

HUMANITARIAN DAILY RATIONS

A DECADE OF EXPERIENCE AND NEW DIRECTIONS

Master of Arts in Law and Diplomacy Thesis

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The image on the front cover is courtesy of the U.S. Air Force, and accompanied an article from December 11th, 2001, concerning the provision of HDRs to villagers in Afghanistan who had assisted American troops crossing a river.¹

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EXECUTIVE SUMMARY

Between 1993 and 2003, the U.S. government has distributed over thirteen million Humanitarian Daily Rations (HDRs) around the world. Each HDR packet contains at least 2200 kilocalories of strictly vegetarian prepared foods, fortified with vitamins and micronutrients. This paper will discuss the government's original goals for the HDR program, explore the needs of HDR recipients and evaluate the effectiveness of the product in fulfilling those needs, and propose improvements to non-food items within HDR packets. Such improvements will not only make for a better product for recipients, but will demonstrate to the American people that the HDR is the best, most cost-effective ready-to-eat humanitarian product that the U.S. government can provide.

HDRs were developed in 1993 as a civilian alternative to the U.S. military's calorie-dense "Meal Ready-to-Eat (MRE)," which was making malnourished civilians ill in Bosnia and Somalia when used as a relief ration. The HDR concept and many of its components are similar to MREs, and HDRs are produced by the same firms that make MREs. Over the past decade, HDRs have been distributed, among other places, in Bosnia, Cambodia, Chechnya, Guinea, Eritrea, Rwanda/Democratic Republic of Congo, Sierra Leone, Iraq, Somalia, Fiji, Georgia, and Afghanistan.

HDRs do not address the root, man-made causes of hunger – nor are they intended to. They enter a dangerous era of 'post-modern' conflict, where food is often used as a weapon (as it has been for centuries) and the military distribution of humanitarian supplies may make relief workers more vulnerable in conflict. Critics of HDRs, while often well intentioned, must remember that although HDRs conflate

the roles of humanitarians and military forces in conflict, there is a role for the ration for mobile populations with no means of preparing meals on their own.

The effectiveness of HDRs in reducing mortality rates in emergencies could be greatly increased with the inclusion of several fiscally insignificant non-food items including soap, micronutrient sprinkles, 'space blankets,' and condoms. Other non-food items such as oral rehydration salts, identification bracelets and water purification tablets, which would be equally valuable, require further study.

If more funds were made available, the HDR could also be improved significantly by tailoring them to differential needs in different regions of the world. HDRs containing foods familiar to different cultures would demonstrate cultural sensitivity and perhaps win the hearts and minds of both enemies and allies. Regionally considerate rations may also be useful in the media war that accompanies modern conflict.

SECTION I: Introduction

“To people more accustomed to lard rendered from fat-tailed sheep than to peanut butter, this fare may be strange. “Rice with Beans,” U.S. Army style, is not quite *kufita-kabab* (ground beef and onions roasted on skewers) or even *kala-pancheh pilau* (rice served with the feet and head – including eyeballs – of sheep).”²

- *Washington Post*, October 13, 2001

Over the past decade, the U.S. government has distributed over thirteen million Humanitarian Daily Rations (HDRs). Orders for several hundred thousand more were filled at the end of last year. This paper will discuss the original intentions of the HDR, explore the needs of HDR recipients, and propose a revision of the non-food items within HDR packets.

The HDR was created by the Department of Defense (DoD) in 1993 in response to a need recognized in Somalia for a nutritionally appropriate, ready-to-eat meal for victims of complex emergencies. Each HDR packet contains at least 2200 kilocalories of strictly vegetarian food, fortified with vitamins and micronutrients. Food items are completely cooked, and once packaged have a shelf-life of at least three years.

The challenge of HDRs is meeting the vast and diverse needs of victims in complex emergencies. HDRs have become a “silver bullet” to many U.S. policymakers, the single ‘relief’ product that will feed any population in any crisis anywhere in the world at short notice. HDRs have been used to feed civilians in flood ravaged villages and drought stricken plains. They have been air-dropped from 25,000 feet, fed to demobilized Asia and African soldiers, East European refugees, malnourished infants and elderly war victims.

Such a varied clientele obviously have differing needs that cannot all be met by HDRs. The excellent team of professionals who work on the HDR program, and who generously provided data for this paper, recognize the challenge but are limited foremost by cost. Each HDR costs less than \$4.50, leaving little room for variability or event-tailored components.

Nevertheless, the defense community must continue to update and improve HDRs, not only to make them more effective for recipients, but because at some point the public and the press are going to call the military to account for the massive costs associated with HDR program. Despite their value in certain humanitarian crises, HDRs were widely mocked in prominent political cartoons during the U.S. campaign in Afghanistan.³ Press accounts during that conflict claimed that HDRs cost \$64 each, including transportation, and with over 2.4 million distributed in Afghanistan, the total cost may be estimated at over \$155 million for food packets alone. Add to that the millions of packets distributed in Iraq, Kosovo, Chechnya, Georgia, Cambodia and Angola. While the \$64 figure is disingenuous (it assumes all HDRs are shipped by air and not by sea or freight), these numbers may at some point alarm an investigative Congress.

Equally important, unlike most other humanitarian relief products and services, HDRs have so far been exempt from any sort of accountability reviews. In an age where Mary Anderson's "do no harm" mantra pervades nearly every relief and development project, and the concept of providing relief to a standard is becoming universally accepted, not a single major NGO has quantitatively reviewed HDR usage. There are no published studies on HDR end use. The greatest hindrance to

improving the product today is simply a lack of on-the-ground research concerning utilization of the HDR product.

This paper seeks to constructively point out reparable deficiencies in the HDR program, and provide suggestions for improving non-food elements of the package. Most recommendations are based on the assumption that total packet costs cannot exceed \$4.50 and that HDRs will be distributed in most foreseeable American military conflicts in the future. It will examine several alternative non-food items that can be added to HDRs, and conclude with a case study of how revised HDRs could have saved more lives. This paper will not address international and domestic processes by which targeting and distribution decisions are made (the task of the Department of State and United Nations agencies). Nor will it provide a technical critique of the nutritional makeup of the package – although this is surely a valuable task for future research.

An effective, well constructed, well justified product that truly assists victims of complex emergencies will justify itself. This paper will provide background, justification and suggestions for how that relevant HDR product can be created.

SECTION II: Origin of Rations

“The HDR was born of a recurring need in the nineties, to support multitudes of displaced or otherwise bereft populations, which seemed to bedevil almost every military contingency in which the U.S. participated.”⁴

- Judith McCallum, Defense Security
Cooperation Agency

Humanitarian Daily Rations were first developed as a civilian alternative to the U.S. military’s calorie-dense “Meal Ready-to-Eat (MRE).” Relief agencies in Bosnia and Somalia, working among war victims, were complaining that regular U.S. military rations that were being distributed to civilians facing famine were too high in protein, indigestible, and violated religious taboos. Bosnian Muslims objected to ham dinners. Famished Somali children were getting even sicker eating chocolate bars.⁵ U.S. military personnel in Somalia were warned against giving MREs to famine victims after several Somalis ate the meals and went into shock.

According to former Secretary of Defense Les Aspin, between 1990 and 1993, almost 53 million MREs were distributed among⁶:

-
- 1) Kurdish refugees in Northern Iraq
 - 2) Volcano victims in the Philippines
 - 3) Demobilized rebels in Angola
 - 4) Flood victims in Mexico
 - 5) Haitian refugees at Guantanamo Bay, Cuba
 - 6) Muslim refugees in Bosnia

The 1990s saw an unprecedented upsurge in military operations involving large civilian populations, from Kuwait to Somalia, Haiti, Kosovo and Bosnia. Any

military has a legal obligation to “treat humanely” all noncombatants under their control as per the Fourth Geneva Convention of 1949.⁷ American Secretary of Defense Les Aspin understood this to include the provision of food to malnourished populations, and in 1993 ordered the creation of the HDR. The HDR product was developed within five months.

On a pragmatic note, during this same post-Gulf War period, the Pentagon had nearly exhausted its supply of MREs. There was growing concern among defense planners that reduced demand for military materiel following the end of the Cold War was leading to a reduction in the number of defense contractors and a decline in the defense industrial base. According to a 1991 agribusiness study prepared by the National Defense University and published by the Department of Defense, “The companies currently in the MRE industry find that the profits are only marginal...The only way to improve profitability would be to open up new civilian and foreign markets.”⁸ The desire to ensure profitability for MRE producers may have played a part in the Pentagon’s decision to create a new product that the MRE industry could market to government, international and non-governmental customers.

The Department of Defense consulted with teams from USAID's Office of Foreign Disaster Assistance (OFDA), the United Nations World Food Programme (WFP), the Center for Disease Control (CDC), the U.S. Food and Drug Administration, the U.S. Department of Agriculture, and the Army Surgeon General's Office. Together they created a low-cost product that met the widest range

of possible needs, a vegetarian meal with minimal dairy ingredients that could sustain one moderately malnourished individual for one day.

The first order for 2.15 million HDRs was placed in 1993 at a cost of \$8.5 million.⁹ The rations are assembled by AmeriQual Group LLC (Indiana), SOPAKO Packaging (South Carolina), and The Wornick Company (Texas), the same firms that manufacture MREs, with various components (from the package itself to each food and non-food item) are manufactured by companies such as Kraft, Tetra Pak, General Mills, Hormel, ConAgra and Proctor & Gamble. In response to the need identified in that 1991 DoD Agribusiness study, HDRs have become a lucrative product for packaged meal producers. In 2000, HDR and MRE orders were placed with SOPAKO Packaging and The Wornick Company valued at over \$64 million and \$44 million respectively.¹⁰ Following the initial HDR drops over Afghanistan, additional rush orders were placed for several million MREs and HDRs with The Wornick Company (\$45,335,788) and AmeriQual Group LLC (\$48,277,600).¹¹

Evolving Role of the Military

Since 1991, military assets have served three basic functions in international humanitarian crises:¹²

- a) Foster a secure environment for civilians and humanitarian agencies
- b) Support the protection and assistance work of relief agencies
- c) Provide direct assistance to civilians in need

The military has been forced to deal with rural and urban droughts that create internally displaced persons (IDPs) and refugees, conflicts and natural disasters in both rural and urban areas, and malnourished military and civilian personnel around the globe.

In responding to these crises, the military must meet the needs of victims, while reassuring the American populace and the international community.

Humanitarian relief, led by the military, serves to back claims that wars are fought against governments and not civilians. Interventions assuage feelings of guilt among the American people and the world, demonstrating that the U.S. is willing to use our might to help others in need. HDRs are a preeminent tool in this media campaign. They look wonderful on CNN, colorful food pouches in the hands of starving and grateful recipients.

Regarding hunger, Jean Dreze and Amartya Sen have written:

“Hunger is...intolerable in the modern world in a way it could not have been in the past. This is not so much because it is more intense, but because widespread hunger is so unnecessary and unwarranted in the modern world.”¹³

The simplicity and universal understanding of what the HDR really is – a packet of food – make it the perfect tool for public diplomacy. Through the HDR, the military provides food to people who are hungry.

The HDR is also a relatively obligation-free way to react to crises far from American shores. When nearly a million Rwandans were slaughtered in the 1994 genocide, just months after eighteen U.S. Army Rangers were killed in Somalia, there was little support within the American Administration to intervene.¹⁴ But as hundreds of thousands of sick and famished refugees created an unprecedented humanitarian emergency on their trek into Zaire (now the Democratic Republic of Congo), international pressure for some type of intervention mounted.

One intervention that may have mitigated the genocide was the jamming of a radio station in Rwanda called *Radio Mille Collines* that was inspiring Tutsis to murder Hutu civilians, stirring fear and providing detailed information on the location of Hutu refugees. The American government chose not to jam the station, still dazed from the debacle in Somalia, concerned with cost and restrictions on free speech. On May 5th, Frank Wisner, Under Secretary of Defense for Policy, wrote a memo to Deputy National Security Advisor Sandy Berger regarding the jamming of *Radio Mille Collines*:

“We have looked at options to stop the broadcasts within the Pentagon, discussed the interagency and concluded that jamming is an ineffective and expensive mechanism that will not accomplish the objective the NSC [National Security Council] Adviser seeks...I believe it would be wiser to use air to assist in Rwanda in the [food] relief effort...”¹⁵

This is the danger of HDRs, and why the defense community must continue to improve the product. HDRs are not an effective substitute for concerted military

action, but unfortunately they are often co-opted and used as such. When the military uses humanitarian aid in place of military action, that aid becomes the military campaign. This blurring of roles has dangerous implications for the safety of humanitarian relief workers who become complicit in this military mission. Yet if HDRs are to be used in place of substantive action, they must contain the most useful elements possible – to include a revision of the non-food items inside each pouch.

