mere 2800 Tajik roubles a month [\$3] for a psychiatrist, you cannot blame them. In psychiatry you cannot earn extra money—you will find little corruption; who can make a psychotic pay? Then, there is no transport in the country; we have no drugs. There is a lack of training and we have no contact with other countries. Since the civil war started, everything has gone downhill. Dr Gulmayov, the grand old man of Tajik psychiatry, was killed last year. Who can replace him?" The chief psychiatrist is aware of the problems, eager to get training, and realistic in his expectations. "Give us time," he tells me.

Electrosleep therapy

It is best not to hurry in Tajikistan. Our planned trip the next day is cancelled because of security problems. At night we hear tanks rolling in the streets. The government is after Mahmoud, a temporary dissident, an army colonel of 34 years, who attacked Dushanbe the day before my arrival. We reschedule and visit a day care centre for people with mental disorders.

The place is old, and the doctor guides us carefully along the corridor, as if through a minefield: there are gaping holes hidden under the carpets. But it is spotlessly clean and friendly. A few patients are lying in bed. "I just gave them haloperidol," he says and walks on. I notice that the ampoules they have been given expired

in 1995. "The family will come to collect them at the end of the day," he says. It remains a mystery whether the patients come every day. We pass some equipment that resembles an old radio. "What is this?" I ask curiously. "Electrophoresis" is the answer. He explains to me about anodes and cathodes, currents that flow between the two, drugs that are sucked into the skin right on the spot where the problem is, and finally about how it relaxes patients. "Shall I demonstrate it?" he asks and grabs my arm. I decline politely.

Behind a screen I notice another instrument. "And this?" I ask. He pushes the screen aside and to my surprise there is a man wired to it, fast asleep. The wire is connected to spectacles that cover half his face. "This is

Summary points

Tajikistan's psychiatric services lack specialist staff: many left when the country became independent after the breakdown of the Soviet Union. Since then the civil war has disrupted society and health services have no drugs, equipment, or transport

The therapies used seem odd to Western eyes and are based on outdated Russian textbooks

Though clean, psychiatric hospitals are run down, with few supplies, and without heating in winter

Since the start of the civil war some psychiatric hospitals have seen half their patients die each year during their admission

electrosleep therapy," he says casually. I feel the ground moving (which later turns out to be related to the floor). "How does it work?" I ask, visibly surprised. "Two electrodes are positioned on the mastoid and the eyes, a minimal current between the two will stimulate sleep. Within five minutes he is fast asleep. A session lasts half an hour depending on the individual patient. We use it for neurosis, hypertension, all sorts of complaints. The patients feel relaxed afterwards. Usually around ten treatments are enough." To convince me he pulls a book from the shelf: *Electrosleep*, published in Russia, 1959. "Did you try it yourself?" I ask. "No, no, luckily it is not necessary," and we walk on.

Tajikistan is a mountainous country in central Asia, with 6 million inhabitants. Its healthcare system depends on foreign aid. The country has been crippled by a continuing civil war and by the collapse of the Soviet Union, which used to supply essential goods. Its healthcare problems are a rigid system, poor centralised planning, a focus on quantitative indicators (number of doctors, number of beds), specialist rather than primary care, and total funding by the state. Reforms are planned but are slow to get off the ground.

The children's home

The children's home is equally old and spotless. "Most children suffer from oligophrenia, perinatal syndromes, spasticity, but we have also abandoned children," the director explains. The term oligophrenia, I find out, is loosely used to describe any sort of learning disability. The home is well furnished. "How do you get all the materials?" I ask. "Begging, Sir" is the answer: "I write to embassies, invite them and they donate a television or toys. Other organisations donate food. But we need personnel. We have two defectologists, a kind of ergotherapist, but we have too much work. Who will pay them?" We walk round and see staff attending to the babies and children with care. Somehow the place is cheerful. I admire the director's energy. It is obvious that her personality lifts the whole institution to a high level of care, regardless of the state that the country is in.

Half of the patients die in winter

By car we travel to a large psychiatric institution; some military checkpoints have to be passed. It seems that Mahmout, the commander who rebelled against the government, has surrendered. Temporarily peace has been restored, at least in town. The rest of the country is not yet safe.

The psychiatric institute used to have 700 beds. The buildings are spread out over a spacious compound. The director has no problem identifying what the needs are. "There is no food for the patients; the heating doesn't work. But that is only a problem during three months. The laundry is worse: we have no washing machines. We ran out of drugs, the personnel ran away. And," he hesitates, "the patients die: last year 176 deaths." I can hardly believe the figures and insist on seeing the registration book. The book is handed over. I have difficulty calculating the death rate as the number of admissions is unclear. It seems they have an average of 300 patients, each admitted for about six months. In any case it is a humanitarian emergency.



"How does this compare to before the war?" I ask. He laughs, "Before the war we had no deaths in this institution, death was a rarity which we took with great grievance. But what can we do?"

We walk around and pass a ward for patients who have been admitted after being convicted for crimes. We are not allowed to go in. I'm told that some criminals try to get admitted on purpose to escape prison. The buildings are all decrepit, windows have no glass, toilets have no tiles, mattresses are old or absent completely. Yet the place is still rather clean. The summer sunshine hides a lot, and the patients quietly linger in the court yard. The quietness may be the effect of the haloperidol. What will it be like in winter? Everybody inside, few blankets, no shoes, no heating.

We find a taxi to take us to Isfara, a town far out in the north east of the country. The driver is not enthusiastic. "Why do you want to go there? It is only for mad people," he warns us. On one side we see Uzbekistan, a desert-like area, yet on the other side is a dramatic backdrop of the snow capped mountains in Kirgizia. The director tells us the same story. "Last year half of the patients died; if aid is further delayed we had better close the place. This has been going on for four years. I can predict that half the patients who are admitted now will die this winter." I hardly dare to ask: "What is the total budget that is available for the place?" He sighs at my ignorance. "There is no budget." He mentions his salary as an example and asks what a doctor earns in Holland. I make up a figure, too embarrassed to tell the truth.

It is doubtful whether the place can be renovated at all. Is it worth the effort? Isn't it wiser to find another building in a better location? These questions run through my mind. But aid has to be organised and quickly, before this winter. If not, half of the patients will die.

It is difficult to take decisions based on a visit of a week. The main problems are, however, clear and need rapid action. It will take decades for psychiatric care to catch up with Western standards. In the short term the number of beds will need to be reduced, and the diagnostic system, as well as treatment, needs updating. The training curriculum in psychiatry will need to be revised. Outside contacts at a high ministerial level are necessary to support the reform. Luckily several places show that the positive attitude of the health professionals will make cooperation possible.