SECTION III: HDR Contents

“The goal of the Humanitarian Daily Rations Program is to provide a low-cost, nutritionally viable, easily delivered, daily ration for use in foreign countries to alleviate hunger after manmade or natural disasters.”¹⁶

- Defense Security Cooperation Agency

Military rations

HDRs are a derivative of “Meals Ready-to-Eat (MREs),” pre-cooked, energy dense meals designed for soldiers. The same firms produce HDRs and MREs, and government contracts for MREs and HDRs are generally written into the same bid. Many of the same foods and complementary items, as well as packaging materials, are used in both MREs and HDRs. To fully understand the nature of the HDR product, it is therefore necessary to understand its origin as an MRE.

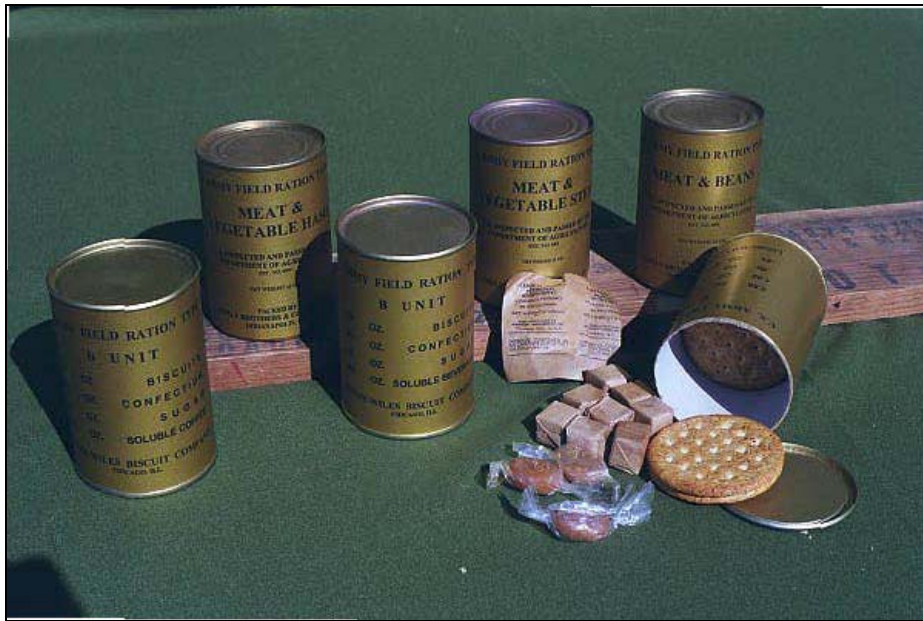
The MRE was designed to meet the nutritional needs of soldiers when kitchens could not be established. The first U.S. military rations were issued to individual soldiers for group preparation during the Revolutionary War. Each ration was per person per week, and included:¹⁷

- 1 pound of beef or $\frac{3}{4}$ pound of pork or 1 pound of salt fish
- 1 pound of bread or flour
- 1 pint of milk or payment of $\frac{1}{72}$ dollar
- 1 quart of cider or spruce beer
- 3 pints of peas or beans

The ration concept evolved, fed largely by advances in canning technology promoted by Napoleon. In the early 1800s, as Napoleon pushed into Russia, his army was ravaged by scurvy and malnutrition as a result of the retreating Russian “scorched earth” policy. Seeking to feed his troops, the French commander offered a reward of 12,000 francs to anyone who could develop a method of preserving foods.

Nicholas Appert won the award by packing fresh food in bottles, corking them, and submerging them in hot water.

The U.S. Army's first pre-packaged operational ration was introduced in the late 1930s and was known as the "C ration." Each element of the C ration was served in a sixteen ounce olive drab can, with three "meat" cans and three "bread" cans composing a full days ration. The six cans combined contained 3,700 calories, and soldiers would subsist on C rations for three to twenty-one days. Although several new entrées were introduced throughout WWII, the C ration was not replaced until the Korean War.



One day's "C rations" (three meat tins, three bread tins), World War II¹⁸

A new ration was introduced in the 1950s, called the "Meal Combat Individual (MCI)" and was used as the main military ration through the Vietnam War

and into the 1980s. The MCI was a significant improvement over C rations in that MCI's were intended to serve as "meals" rather than "rations." To that end, they provided a more balanced nutritional serving to troops on the move. The MCI consisted of a box containing a main meal (beefsteak, boned chicken, pork and beans, spaghetti and meatballs), a bread unit (crackers, candy, cheese), a desert (canned fruit, pound-cake) and an accessory pack. The accessory pack contained a can opener, coffee, gum, matches, toilet paper, salt, sugar, a plastic spoon and a small pack of cigarettes. Each meal contained roughly 1200 calories, for a daily total of 3600Kcal.¹⁹

The current individual military ration, known as the "Meal Ready-to-Eat (MRE)" advances the meal concept even further, providing twenty four entrées and a wide variety of accompaniments. Entrée, which include among others chicken tetrazzini, jambalaya, chicken with cavatelli and meat loaf with gravy, are field tested and replaced annually based on continuous soldier feedback and customer surveys. The components vary among menus and include rice, fruits, bakery items, crackers, spreads, beverages, snacks, candy, hot sauce, and even chow mein noodles for the pork chow mein entrée. The fruits may be applesauce, pears, peaches, pineapple, or strawberry. Bakery items include a fudge brownie, cookies, fruit bars, a toaster pastry, and lemon, chocolate mint, vanilla, orange, and pineapple pound cake. Each meal also contains an accessory packet with some combination of instant tea or apple cider, coffee, a sugar packet, creamer, salt and red pepper packet, chewing gum, matches, toilet tissue, a moist towelette, dried drink mix, candy and a flameless heater. The contents of one MRE meal bag provide an average of 1250 kilocalories

(13% protein, 36% fat, and 51% carbohydrates), with each bag providing 1/3 of the recommended calories and nutrients for an active soldier. This stands in contrast to the HDR, which contains 2,200 kcal and is meant to be the only meal eaten per day.²⁰

Although most MREs do not meet the religious requirements of many populations, soldiers who maintain vegetarian, kosher or halal diets are accommodated. Each case of ten MREs includes two vegetarian entrées (pasta with vegetables in tomato sauce, cheese tortellini, pasta with vegetables in alfredo sauce, or black bean and rice burrito). Soldiers observing Jewish or Muslim dietary restrictions may be fed kosher or halal rations, but these must be specially ordered, are slightly more expensive and are not always available. Religiously sensitive meals also do not come with accessory packets (toilet paper, spices, matches, etc) which must be distributed separate from the meals. Each kosher or halal menu provides approximately 1200 kilocalories (11-13% protein, 37-40% fat, and 48% carbohydrate), and common entrées include beef stew, chicken and noodles, cheese tortellini and pasta with vegetables, among others. Unlike MREs, The maximum shelf life at delivery of halal or kosher rations is 10 months.²¹



HDR (above) and MRE (below)²²



Technical Requirements

the Defense Security Cooperation Agency (DSCA),²³ the U.S. government agency tasked with procuring HDRs, succinctly describes the contents of the HDR as follows:

“The HDR’s nutritional content is tailored for people who are near starvation or fleeing from catastrophe to a safer haven and need to eat enroute. It has 2,300 calories, weighs 30 ounces, is fortified with vitamins and adequate for the widest range of cultural or religious dietary restrictions—it is meatless. HDRs were developed to

maintain the health of moderately malnourished recipients until conventional relief programs or targeted feeding can resume.”²⁴

HDR dietary and nutritional requirements conform to *SPHERE* standards for humanitarian relief, as well as WFP and UNHCR recommendations on nutrition in complex emergencies.²⁵

HDR contents are produced by a variety of contractors, including SOPAKO, AmeriQual LLC and the Wornick Company. The product supplied by each contractor must meet a series of guidelines laid out in the “Technical Data Package (TDP) of Humanitarian Daily Rations MRE XXIII (2002)” produced by the Department of Defense. However, significant leeway is accorded each contractor within these guidelines. According to the TDP, contractors are not limited in the selections of entrées or complementary components that may be included in HDRs provided they meet dietary and certain technical requirements. Size and weight of the HDR pouches is at the discretion of the contractor.

The requirements for HDR contents have changed very little since the first contracts were issued in 1993. The only significant changes have been to the color of the package and the addition of pictographic markings and multi-lingual information to assist end user utilization. Last year, the color of HDRs meal bag was changed from yellow to ‘salmon’ to differentiate the packets from unexploded ordinance. A light color blue (to symbolize the U.N.) was rejected, out of concern that recipients may think the food was of Israeli origin.²⁶

HDR Contents

HDRs are physically quite similar to current military MREs. They are packed in the same trilaminate double-thick plastic material, and are roughly the same shape and weight. While several food items can be found in both HDRs and MREs (such as peanut butter and crackers), the HDR is easier to digest in that it contains only 2,200kcal, while one day's MRE rations (three pouches) contain 3,750kcal. Like the MRE, the HDR has a shelf life of 36 months at 80° Fahrenheit.

According to the Technical Data Package (TDP) issued to all HDR contractors, nutrient and micronutrient levels must meet specific minimal requirements. The ration must include 67-73g of fat or 600-660 calories (27-30% of the meal). It must contain 55-70g of protein or 220 – 286 calories (10-13% of the meal). It must also include no less than 345g of carbohydrates or no less than 1380 calories (no less than 60% of the meal).²⁷

HDR Micronutrient Levels as Specified in the Technical Data Package

- Vitamin A: 900.0mcg stabilized retinal equivalent
- Vitamin C: 60.0 mg
- Vitamin D: 10.0mcg
- Iron: 12.0mg
- Calcium: 1300.0mg
- Phosphorous: 1300.0mg
- Folate: 400.0mcg
- B-1: 1.5mg
- B-12: 2.0mcg
- B-6: 2.0mg
- B-2: 1.7mg
- Niacin: 18.0mg
- Zinc: 15.0mg
- Magnesium: 350.0mg
- Calcium/Phosphorous ratio: 1 to 1

To conform to religious needs of recipient populations, all HDR contents are vegetarian, to include animal based cooking fats and oils. Limited dairy products are permissible but only in quantities acceptable to lactose intolerant individuals. Products containing ethyl alcohol or ingredients derived from ethyl alcohol are prohibited.

The TDP stresses that foods appropriate and easily digestible by infants and children, including fortified cereals and biscuits, milk-based puddings, fruit rolls and fruit sauces are important components of the HDR. However, DSCA does not require that HDRs contain food for infants, children and lactating mothers. Nor are there any internal markings on food packets indicating which foods are intended for weaning infants, women or children.

The HDR also contains a limited amount of non-food items. These include iodized table salt, black pepper, a non-alcohol pre-moistened towelette, a 7-inch plastic spoon, one packet of red cayenne pepper, one packet of refined sugar, one book of plain paper safety matches and one plain paper napkin. The HDR may be eaten cold, or heated by placing the entrée package in hot water or heating the contents in a pot.

Despite these strict, religiously sensitive requirements, early HDR shipments were not without problems. 225,120 HDRs of the original shipment destined for Bosnia in 1993 contained a gelatin-based fruit snack similar to “Gummi Bears.” Gelatin is made from crushed hooves and bones of pigs and other animals—in violation of Islamic dietary restrictions. The mistake was caught before shipment,

and was blamed on the contractor, Right Away Foods of McAllen, Texas. These non-vegetarian rations were sent to the former Soviet Republic of Georgia (where gelatin is not an unacceptable food) to assist refugees fleeing civil war, and the gelatin-based snack was removed from future shipments.²⁸

Sample HDR Menus ²⁹						
Menu 1	Menu 2	Menu 3	Menu 4	Menu 5	Menu 6	Menu 7
Bean Salad	Barley Stew	Beans & Rice in Tomato Sauce	Beans w/Potatoes	Pasta in Tomato Sauce	Lentil Stew	Red Beans & Rice
Brown & Wild Rice w/Lentils	Lentil Stew	Herb Rice	Brown & Wild Rice w/Lentils	Yellow Rice	Peas in Tomato Sauce	Yellow Rice
Crackers	Vegetable Biscuits	Biscuit (2 pack MRE crackers)	Flat Bread	Biscuit (2 pack MRE crackers)	Vegetable Biscuits	Biscuit (2 pack MRE crackers)
Peanut Butter	Jam	Vegetable Crackers (2 pack)	Crackers	Vegetable Crackers (2 pack)	Jam	Vegetable Crackers (2 pack)
Raisins	Peanut Butter	Fruit Bar (2 oz. Fig)	Peanut Butter	Peanut Butter	Peanut Butter	Fruit Bar (2 oz. Fig)
Flat Bread	Fruit Bar	Peanut Butter	Strawberry Jam	Strawberry Jam	Fruit Bar	Peanut Butter
Strawberry Jam	Shortbread Cookies	Strawberry Jam	Raisins	Fruit Bar (2 oz Fig)	Shortbread Cookies	Strawberry Jam
	Fruit Pastry	Fruit Pastry (2 pack)		Fruit Pastry (2 pack)	Fruit Pastry	Fruit Pastry (2 pack)
		Shortbread (1 bar)		Shortbread (1 bar)		Shortbread (1 bar)
Accessory Pack *	Accessory Pack *	Accessory Pack *	Accessory Pack *	Accessory Pack *	Accessory Pack *	Accessory Pack *

* Accessory Pack Contains:

Red Pepper, Pepper, Salt, Sugar, Spoon, Matches (unprinted) & Towelette (alcohol-free), Napkin

Packaging

HDRs are wrapped in double-thick salmon-colored plastic, strong enough to withstand high altitude drops and extreme environmental conditions. The packaging is designed to survive airdrops with less than 25% damage. The trilaminate packaging is “virtually puncture resistant,” and the heavy gauge plastic is intended to protect the food from environmental damage for 36 months.³⁰

18 months after the HDR is manufactured (if it has not yet been distributed), representatives of the U.S. Army’s Veterinary Command inspect a sample of the packets to ensure individual products within the HDR are performing as expected. At the end of 36 months, another inspection is conducted to see if shelf life can be extended further.

The most significant variable in the shelf-life of the HDR is storage temperature. Constant exposure to temperatures greater than 80°F could “significantly impact the nutritional value” of the HDR. Monitoring temperature is particularly challenging when the HDRs leave U.S. government controlled spaces, and HDRs face the greatest risk of heat stress during the shipping phase – sitting on a pier, pre-distribution in trucks, warehouses, local trailers or rail cars. To address the heat threat, stress indicators on each box of ten HDRs indicate if the box has been exposed to temperatures greater than 100°F.³¹

Each HDR is marked with appropriate nutritional labels as well as the words “Humanitarian Daily Ration,” “Food Gift From The People of The United States of America” and pictorial utilization instructions (a male silhouette with a spoon in his

mouth). The USAID symbol and words “United States of America” are also to be printed on all food packets within the HDR pouch. The words “This Bag Contains One Day’s Complete Food Requirement For One Person” is written in English, French and Spanish on each pouch. Additional labeling is at the discretion of the contractor. In Afghanistan, after the first week, leaflets were also dropped with HDRs indicating, through cartoon figures, that HDRs were edible, ‘*balal*’ meals.

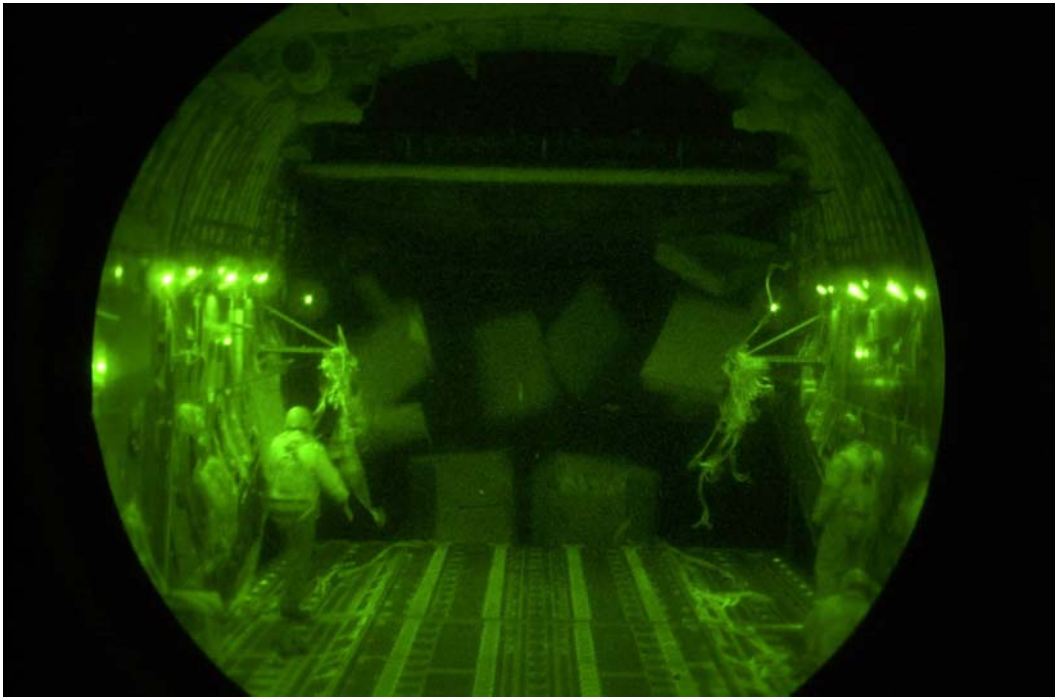


“Operation Enduring Freedom” HDR leaflets dropped from C-17’s along with HDRs. Front (above) and back (below)³²



SECTION IV: HDR Usage

HDRs were first delivered on November 23, 1993 over Maglaj, Brandina, Gorazde and Desaj in Bosnia. These rations were air-dropped by one French and six U.S. aircraft. The aircraft dropped 38 tons of humanitarian relief materials, including HDRs, toys, warm clothing and shoes.³³ While exact numbers are difficult to locate, at least 12.4 million HDRs have been distributed since 1993.³⁴



HDRs released over Afghanistan via the TRLADS system, 2001.³⁵

SELECT HDR DISTRIBUTIONS SINCE 1993

India (1993)

HDRs were initially not welcome by all recipients. In 1993, India rejected an early shipment of HDRs intended for earthquake survivors because, according to the Indian government, they were not needed. The Indian rejection occurred the same month that DoD discovered gelatin in the first shipment of HDRs.³⁶

Rwanda/Democratic Republic of Congo (1994)

In July, 1994, 500,000-800,000 Rwandan refugees fled into the North Kivu region of the Democratic Republic of Congo (DRC). They were mostly Hutus fleeing a Tutsi-led invasion of the country (in response to a Hutu-led genocide of Tutsis the previous year). The Hutu refugees feared a reverse genocide, and many of the perpetrators of the Tutsi genocide (known as *genocidaires* or politically as the *interhamwe*) were mixed in with the fleeing Hutu and using the refugees for cover. The vast majority of these refugees settled in Goma, a volcanic region of the DRC with notoriously hard volcanic soil.

Goma embodied a combination of some of the most difficult conditions that militaries seeking to assist in humanitarian disasters will face: intense power structures within the refugee community who used food as a means of control, rampant disease, food insecurity and widespread malnutrition. Immobile populations were living in areas with little water, no defecation fields (initially), no effective means of information

transmission and rampant rumors of imminent government and Tutsi attack.

According to a study published in *The Lancet* by the Goma Epidemiology Group – which included esteemed representatives from the DRC Ministry of Health, UNHCR, WHO, CDC, Epicentre, USAID, MSF and ICRC):

“During the first month after the influx, almost 50,000 refugees died, an average crude mortality rate of 20-35 per 10,000 per day. This death rate was associated with explosive epidemics of diarrheal disease (*baseline crude mortality rate in Rwanda was about 0.6 per 10,000 per day*)...3-4 weeks after the influx of refugees, acute malnutrition rates among children under 5 years old ranged between 18-23%. Children with a recent history of dysentery and those in households headed by women were at a higher risk of malnutrition...Between 6 and 10% of the population died during the month after arrival in Zaire, a death rate two to three times the highest previously reported rates among refugees in Thailand (1979), Somalia (1980) and Sudan (1985). This high mortality was due almost entirely to the epidemic of diarrheal diseases.”³⁷

In the first mass HDR airdrop, the U.S. military parachuted HDRs to Rwandan refugees beginning 24 July 1994. American satellites and spy planes were used to track and target refugees for food aid.³⁸ While the delivery of food per packet was useful in combating malnutrition and food insecurity, the vast majority of deaths in Goma (as in so many complex emergencies) were due to diarrheal disease. What could have been done to reduce this outrageously high crude mortality rate? According to the Goma Epidemiology Group study:

“Long term solutions require time and prompt implementation of several effective measures that depend more on human than technological resources. These measures include the organization of chlorination brigades at untreated water sources, the designation of physically isolated defecation fields, community outreach to identify and treat patients outside of clinics, and oral rehydration therapy. In addition, a greater emphasis needs to be placed on education about personal hygiene and the provision of soap.”³⁹

Cambodia (1995)

In 1995, the United States distributed 44,000 HDRs to Cambodia to feed defecting Khmer Rouge soldiers and displaced persons. The Cambodian Red Cross distributed this first allocation of rations, but following problems with stolen packets, the next disbursement of 74,000 HDRs in 1996 was given to the Royal Cambodian Armed Forces for civil affairs work.

Chechnya (1995/1996)

Chechnya was a large recipient of HDRs in the mid-1990s, as the first Chechen war was coming to an end and the Russian Federation sought to improve its humanitarian image internationally. In March of 1995, 389,440 HDRs were requested by the U.S. Department of State for distribution in Chechnya, and were distributed along with 600 pallets of medical supplies and sleeping bags.⁴⁰

In July 1996, the U.S. airlifted 35,000 HDRs to Chechnya at the request of WFP. The food was stored in WFP warehouses in Dagestan, and was trucked into Chechnya and distributed by the WFP. In August 1996, WFP requested an additional 160 metric tons of rations (~140,000 HDRs) for displaced Chechens from Grozny.⁴¹

Somalia (1997)

In 1997, UNICEF took the lead and distributed 39 tons of HDRs to Somali

victims of flooding in the Juba valley. The flooding killed over 1,200 people, displaced more than 220,000, and destroyed sorghum and cereal reserves. In addition to the 50,000 HDRs, the U.S. government pledged 750 rolls plastic sheeting, 50,000 blankets and 30,000 jerricans. The rations were distributed by the NGO Concern Worldwide.⁴²

Fiji (1998)

In response to a prolonged drought and series of natural disasters, the U.S. government donated 200,000 HDR packets worth \$500,000 to the Fiji Red Cross. The packets were distributed to schoolchildren.⁴³

Kosovo (1999/2000)

In the Spring of 1999, Serbian authorities were blocking entry of humanitarian goods to Kosovar civilians by road. According to NATO, in late May, 12 humanitarian convoys had reached Yugoslavia, but none had entered Kosovo. Additionally, 28 trucks filled with relief supplies were being blocked at the Kosovo border in Montenegro and the Yugoslav army was confiscating the food.

Although initially unwilling to deliver HDRs themselves, the U.S. was anxious to help, and State Department spokesman James Rubin said that the United States was "definitely supportive" of NGO efforts to deliver rations.⁴⁴ American General Wesley Clark, Supreme Allied Commander of NATO during the campaign, considered HDR

distribution via aircraft as a means of reducing refugee mobility, strengthen resistance to the Serbs and reduce the need for Greek humanitarian aid convoys which were complicating target selection, but according to his memoirs rejected the idea.⁴⁵ NATO forces claimed that they were unable to guarantee the safety of planes flying humanitarian missions over Serbia and Kosovo, particularly because the alliance was waging an air campaign in which the Serbs were targeting all aircraft flying over the conflict zone. The Yugoslav foreign ministry also opposed airdrops, saying: "such air drops are risky and could cause serious incidents. There is no reason to deliver humanitarian aid in this way, as there are no obstacles to delivering it on the basis of cooperation with our authorities and institutions, with their consent and supervision."⁴⁶

In an awkward marriage of convenience, the International Rescue Committee (IRC) agreed to airdrop HDRs to famished Kosovars despite NATO's lack of security guarantees. According to Susan Dwyer, one of the IRC personnel involved in the program, the White House requested that USAID contract food drops to an NGO – although publicly the Administration denied any involvement. According to Ms. Dwyer, the drops were carried out by three IRC personnel with no experience airdropping rations, and roughly ten logisticians from the USAID Office of Foreign Disaster Assistance.⁴⁷

IRC contracted with a Washington-based aviation company, Skylink Air & Logistics, to run the operation. Skylink relied on Moldovan aircrews who had never conducted airdrops to fly two daily HDR drops using Russian-made Antonov planes. Their inexperience was evident during the first drop, when the crew could not figure

out how to release the HDRs from the aircraft bay. Several HDRs were eventually thrown out by hand, and a conveyor belt system was installed for the next flight.

NATO permitted humanitarian runs when all other offensive flights were suspended, between 5:00am and 7:00am daily. NATO determined airdrop locations, and IRC aircraft released HDRs at 14,000', far higher than experienced WFP and UNHCR representatives on the ground recommended. The IRC alerted Serbian representatives in Belgrade and at the UN of their flight plans, but never received a formal response from the government. In an attempt to publicly maintain neutrality and avoid any perception that they might be dropping military supplies to the Kosovars, IRC relied on the Swiss firm Société Générale de Surveillance to inspect each cargo and ensure that the contents were strictly humanitarian.

IRC airdrops ended with the coalition-led bombing campaign, as soon as the Serbs agreed to withdraw from Kosovo. Despite protests from the IRC that isolated populations still required assistance, USAID refused to provide additional rations. IRC never conducted any evaluation of the HDR program, and the only indication that aid was reaching malnourished populations was from sporadic reports sent by a reporter on the ground with Radio Free Europe.

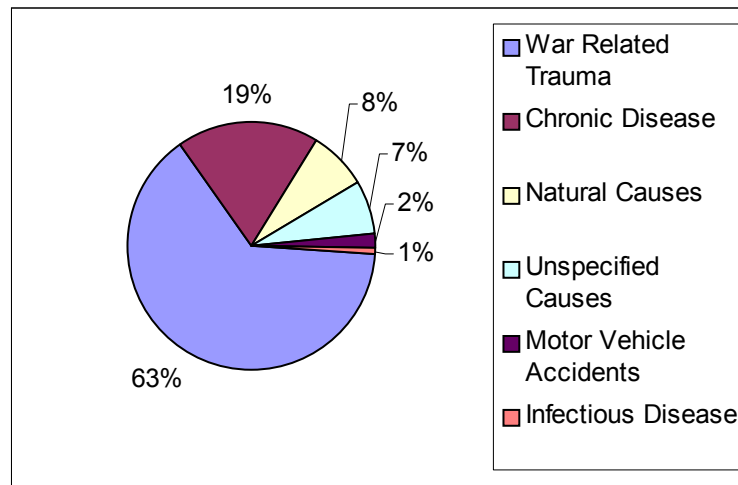
Over two weeks, IRC dropped approximately 30,000 HDRs. Ms. Dwyer says she subsequently learned that General Clark had approved the flights as a means of getting food to the anti-Serb Kosovo Liberation Army (KLA). Ms. Dwyer, an experienced humanitarian relief professional, calls the entire program flawed, and a

serious challenge to humanitarian principals.⁴⁸

The World Food Programme was also distributing HDRs on the ground in the summer of 1999, both to refugees fleeing from and those returning to Kosovo. In addition to bulk food stocks, WFP pre-positioned 300,000 humanitarian daily rations in Macedonia, 250,000 in Albania and had 150,000 in its food pipeline. For refugees leaving Albania and Macedonia following the end of the bombing campaign, WFP provided in-transit food consisting of one humanitarian daily ration (HDR), three loaves of bread, three cans of fish or meat, and 300 grams of high energy biscuit and a basic food ration of 10kg of flour, 2kg of pulses, oil, two tins of canned fish and one HDR per person.⁴⁹ The following summer, NGOs such as Mercy Corps also began distributing HDRs in the region.⁵⁰

While malnutrition and food insecurity were, to some extent, a problem in Kosovo, a study of mortality in Kosovo between 1998 and 1999 by Peter Salama and Paul B. Spiegel of the CDC in Atlanta clearly indicates that very few people actually died of malnutrition or associated diseases.⁵¹ Their study, based on interviews from a sample population of 8605 individuals (1196 families) surveyed from 50 clusters in 24 villages, found that of the 105 deaths recorded, few if any died from malnutrition-related causes.

Causes of Mortality in Kosovo, 1998 - 1999



Although malnutrition and shock are contributing factors that sped the death of those with chronic disease and can cause severe trauma, very few (if any) in this population cluster died of a cause that could have been mitigated by HDRs.

Another important finding from the CDC study was that, unlike many complex emergencies, 75% of the total deaths in Kosovo were of men and older men were ten times more likely than older women to be killed by war-related trauma. This may be because Serbs intentionally targeted elder males in an attempt to destroy family units, or it may reflect the increased difficulty of older males to flee from genocidal killers. In any case, it raises challenging questions regarding HDR distribution – whether elder males should be a target population of the HDR program, and if so should the contents of the packages be nutritionally adapted accordingly.

Sierra Leone (1999)

Following the Kosovo campaign in 1999, HDRs were supplied en masse to WFP for Sierra Leonean refugees in Guinea. By the end of September 2000, over 60,000 HDRs had been delivered.⁵² HDRs and high-energy biscuits were distributed on the ground by WFP, UNICEF, UNHCR and several NGOs.

Indonesia/East Timor (1999/2000)

Massive refugee flows coupled with flooding and widespread ethnic violence 1999/2000 displaced more than 75% of the population and destroyed nearly 70% of homes and public buildings. In response, WFP and the Australian Defence Force airdropped 277,500 HDRs in East Timor and distributed an additional 22,500 rations by truck and helicopter. WFP and the International Force in East Timor (INTERFET) also airdropped 24 tons of high-energy biscuits and 20 tons of rice in East Timor between September 17 – 29, 1999. WFP pre-positioned additional HDRs in Dili, Maliana, Suai, and Oecussi, as a preparedness measure for possible return of 50,000 refugees.⁵³

Eritrea (2000)

A border war with Ethiopia (1998-2000) concluded with a ceasefire in June 2000, but the war and a serious drought left 1.5 million Eritreans displaced and often

without adequate food stocks. During the summer of 2000, WFP dispatched 40 tons of HDRs to cover the food requirements of 20,000 IDPs in the Debub Region, who returned to Tessene. WFP distributions also took place in Areza and Adi-Keih.⁵⁴

Afghanistan (2001)

As the United States began its military campaign in Afghanistan to oust the Taliban and capture al Qaeda leaders in October 2001, they began a near-simultaneous program to air drop thousands of HDRs to Afghan civilians daily. Between October 7 and October 24, 2001, DOD dropped an unprecedented 821,880 HDRs over Afghanistan.⁵⁵ Years of drought, failed crops and economic isolation had left the country facing a potentially devastating food crisis. WFP estimated the drought affected rural population to be between four and six million. In the fall of 2001, there were between 150,000 and 250,000 drought affected IDPs (both inside and outside camps), and 200,000 to 250,000 new conflict IDPs.⁵⁶

Seven and a half million Afghans were in need of food assistance, just prior to the onset of winter.⁵⁷ Early American airdrops were delivering 37,500 rations per day, but with each ration providing enough kilocalories to nourish one person for one day, food was reaching roughly 0.005% of population. Secretary of Defense Donald Rumsfeld acknowledged this dramatic inadequacy in the HDR program, saying, “It is quite true that 37,000 rations in a day do not feed millions of human beings. On the other hand, if you were one of the starving people who got one of the rations, you’d be appreciative.”⁵⁸

On December 13, 2001, the Department of Defense conducted its final HDR airdrop in Afghanistan. Over the course of the operation, DOD provided 2,440,920 HDRs at a total cost of approximately \$50.9 million.⁵⁹ While some were genuinely targeted towards malnourished populations, other rations were clearly directed to civilians allied with American forces. In one case, widely showcased by the military, the U.S. Air Force dropped 17,200 HDRs to villagers around the Arghanab river after they assisted a group of U.S. Marines by building a stone bridge over a shallow point in the river to facilitate a vehicle crossing. The message was unmistakable: the military will provide food to those who help American forces.⁶⁰

Guinea (2001)

In March 2001, the United Nations World Food Programme released 24 tons of corn-soya blend (CSB) and humanitarian daily rations (HDR) to NGO implementing partners for assistance to refugees that have been fleeing the region of Nongoa.⁶¹ Five tons of HDRs were also provided to the International Rescue Committee for distribution to refugees in Katkama transit camp in June 2001.⁶²

SECTION V: The Critiques

“The U.S. military is thought to have spent some \$46 million on dropping over two million humanitarian daily ration packs by air. At best this was a waste of resources and at worst it was dangerous.”

- Report on the Humanitarian Crisis in Afghanistan by the Parliament of the United Kingdom, 13 September 2002.⁶³

Following their mass distribution in Afghanistan this past Fall, HDRs were widely covered, and criticized, in the media. According to one NGO, “At best, airdrops could allow aid to reach a tiny percentage of those in need, on a very temporary basis, and are a last-ditch resort when no other option is available.”⁶⁴ Yet these critiques, while important, sometimes tend to ignore the value of the product or understand that HDRs will probably be used by the military for the foreseeable future. The most effective critiques, therefore, are those that seek to ensure proper application of the HDR, and improve the product itself.

The HDR is a pre-packaged ready-to-eat vegetarian meal containing enough calories and nutrients to sustain one person for one day. It is designed to feed populations suffering through natural disasters and complex emergencies around the world. Yet the HDR has been widely criticized for flaws in distribution, packaging and cultural acceptability. HDRs also enter the charged debate on the implications of military interventions in humanitarian relief operations.

The problem with widespread condemnation of HDRs is they often fail to recognize the value, or understand the inherent limitations of the product. There is a place for the short-term use of HDRs in complex emergencies and natural disasters until alternative food pipelines can be established. The challenge is to create a single

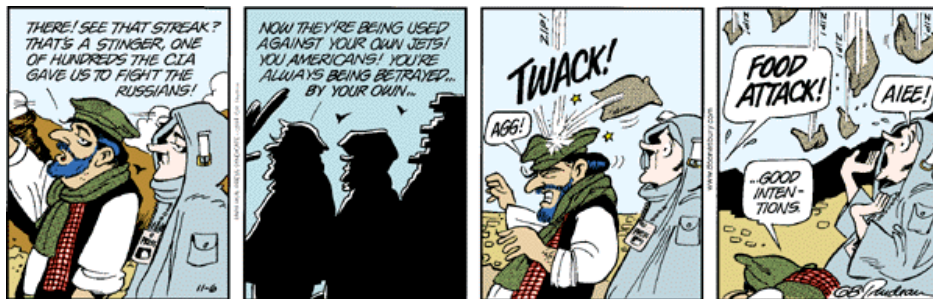
food product for universal distribution to peoples of all religions, cultures, regions and environments for less than \$4.50. While never the ideal solution, HDRs are often the only ready-to-eat ration available for immediate distribution.

Well-informed critiques are an important evaluation tools for those who design and distribute the rations. To maintain funding for relief projects, donors (including the U.S. military) must demonstrate the effectiveness of their programs to politicians and the public. As Joanna Macrae has written: “Humanitarian aid is provided in order to reflect the humanitarian intentions of the donor public. If that public is no longer convinced that it is serving this purpose, then political support will wane.”⁶⁵

Of course the politics of aid runs far deeper, and even disasters that garner little public interest or are dramatically politically corrupted (Southern Sudan or North Korea, for example) continue to receive assistance. This is due in part to the to budgeting cycles of donor countries – aid from international organizations must be distributed within a certain timeline and is generally inflexible to momentary public variations. The negative publicity a donor would receive for cutting food aid to a country in need may also be unacceptable (although the U.S. has recently shown an unusual propensity for action condemned by the international community). Critics must also realize that although HDRs may be flawed, there is no alternative ready-to-eat relief product (aside from high-energy biscuits) available.

HDRs may be a victim of their own success, as extensive distribution has opened the program up to widespread public critique. The NGOs CARE USA and OXFAM—UK were quick to condemn the HDR program and the role of the

military in distributing humanitarian relief last fall. The popular editorial cartoon *Doonesbury* ran a series of strips mocking the HDR as “food bombs,” and over time NGOs such as the Aga Khan Foundation and Partners International provided technical critiques of the HDR program. Yet after the first few months of HDR distribution over Afghanistan, these critics largely fell silent. Perhaps this is due to the wide range of NGOs that have actually distributed HDRs in emergencies (Concern Worldwide, Mercy Corps, IRC and UNICEF, among others) or perhaps it is tied to a fear of isolating the World Food Programme – a major supplier of HDRs in emergencies. Nevertheless, it is surprising how few organizations actually challenged the legitimacy of extended HDR distribution, in light of the numerous food security hazards it presents.



Gary Trudeau, *Doonesbury*, 6 November 2001

HDRs were not designed to decrease the vulnerability of a population to famine and do not address the causal factors of hunger. Unless sold, they do not create new entitlements. They cannot repair malfunctioning markets, poor weather or non-arable land. To some extent, they can help overcome transportation

problems, but only as a work-around and not a permanent solution. They are meant to feed a population for a very short period – days to weeks at most. They enhance food security simply by putting a packet of food in the hands of malnourished recipients.

But herein lies the dilemma – HDRs are a short-term relief product that policymakers often use in place of concrete action to address humanitarian disasters. They attract press attention and satiate the public's desire to believe that the military is working to solve a humanitarian crisis. Yet despite criticisms, there will always be a niche need for a short-term nutritional response in food emergencies.

HDR contents are reviewed with each new order, and the military has been responsive to the concerns of the humanitarian community. DoD has changed the color of rations and reportedly removed inedible desiccant sachets. However, the silence regarding HDRs from the humanitarian community over the past year provides little incentive for change.

The U.S. military will be distributing humanitarian daily rations in almost every conflict for the foreseeable future. They have become another tool to win the hearts and minds of both friends and enemies. Humanitarian agencies must provide suggestions to enhance the value of this product, and they must begin doing so now. Once the financial and technical limitations of HDR production are understood, we can begin to strengthen a potent instrument that can save lives in the war against hunger. Until then, a good – but not great – product will continue to be distributed in Afghanistan, Kosovo, and perhaps soon in Iraq.

SECTION VI: Alternative Non-Food Elements

“It takes a long time for a person to starve to death, but in a weakened state and without shelter or adequate bedding, hypothermia can kill in a night. Food is often used as a shorthand by the aid agencies to refer to both food and non-food items. While 80% of the need for shelter, blankets and warm clothing is being met [in Afghanistan], there is a need to ensure that other non-food needs are properly addressed...There is still some evidence to suggest that people are dying from a lack of shelter and steps need to be taken urgently to ensure that non-food items are distributed to those in need.”⁶⁶

- Report on the Humanitarian Crisis in Afghanistan by the Parliament of the United Kingdom, 13 September 2002.

HDRs are one temporary solution to the shock of famine and food insecurity – for a brief period, they answer the question, “what will my family and I eat next.” But with only minor, financially negligible changes, the HDR could begin addressing other causes of mortality in emergencies. A bar of soap could mitigate epidemics of cholera and scabies. Micronutrient supplement packets can help reduce the frequency of a range of chronic and acute diseases – most notably anemia - common to malnourished populations. Condoms can reduce the transmission of HIV in refugee camps. Identification tags can assist post-conflict reunification. Oral rehydration salts (ORS) can treat diarrheal diseases. While each additional non-food item faces questions that must be resolved it is important to consider the benefits of HDRs with modified non-food elements to populations in need.

The most important considerations for non-food additions to HDRs are cost, weight and potential substitutions, and market distortions and increased conflict owing to high-value items. The added weight of non-food items must be deducted from current food items. This substitution is done at the expense of

additional calories, and while 2,200Kcal is more than enough for one person to survive for one day, most humanitarian rations are shared among recipient families. There is also the remote but still relevant risk that the addition of certain non-food items (such as radios) would increase the risk of conflict. In 1995, HDRs distributed to the Cambodian Red Cross and meant for Khmer Rouge defectors, their families, and displaced persons was stolen from a Red Cross warehouse. The number of HDRs stolen is not known, but was likely around 3,000.⁶⁷

After speaking with several HDR industry professionals, it was determined that the space allowed for additional small non-food items (smaller than a deck of cards), while not unlimited, is flexible. The U.S. military does not limit HDR size. With the removal of the plastic spoon, cayenne pepper and moist towelette, \$0.042 is available per HDR to include additional non-food items.⁶⁸

Soap

Sir Edwin Chatwick was the first person to address disease from a social control standpoint. Sir Chatwick recognized in the 19th century that improvements in overall cleanliness through the use of soap made an immense contribution to the prevention (not simply the management) of disease. Even today, infant mortality remains significantly higher in parts of the world where soap and detergent use is low (less than 2kg/person/year).⁶⁹

Several recent studies of soap usage in the Journal of the American Medical Association and the British Medical Journal attest to the importance and efficacy of soap in reducing bacterial colonies on the hands of users, thus lowering infection rates and the prevalence of certain diseases. Antiseptic soap reduced bacterial contamination by between 49.6% and 58% among healthcare workers in each study. Interestingly, both studies note that cleaning with an alcohol-based liquid solution reduces bacterial rates by 83% - 88.2%, but 9.3% of study participants also reported that the alcohol-based solutions worsened pre-existing skin conditions. Average washing time for each cleaner was thirty seconds.⁷⁰

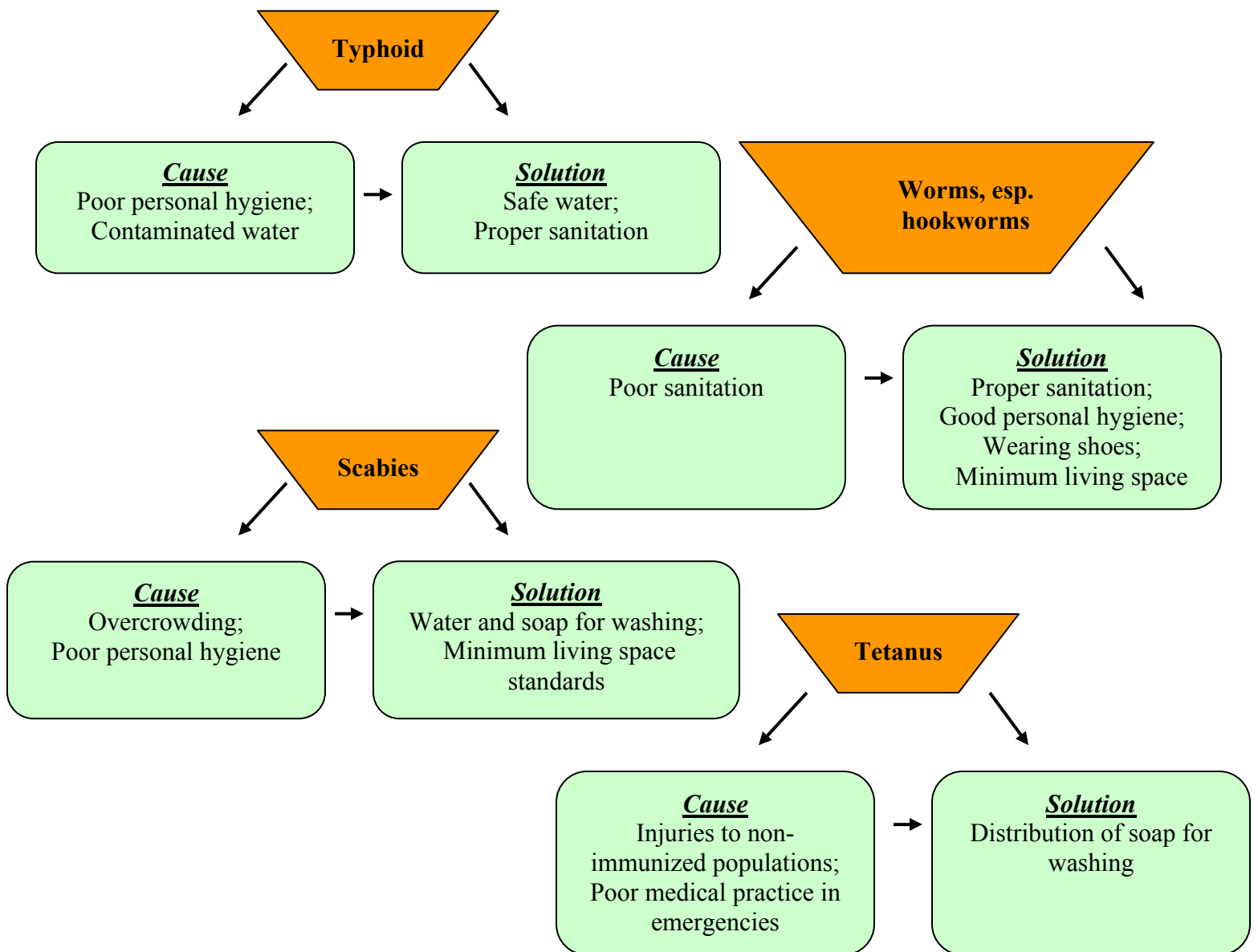
Soap reduces disease-causing bacteria by lowering the surface tension in water, in turn allowing it to take hold of bacteria on the skin's surface. Water alone will often only wet the skin then run off. Similarly, pre-moistened towelettes are useful for removing bacteria on a limited surface area, but their small size means that they quickly become ineffective once covered in dirt and grime.

Unlike soap bars, hand-wipes (which are currently included in HDRs) can be used only once. Bar soap is recognizable world-wide, as opposed to pre-packaged hand-wipes which, according to one study in Afghanistan, were eaten by the recipients thinking they were some form of medicine.⁷¹ Indeed, in the past two years alone the International Committee of the Red Cross has distributed soap to victims of humanitarian emergencies in the Democratic Republic of Congo, Sierra Leone, Guinea, Russia, Mali, Eritrea, Palestine, Ethiopia, Yugoslavia, the Northern Caucas, Liberia, Indonesia, Nigeria and Sri Lanka.⁷²

Personal hygiene and soap use are among the major control mechanisms for the spread of diseases most common in complex emergencies. According to the United Nations High Commissioner for Refugees (UNHCR), diarrheal diseases which are most often caused by overcrowding, contamination of water and food and a lack of hygiene can be prevented through the distribution of soap, good personal and food hygiene, safe water supply and sanitation, adequate living space and public health education. Soap can also mitigate the effects of numerous common health problems among refugee populations. Although most suppliers offer 40g bars of individually wrapped soap for ~\$0.12/bar, it is likely that a large-scale procurement could be negotiated for far less.⁷³

Some may argue that bar soap is useless to populations without access to water. However a quick study of the major emergencies in which HDRs were distributed shows that water was readily available in all but one case (Rwanda). Even dirty water will wash away bacteria when used with the surfactants in bar soap.

Common Refugee Health Problems:



If bar soap were substituted for the spoon, hand-wipes and cayenne pepper packet in HDRs, the packets that reach refugees could curb killer diseases in complex emergencies. The pepper is nutritionally negligible and unfamiliar to many recipient cultures, as are pre-packaged hand-wipe. The spoon, while aesthetically

pleasant, is completely irrelevant for prepared foods that can easily be eaten straight from the package. Indeed, the addition of soap may actually lower the production price of HDRs while increasing their application significantly. And for populations lacking water, a spoon, pepper and hand-wipe are equally irrelevant to survival.



UNHCR distribution of soap, plastic sheeting, and jerry cans at Jolozai, Afghanistan (April 2001)

Micronutrient Sprinkles

In 1996, UNICEF recognized the need for a new preventative method for combating anemia (iron deficiency) and related micronutrient diseases in the developing world. Based on the techniques used to combat micronutrient diseases in the developed world, namely fortification of commercially available foods with no visible effects to the food, several groups began pursuing novel projects to develop micronutrient supplements. The most successful result to date is micronutrient sprinkles, developed by the Hospital for Sick Children at the University of Toronto.



Standard 0.5g packet of micronutrient sprinkles⁷⁴

Micronutrient sprinkles, known commercially as “Supplefer Sprinkles,” are single-serve sachets of tasteless dry powder. The powder consists of iron and vitamin C encapsulated in a soy lipid. Each packet costs \$0.03 - \$0.05, and sprinkles can be mixed into any food.⁷⁵ The lipid protects the iron source (ferrous fulminate) from changing the color, smell or texture of the food. Sprinkles contain no alcohol or pork products, and can thus be mixed into kosher or halal foods.

Micronutrient diseases such as anemia commonly afflict populations in developing countries who rely on unfortified foods, cereals (low in iron) as a primary

component of the diet, and where food diversification is impractical. The CDC has also published materials blaming iron deficiency on a lack of understanding among policymakers regarding the impact of iron deficiency on children's cognitive development, high anemia prevalence attributed to non-nutritional causes (parasites and genetics) and unfounded concerns about increasing iron intake.⁷⁶

In contrast, developed nation diets tend to be higher in meats and vitamin C rich foods. Infant foods are generally fortified in developing countries and in the United States the WIC program (Women, Infants and Children) targets children under five for special supplementation. CDC experience with micronutrient supplementation in Gaza, Russia and China also points out that micronutrient deficiencies are often perceived as an illness and supplements as a medication to be taken only when sick. "Free" supplements were not valued in China, and support for preventative supplementation increased when parents were informed of the consequences of micronutrient deficiencies.⁷⁷

Common Micronutrient Deficiencies⁷⁸

Micronutrient			
	Function	Food Sources	Deficiency
Vitamin A	<ul style="list-style-type: none"> • Maintain healthy vision • Plays a role in growth, reproduction and functioning of the immune system. 	<ul style="list-style-type: none"> • Foods of animal origin including milk products, margarines, egg yolk, liver and fish liver oils. • Carotenes are found in dark green leafy vegetables, deep yellow vegetables, tomatoes and yellow fruit. 	<ul style="list-style-type: none"> • Night blindness leading to bitot's spots and later xerophthalmia. • Lowered immune response, leading to a lowered resistance to infection. • Vitamin A deficiency is commonly found in southern and eastern Asia and parts of Latin America.
Vitamin D	<ul style="list-style-type: none"> • Aids in the absorption of calcium and phosphorus • Regulation of bone mineralization. 	<ul style="list-style-type: none"> • Fatty fish, eggs, liver, butter and fortified milk and margarine. 	<ul style="list-style-type: none"> • In infants and young children, vitamin D deficiency may lead to rickets, a condition resulting in bone deformities. • In adults, deficiency may result in osteomalacia, a demineralization of bone affecting the spine, pelvis and legs.
Vitamin E	<ul style="list-style-type: none"> • Involved in maintaining the integrity and function of cellular membranes. • Thought to play a role in the prevention of oxidation of fatty acids contained in cell membranes. • Thought to be an antioxidant, potentially capable of preventing the actions of free radicals. 	<ul style="list-style-type: none"> • Most commonly found in vegetable and cereal seed oils. • Also found in small amounts in eggs, fish and meat. 	<ul style="list-style-type: none"> • May lead to hemolytic anemia, edema (water retention), elevated platelet count, red blood cell structural changes and skin lesions. • Adults are rarely deficient, however premature babies may be at risk of deficiency due to poor placental transfer and absorption from the gut.
Zinc	<ul style="list-style-type: none"> • Co-factor for numerous enzymes involved in metabolism and cell growth. • Sexual maturation, wound healing, appetite, sense of taste and smell and skin integrity. 	<ul style="list-style-type: none"> • Richest sources of zinc include red meats, liver, fish, eggs, milk, nuts and legumes. • Although zinc is present in vegetable matter, it is less available as it is bound by phytates, which are found in many of these foods. 	<ul style="list-style-type: none"> • May lead to growth faltering, delay in sexual maturation, mental lethargy and skin changes. • Zinc also plays a role in maintaining immunity (T-cell function).

Vitamin B1 (Thiamin)	<ul style="list-style-type: none"> Part of a coenzyme (a compound that aids enzymes in activating reactions) involved in energy metabolism reactions. Also involved in nerve transmission. 	<ul style="list-style-type: none"> The richest sources of thiamin include yeast, wheat germ, pork, organ meats, liver, eggs, cereals, berries, green leafy vegetables, nuts and legumes. 	<ul style="list-style-type: none"> Milling grains removes portions rich in thiamin. Therefore, in populations where white rice is a staple, it is important to get thiamin from other sources. Thiamin deficiency is known as “beriberi.” “Dry beriberi” includes paralysis and muscle atrophy. “Wet beriberi” is characterized by congestive heart failure, cardiac dilation and serious edema (swelling due to water retention). In infants, beriberi results in cardiac failure.
Niacin	<ul style="list-style-type: none"> Important part of enzymes involved in energy metabolism. Involved in skin, gastrointestinal system and nervous system maintenance and function. 	<ul style="list-style-type: none"> May be synthesized from the amino acid tryptophan with the aid of vitamin B6 in the body. Also contained in foods such as liver, meats, fish, whole grain and enriched cereals, beans, peanut butter, nuts and peas. 	<ul style="list-style-type: none"> Niacin deficiency may occur in individuals consuming diets based on corn, where tryptophan is limited. Deficiency is known as “pellagra,” including fatigue, anorexia (lack of appetite), irritability and depression. In parts of the body exposed to sunlight, a scaly dermatitis (skin irritation) may occur. In addition, glossitis (inflammation of the tongue), soreness, burning sensation and ulceration of the mouth may occur. Diarrhea and dementia occur in more severe forms, resulting eventually in death.
Vitamin B6	<ul style="list-style-type: none"> Required for protein metabolism. B6-enzymes are involved in the creation of certain neurotransmitters and the conversion of tryptophan to niacin. 	<ul style="list-style-type: none"> Meat, fish, poultry, organ meats, legumes, grains, certain fruits and vegetables. 	<ul style="list-style-type: none"> B6 deficiency in infants can lead to convulsions and irritability. Dermatitis (skin irritations), glossitis (inflammation of the tongue), mouth lesions, depression and confusion may also be present.
Vitamin B2	<ul style="list-style-type: none"> Component of several enzymes involved in energy metabolism. Required for tissue growth and maintenance, particularly the eyes. 	<ul style="list-style-type: none"> Organ meats, milk, green leafy vegetables, eggs, enriched cereal products, meat and cheese. 	<ul style="list-style-type: none"> Glossitis (inflammation of the tongue), angular stomatitis (lesions around the mouth), eye problems, dermatitis (skin irritations), itching and burning.
B12 (Cobalamin)	<ul style="list-style-type: none"> Required for folate metabolism, cell division and replication. Involved in the metabolism of certain amino and fatty acids. 	<ul style="list-style-type: none"> Found almost exclusively in foods of animal origin, including organ meats, milk and eggs. 	<ul style="list-style-type: none"> Where B12 is deficient, folate deficiency may also occur. Anemia may be due to B12 and/or folate deficiency. Glossitis (inflammation of the tongue) and gastrointestinal disturbances may occur. Neurological problems may result such as parasthesia, unsteadiness, poor muscle coordination, moodiness, forgetfulness, depression, hallucinations and psychosis. Deficiency may occur due to inadequate intake (such as in a vegan diet) or where individuals can't afford foods of animal origin as in many developing countries.

Folate	<ul style="list-style-type: none"> Involved in DNA synthesis, cell division and replication. The active form in the body is involved in certain biological reactions including amino acid conversions. 	<ul style="list-style-type: none"> Liver, organ meats, yeast, dark green leafy vegetables, legumes, nuts, whole grain cereals, eggs and fruit. 	<ul style="list-style-type: none"> Deficiencies result in fatigue, insomnia, and anemia. Deficiency results in anemia, glossitis (inflammation of the tongue), gastrointestinal disturbances, diarrhea, malabsorption and mood changes. Deficiency during pregnancy may result in neurotube defects in newborns. Folate deficiency is particularly high in developing countries such as India, especially in pregnant and lactating women.
Vitamin C	<ul style="list-style-type: none"> Involved in the formation of collagen, tissue repair, and wound healing, the synthesis of several hormones and reactions. Ascorbic acid solubilizes copper and iron, putting them in a form that can be more easily absorbed in the body. May also play a role in membrane permeability, leukocyte function, and prevention of histamine accumulation in the body. 	<ul style="list-style-type: none"> Black currants, citrus fruits, other fruit and raw vegetables. Prolonged heating or aging can significantly reduce the amount of active vitamin C available from foods. 	<ul style="list-style-type: none"> Vitamin C deficiency leads to “scurvy,” characterized by bleeding gums, loose teeth, swollen tender joints, hemorrhage, muscular aches and pains and irritability.
Copper	<ul style="list-style-type: none"> Cofactor for a series of enzymes required for reactions in energy metabolism, formation of skin pigment, formation of tissue, synthesis of neurotransmitters, in the mobilization and transport of iron and numerous other reactions. 	<ul style="list-style-type: none"> Oysters, nuts, liver, kidney, legumes, and whole grain cereals. 	<ul style="list-style-type: none"> Copper deficiency leads to anemia and connective tissue damage. When the connective tissue is damaged, hemorrhage can occur leading to death. Severe forms of malnutrition may also lead to copper deficiency. Copper deficiency has been found where infants have been fed modified cow’s milk or formula low in copper.
Iodine	<ul style="list-style-type: none"> Iodine is a component hormones involved in energy metabolism, thermoregulation, protein synthesis, reproduction, growth, physical and mental development, neuromuscular function and red blood cell development. 	<ul style="list-style-type: none"> The iodine content of food is dependent on the iodine found in the environment. Seafood and seaweed are good sources. Meat, milk and eggs may also be good sources depending on the content found in the animal feed. Coastal areas tend to have soils with higher iodine content as opposed to inland areas. 	<ul style="list-style-type: none"> Iodine deficiency results in goiter (an enlargement of the thyroid gland) due to over-stimulation by the hormones T4 and T3. Severe deficiency results in myxedema, a dry waxy-type swelling with deposits of mucoprotein under the skin. When iodine deficiency occurs in the womb, cretinism (retarded mental development), lowered metabolic rate and/or dwarfism may occur. Deficiencies are common in developing countries where no source of iodized salt is available or accessible.

Sprinkles are currently designed as a daily iron and vitamin C supplement, but other micronutrients could be added. Individually pouched in four layers of paper, foil and plastics, each sachet remains stable for one to two years. This requires overages of the vitamins of 20% - 25% over label claims (to account for processing, packaging and degradation over time. Research is ongoing regarding the fortification of sprinkles based on UNICEF recommended daily allowances for infants and children 6 – 24 months. Currently, prevention of anemia requires only one sachet per day. Treatment may require two to three sachets per day.

Supplefer Micronutrient Formulation⁷⁹ <small>(UNICEF recommended formulation, based on 100% of RDA for 13-24mo of age; iron does based on absorbed needs of infants 6 – 12 mo.)</small>	
<u>Micronutrient</u>	<u>Dosage</u>
Vitamin A	375 mcg equivalents
Vitamin D3	5 mcg
Vitamin E	6 mg a-tocopherol equivalents
Vitamin B1	0.5 mg
Vitamin B2	0.5 mg
Vitamin B6	0.5 mg
Vitamin B12	0.9 mcg
Folate	150 mcg
Niacin	6 mg
Vitamin C	35 mg
Iron	30 mg
Zinc	5 mg
Copper	0.6 mg
Iodine	50 micrograms

Efficacy studies have been conducted (or are currently underway) among iron-deficient populations in Canada, Ghana, China, Vietnam, Mongolia, Pakistan and Benin. Among populations that generally rely on iron drops for supplementation (and where compliance remains low as a result), sprinkles may prove an effective

alternative. The Ghanaian study found sprinkles to be as effective at combating iron deficiency anemia as traditional iron drops, and were far easier to use. Studies of multiple micronutrients included in sprinkles are ongoing in Ghana, to addressing concerns regarding nutrient interactions.⁸⁰

One alternative methods for micronutrient supplementation is the “foodlet.” The foodlet is a micronutrient-enriched wafer, composed of compressed and sweetened dry milk powder fortified with 100% of the recommended daily allowance of ten vitamins and four minerals for infants and small children. Foodlets have several advantages over traditional supplementary syrups including lower shipping costs and higher stability in adverse conditions. The tablets can also be dissolved in liquid. Foodlets costs roughly \$0.052 per tablet and are currently packaged in individual blister packs. Efficacy studies conducted in South Africa, Vietnam, Indonesia and Peru with results expected shortly. Like Sprinkles, foodlets are designed as a daily supplement and have a shelf life of one to two years.⁸¹



Child mixing micronutrient sprinkles into meal, Baotou city, Northern China⁸²

Because sprinkles have been the subject of more comprehensive clinical study and would probably be easier to direct towards children within the HDR, they are a more feasible product for inclusion in the packet than foodlets. Sprinkles can be mixed into foods without affecting taste, while foodlets are flavored. Foodlets are also delivered in a large pill-like form, and although it can be easily crushed, parents may be hesitant to give a large unfamiliar pill to their child.

Methods of Iron Supplementation⁸³

Sprinkles	Drops/Syrup
No taste or after-taste	Strong metallic taste
Does not stain teeth	May stain teeth
One dose per sachet - easy to use and overdose unlikely	Use dropper to measure quantity – may lead to overdose if measured incorrectly
Light packet, easy to transport	Heavy, especially glass bottles. Expensive to ship and transport
Iron encapsulation to avoid gastrointestinal discomfort	Iron may cause gastrointestinal discomfort, stomach aches
Other vitamins/minerals may be added to formulation	Contains only iron, no other vitamins or minerals
Shelf-stable	Unstable in light and heat

Mass distribution of sprinkles through HDRs would face certain obstacles. Micronutrient sprinkles are currently designed to be taken daily, and when dealing with children affected by micronutrient deficiency related diseases, two to three daily sachets are recommended. Studies are ongoing in Northern China to investigate the efficacy of once-weekly supplementation. Toxicity would require ingestion of over 20 sachets, a remote but entirely possible threat when thousands of HDRs are dropped over a select community. Familiarity with the product would also be a

challenge to correct utilization, although anecdotes from Afghanistan indicate that powdered components of HDRs (such as desiccant packs, salt and pepper) are generally understood to be spice packs. To effectively direct the sprinkles at infants and children would require creative pictorial labeling. Sprinkles are most effective when mixed with cool or temperate solid foods (they tend to float to the top of liquids and the lipid coating can melt above 60°C), and this would need to be indicated as well.

Of course, any successful micronutrient supplementation program requires national (if not international) concerted support, which cannot be achieved through the distribution of HDRs in complex emergencies. National programs must adopt supplementation as policy, and encourage food supplements in complementary feeding programs. The international community must work to develop low-cost and easy-to-distribute micronutrient supplements, ideally along the lines of the oral rehydration salts program.

Nevertheless, the low cost and high health yield of micronutrient sprinkles makes this a product well worth considering for addition to HDRs. The image of the sprinkles themselves as a candy or treat may help direct the product towards more vulnerable infants and children. A single dose of iron and other select vitamins may stave off crippling (and entirely preventable) micronutrient diseases for a few extra weeks before a family can return to a more stable environment. For three cents per pouch and 28oz, micronutrient sprinkles could be the most valuable new addition to HDRs.

Oral Rehydration Salts (ORS)



50g ORS sachet⁸⁴

Since the late 1970s, global diarrheal mortality rates have been reduced by nearly 70%. Some of the interventions that led to this dramatic decline include improved hygiene, access to clean water, promotion of breastfeeding and measles vaccinations, safe fecal disposal plans and vitamin A distribution. But no single strategy has had a greater effect on the reduction of diarrheal deaths than the introduction of oral rehydration salts (ORS).

ORS has helped reduce the number of diarrheal deaths of children under five from 4.6 million in 1980 to 1.5 million in 1999. While it is difficult to say how many of those deaths were averted due to ORS, there have been no comparably large declines in other childhood illnesses over that same period, and ORS was introduced and widely distributed and promoted beginning in 1980. Micro-level studies conducted in the Philippines, Brazil, Egypt and Mexico report similarly dramatic ORS-related reductions in diarrheal deaths.⁸⁵

ORS is a simple, safe and inexpensive combination of glucose, sodium, potassium, citrate and chloride. It comes in a powdered packet form and is diluted in purified water immediately prior to use. It works by replacing fecal losses of water and salts in the body, but does not (generally) reduce stool volume or shorten the duration of illness. Modified ORS solutions can also be prepared using eight teaspoons of salt and one teaspoon of sugar dissolved in one liter of water.

Non-medical personnel, volunteers and family members can safely administer ORS in emergency situations. This was first demonstrated during the 1971 India-Pakistani war, during which unsanitary and dangerously overcrowded refugee camps were created in both countries. These conditions bred epidemics of cholera and related diarrheal diseases. Overwhelmed camp administrators abandoned medically supervised ORS dispensation, and simply began distributing prepared ORS solution to family members while instructing them on how to use it to treat children with diarrheal disease. Corresponding death rates in camps using ORS were roughly three percent, compared to 20 – 30 percent in camps using only IV therapy.⁸⁶

A revised ORS solution was introduced by WHO and UNICEF in late 2002 that, at low cost, reduces the need for IV therapy by 33 percent. This new formulation also reduces stool output by about 20 percent and the incidence of vomiting by 30 percent. These improvements were achieved by reducing the osmolarity of the solution (reducing sodium and glucose concentrations).⁸⁷ ORS is provided in dry powdered form, and must be mixed in boiled and cooled (or otherwise purified) water to different concentrations depending on the age and weight of the patient.⁸⁸

ORS, which in appearance is similar to powdered drink mix, could be added to HDRs for roughly \$0.05 per packet.⁸⁹ Like most essential drugs, ORS is no longer patented and is produced generically for far less in many developing countries. 28-gram ORS sachets would take up insignificant amounts of additional space, and if correctly used would save lives. Unfortunately, while ORS would be a wonderful product to provide to all victims in complex emergencies, there are practical hurdles that make global unsupervised distribution challenging.

ORS preparation, while relatively simple, presents a hazardous opportunity for caregivers to inadvertently harm a malnourished child through improper dilution. Similarly, caregivers may completely substitute ORS (seen as a ‘superior’ western food) for breastfeeding or other appropriate weaning foods. Caregivers may not know how to provide ORS when a child is vomiting, and while they should simply re-administer ORS every ten minutes, they may become dissuaded and refrain from ORS feeding. Prepared ORS, if not used within 24 hours, is likely to attract bacteria that could further harm an already weakened child. ORS mixed with fruit juices, milk or other electrolyte-containing beverages may disrupt the chemical balance of the beverage, making it less effective. Finally, there is an increased risk of symptomatic hyponatraemia (abnormal decrease in blood sodium concentrations) with new ORS that requires careful monitoring, especially in adults suffering from cholera.⁹⁰

The greatest challenge to the unsupervised provision of ORS may be labeling and recognizability. Studies from several countries indicate that the majority of health workers globally are not familiar with proper prescription of ORS. Studies by the WHO in South Asia have shown that health workers do not see dehydration as a

primary treatment problem associated with diarrhea, and instead seek to treat the diarrhea itself with potentially dangerous antidiarrhoeal drugs. Dehydration is also the priority for most mothers and conventional ORS solutions do not control diarrhea itself. It is therefore likely that, unless distributed by a medical professional, ORS inside HDR packets would be unfamiliar to recipients.⁹¹

The UN General Assembly Special Session on Children in May 2002 pledged to reduce global deaths from diarrhea by 50 percent by 2010. ORS is the most powerful tool in that fight. Globally, 21 percent of all diarrheal cases were treated by ORS in 1993, and in 1991-1992 roughly 800 million ORS packets were distributed.⁹² To reach the 50 percent reduction goal, member nations will rely on widespread education and advertising campaigns to familiarize populations with ORS. Once ORS preparation is globally recognized and proper dilution methods understood, ORS packets should be considered for addition to HDRs. They are inexpensive, lightweight, and unquestionably vital in reducing unnecessary infant and child deaths. Diarrheal diseases are one of the top killers in complex emergencies, and ORS can stop it. HDRs could someday serve as a powerful medium to provide ORS to populations in need.

Condoms

“AIDS can be prevented. Anti-retroviral drugs can extend life for many years. And the cost of those drugs has dropped from \$12,000 a year to under \$300 a year -- which places a tremendous possibility within our grasp. Ladies and gentlemen, seldom has history offered a greater opportunity to do so much for so many.”

- U.S. President George W. Bush
State of the Union, 28 January 2003

The mass migrations and communal breakdown that often accompanies hunger in complex emergencies also destroys the networks that protect vulnerable members of society. In these situations, women and girls with few resources, tasked with caring for children while males are absent or deceased, are particularly susceptible to rape and sexual exploitation. According to the Joint United Nations Programme on HIV/AIDS (UNAIDS), mobility also creates an imbalance in the ratio of men and women, and the sharing of sex partners becomes normal.⁹³ With the addition of condoms, HDRs may provide a means of reducing new HIV infections in these dangerous situations.

The major killers in most complex emergencies are diarrhea, measles, malaria and acute respiratory infections complicated by malnutrition and shock. But underlying these diseases, several of which may be opportunistic infections, is HIV/AIDS. Roughly 40 million people were living with HIV/AIDS in 2001. Half of all new infections occur among people age 15 – 24, making up 1/3 of the total population living with the disease. In the most affected countries, half of all fifteen

year old children will eventually die of the disease. Including condoms in HDRs has the potential to mitigate the spread of HIV/AIDS and save lives.

The joint UNFPA/UNHCR/WHO guide “Reproductive Health in Refugee Situations – an Inter-Agency Field Manual” (1999) lists several techniques for short-term interventions to prevent the spread of HIV/AIDS. While most require training and on-the-ground involvement (i.e. enforcing respect for universal precautions against HIV/AIDS or distribution of clean birthing kits), condom distribution is a key element of every program. Condoms not only prevent unwanted pregnancies and HIV infections, but are also effective in mitigating the spread of sexually transmitted diseases which can create open sores and make HIV infection more likely in the future.

No contraceptive measures (aside from abstinence) are as effective at stopping the spread of HIV/AIDS as condoms. Diaphragms require professional fitting. Female condoms, while giving more power to the women to limit pregnancy and the spread of sexually transmitted diseases, are often unfamiliar and are unlikely to be used effectively by most disaster-affected populations without accompanying educational programs.

This need for condoms in developing countries ravaged by HIV/AIDS is woefully unmet. The world’s poorest countries need between eight and ten billion condoms per year to help stem the spread of the disease, and that requirement is expected to double by 2015. Currently, according to the United Nations Population Fund (UNFPA), these countries receive only 950 million condoms per year. The

U.S., which gave third world countries 800 million condoms in 1990, donated only 360 million in 2000.⁹⁴

UNFPA and the International Federation of the Red Cross and Red Crescent Societies (IFRC) have been successfully distributing condoms in emergency situations for years. Condom machines have been installed in public locations in Sri Lanka and Benin. As of 2001, approximately 1 million condoms have been sold to UN peacekeepers around the globe. UNFPA has engaged in creative social programming, marketing a brand of condoms in war-ravaged Sierra Leone under the name “Bullet Proof.” Condoms have been distributed to street children in Ethiopia, and the IFRC teamed up with the World Scout Movement to distribute condoms and HIV/AIDS prevention information to Ghanaians ages 14 – 30.⁹⁵

American-made condoms are currently purchased in bulk by USAID for \$0.04 each. Their volume is negligible when included in HDR packets. Pictorial instructions could be printed on each condom package to overcome unfamiliarity and illiteracy issues. And even if two thirds of recipients fail to use the condoms, for those few women who receive them in their ration and actually use them, it very likely could save their lives.



There are, unfortunately, several practical problems with condom distribution through HDRs. If used improperly, condoms will do little to stop the spread of the disease – and for populations unfamiliar with contraceptives it is unlikely that they will be used at all. It is also not clear whether latex condoms will decay over the three-year lifespan of the packets.

Condom distribution may violate cultural and religious taboos, particularly in Catholic countries. In fact, religious leaders in Indonesia and Russia recently shut humanitarian condom distribution programs.⁹⁶ Due to the universal nature of HDR customers, packets can not be tailored to each emergency.

In post-modern conflict, sex has been used as a weapon, as has impregnating women with children of the enemy, to undermine social structures and community cohesion. Seen most recently during the genocides in Rwanda and Kosovo, rapists are unlikely to take into consideration the health of the woman and use a condom. In an interesting twist, the NGO CARE found that in refugee camps in Ngara, Rwandan refugees were unwilling to use condoms because they wanted to have more children following the 1994 genocide.⁹⁷

Even in places where there are no cultural or political barriers to condom use, there are individual obstacles that must be overcome. To get people to use condoms, according to a recent study in *The Lancet*, “they need to be easily accessible, perceived as being fun, and easy to use. New users, especially men, need to be taught correct use and given confidence to use a condom without anxieties about it affecting performance.” The study reviewed several types of condoms for ease of use, sensitivity and breakage – all of which are crucial to ensuring recipients use the condoms.⁹⁸

Additionally, a recent United Nations study on myths surrounding condom use found widely accepted rumors that most condoms have holes, contain the AIDS virus, and that the wrong size can “cause the penis to break off.”⁹⁹ The solution, according to the UN study, is increased education, making condoms a “valued” asset

which must be purchased (not distributed free of charge) and “social marketing” which associates condoms with sexy and funny concepts. Free condom distribution in food packets probably fails to meet all of the above criteria.

Of all challenges faced by recipients, the greatest difficulty to condom distribution may be domestic politics. The Bush Administration has recently begun a dramatic international anti-contraceptive campaign. According to Assistant Secretary of State Gene Dewey (at a UNPF conference in Bangkok this past December), the U.S. “supports the sanctity of life from conception to natural death.”¹⁰⁰ At the same UNPF conference, the U.S. tried to block an endorsement of condom use to prevent AIDS. The Administration also tried to block endorsements of “reproductive health services” and “reproductive rights.” Although the President’s 2003 State of the Union speech may indicate a new activism in the fight against HIV/AIDS, recent history offers little reassurance.

The unconscionable anti-condom campaign was based on the theory that condom distribution encourages adolescent sex. It ignores the fact that teenage girls largely contract the disease from older men, and have neither the free-will to reject sexual advances or access to other means of contraception. Unfortunately, the lost lives of women in poor countries is a price the Republican administration is willing to pay in order to win support from far-right religious constituencies at home.

Aside from domestic politics, the inclusion of condoms may be diplomatically untenable so long as a single HDR continue to be produced for all regions of the world. If, however, HDR packs are eventually tailored to different regions of the world, condoms should be considered. If used, they can help to halt

the spread of HIV/AIDS and save lives at extremely low cost. Additionally, if the American government is willing to take a principled stand against the spread of HIV/AIDS and pressure the international community to promote universal condom use, then HDRs with condoms would pass a powerful message. Until then, humanitarian agencies must continue the distribution of condoms, along with condom education programs, to vulnerable populations around the globe.

Kelvalite ‘Space Blankets’



2 oz kelvalite space blanket

In recent years, extreme cold weather has been a major contributor to death and dislocation in Georgia, Afghanistan, Mongolia and Kosovo. Populations affected by complex emergencies often lack shelter materials against the weather and appropriate cold weather clothing. Exposure to cold weather leads to hypothermia, increases nutritional requirements (often in situations of constrained food accessibility), and destroys livestock.

‘Space blankets’ are lightweight, inexpensive kelvalite cloths used to warm individuals in extremely cold environments. Weighing 2oz. and roughly the size of a pack of cards, space blankets would be an inexpensive, life-saving addition to HDRs. Kelvalite is an ultra-insulating material coated on both sides with heat-reflective metallic surfaces. According to Harrison Insulating Services, a major producer of kelvalite products, “The inner coating reflects the vast majority of radiated body heat, warming the patient in a progressive fashion. The outer layer forms an impermeable barrier to rain and wind, as well as reducing heat loss by evaporation.” 500 blankets can be purchased for \$0.88 each, but the price for bulk purchase may be negotiated far lower.¹⁰¹

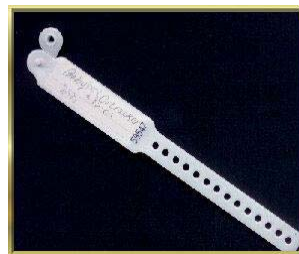
Space blankets are highly visible and radar reflective, and can serve to assist military and relief organizations track the movement of refugees. Lost refugees have been a serious concern in Guinea, for example, when UNHCR declared 420,000 Sierra Leonean refugees missing in 2000.¹⁰² The refugees fled following rebel attacks on towns in Southern Guinea and were rediscovered nearly ten days later, without food or medical care. Refugee tracking was also a decisive military factor in Kosovo, when commanders made targeting decisions based on refugee locations.

The blanket can be used as a short-term shelter or to cover shelter openings, although 'space blankets' are not a replacement for heavy-duty tarps distributed by relief agencies. Blankets may be used to keep animals warm when sick. They may be hung like a bucket to collect rainwater. Finally, space blankets provide a clean layer of insulation against the cold ground as refugees lay down to sleep.

The greatest drawback to space blankets is cost. At \$0.88 each, the blankets would account for roughly 20% of the cost of the current packet. The added weight would be negligible since contractors have leeway to define weight themselves and packets are currently loosely packed with enough space available for a 2oz. package. However, additional costs could be offset by the money saved on aircraft and man-hours that otherwise need to be spent searching for mobile refugee populations. Additionally, being highly visible, space blankets (printed with "Gift of the People of the United States of America") would play an important role in winning the hearts and minds of populations affected by conflict. They are aesthetically pleasing for press photographers, and could therefore help maintain domestic and international support for certain military interventions.

Identification Bracelets

A grave concern during refugee flows and complex emergencies is the separation of families and communities. Children are often separated from parents and siblings during rapid forced migrations. Identification bracelets and permanent markers packed into HDRs could be used by parents to mark children and assist in post-emergency reunification.



Like in so many other refugee crises, family separation during mass migrations was a serious problem during the 1996 return of Rwandan refugees from Tanzania in 1996. The Red Cross reported that in mid-December 18,000 refugees per hour were crossing a narrow bridge into Rwanda. Although the Red Cross distributed pieces of yellow string to mothers so they could tie themselves to their children, roughly 1,000 children were separated from their parents in the crush.¹⁰³

Several types of identification bracelets could be added to HDRs for less than \$0.09 each. One-half inch vinyl bands, often used at concerts or festivals, are durable and lock quickly and easily with a plastic or metallic knob. They are quite durable and water-resistant, and according to manufacturers should last on the wrist of a child for at least four weeks. High-durability laminate wristbands are also made for law enforcement and military use, but sell for roughly \$0.30 each and are more difficult to apply.¹⁰⁴

Each packet would also need to include a permanent marker to mark the bracelet with a child or parent's name, home village, or other identifying marks. A

small permanent marker costs \$0.80, but pencils could be included for as little as \$0.02 each.¹⁰⁵ The U.S. government may be able to procure lower priced pens through prison industries or government-sponsored pen and pencil making firms such as “Industries for the Blind” in Wisconsin that produce “Skilcraft” writing implements for the federal government.

Identification bracelets, however, must overcome several obstacles before they are added to HDRs. Identification bracelets that must be marked by a parent requires a level of literacy among populations that may not exist. Locking wrist bracelets are unfamiliar to many cultures, and would therefore require detailed, non-verbal instructions on how they should be applied. Recipients may be concerned that marking children with a name or village of origin during conflict will identify them to an enemy as being of a particular ethnic, national or religious background.

Marking families would prove immensely useful when seeking to reunite communities and could reduce the number of vulnerable orphans following humanitarian crises. It may also provide a bit of the comfort and the stability so often lacking in emergencies. Further research and interviews with sample populations is required to determine if these risks outweigh the benefits associated with easier post-emergency family reunions.

Water Purification

In 1994, the failure to separate potable water and defecation fields in the Rwandan refugee camps in Goma fueled a massive cholera epidemic and led to outbreaks of deadly diarrheal diseases. As in so many other complex emergencies,

the lack of potable water was a primary cause of the unprecedented mortality rates in the camp.

Contaminated water is most often a problem following natural disasters when wells, aquifers, farmland, pipe networks and purification stations become polluted. A massive earthquake in Northern Pakistan at the end of 2002 and the floods in India last summer caused just such damage. Drought can also cause contamination problems as drainage and sewage systems fail to function, leading to stagnant water pools and contamination by human waste (see: Western Paraguay, October 2002). Of course, conflict-related water contamination is also common – in 2000, civilian water supplies in Grozny were polluted following years of Russian aerial bombing of oil pumping stations, refineries and reserves. A massive oil and water pond under and around the city – stretching more than 18 miles and up to 37 feet deep – made wells unpotable and seeped into farmlands and rivers.¹⁰⁶

The problem of polluted drinking water is amplified in populations with high rates of HIV/AIDS infections. Individuals with immunodeficient conditions are particularly vulnerable to opportunistic infections acquired through polluted water. Ideally, each HDR packet should contain a low-cost, easy-to-use method of water purification. Unfortunately, aside from boiling water, the chemical agents and filtering systems that could be used to purify water all require a level of training that cannot be included in a 36-ounce, \$4.50 HDR pouch.

The most effective means of purifying water is to bring the water to a rolling boil for several minutes. While the HDR does include a packet of matches and cardboard packaging that can be used as fire-starter, there is little else that the pack

can do to assist populations seeking to boiling water. Water can also be purified with bleach, iodine or chlorine, all used in minimal doses. Four drops of bleach or chlorine will purify one quart of cloudy water, as will ten drops of tincture of iodine.¹⁰⁷

Unfortunately, as the consumption of desiccant packs and hand-wipes in Afghanistan demonstrates, such chemicals could easily be confused as medicines. There is no universal symbol to indicate “For Water Purification Only” nor any way for populations in flight to measure one quart of water. Chemical purification may even give recipients the false — and dangerous — sense that they can drink otherwise polluted water without boiling.

One interesting alternative that requires additional study is to include osmotic sachets, developed in Bangladesh, inside HDRs. These sachets are filled with sucrose and placed in water for approximately five hours. The bags hydrate by osmosis. When placed in water containing coliforms and heterotrophic bacteria, the sachets successfully filter almost all the contaminants. Such a system could be ideal for flood recovery when all water is contaminated. The packets may also be made in a two-bag form, where one side of the packet hydrates and the other is filled with dried infant formula. The two sachets are then combined when osmosis is complete, making clean infant formula.¹⁰⁸ The problem with such sachets, however, is the time required to prepare the water and the training needed. Osmotic sachets, while ideal for stable populations facing natural disasters, are poorly suited to mobile victims.

SECTION VII: HDR Alternatives

In addition to modifying non-food contents of HDRs, there are more radical modifications to the HDR packet and HDR program that may improve their effectiveness in humanitarian emergencies. Chief among these alternatives are international MRE substitutions and NGO collection of airdropped HDRs. While not conforming to the cost-limited core assumption of this paper (\$4.50), these modifications are worth considering for future military relief efforts.

Regional Tailoring

Because HDRs must feed consumers from every culture and culinary background, their contents are limited to rather bland, vegetarian foods. Yet reports from Afghanistan indicate that even these meals made many recipients ill, perhaps due to unfamiliar spices or food mixtures. Regionally tailored HDRs, while more expensive to produce and perhaps more challenging to stockpile, should be considered for future relief efforts.

There are dramatic differences in the diets of habitants within each region. However, HDRs could be adapted to accommodate certain general tastes and preferences. Asian meals could have more curries and rice dishes. Middle Eastern and North African meals could include more chickpeas, and African meals additional maize. Adapting meals to local tastes not only increases the likelihood that the food will be consumed, but shows a respect for the local culture that may help to win friends in otherwise hostile situations.

The greatest barriers to regionally tailored meals are technology and inventory balance. Creating a prepared meal in a bag that can last for three years is a complex process, involving years of research by private, government and academic labs. The military would need to invest significant funds to provide distinct menus for each region (HDRs currently include seventeen different main-course menus). Of course, this research could be done in conjunction with MRE research, and the food packets could be used for both HDRs and MREs. Certain current HDR and MRE meals, such as the “bean and rice burrito” could also be adapted to specific regions, somewhat reducing the need for additional research.

A greater challenge to regionally customized HDRs, perhaps, would be in maintaining an inventory balance. HDRs are currently stockpiled in DoD installations on both coasts, warehoused in several locations in Europe and Asia, and are occasionally donated to countries in anticipation of natural disasters. For example, in May of 1999, WFP stockpiled more than one million HDRs in Macedonia, Greece, and Italy to be distributed inside Kosovo when overland routes become available.¹⁰⁹

Regionally tailoring HDRs would mean that enough meals would need to be available for disasters in each region. Without knowing where the next emergency will arise, these regional stocks would all need to be quite large. Unlike current HDRs, targeted HDRs would not be easily transferable between regions (providing Southern African meals to Eastern Europeans would create even greater cultural acceptability issues than those faced by HDRs today).

How would U.S. government determine the appropriate number of meals to prepare – considering that over 2.5 million HDRs were distributed in Afghanistan alone (and it is doubtful that DoD seriously planned for a large scale relief effort in Afghanistan prior to September 2001). What if WFP faced more than one emergency in a region at one time? Assuming the U.S. and WFP stockpiles only 2.5 million rations in each of five regions, the cost to purchase 12.5 million HDRs alone would be over \$56 million.

One other possible means of culturally tailoring rations would be to purchase and stockpile military rations from militaries in each region. French and German military rations could be distributed in Western Europe, Russian rations in Eastern Europe, Israeli rations for the Middle East (obviously re-packaged to obscure the country of origin), etc. While the U.S. would still need to prepare HDRs for regions without nutritionally acceptable military rations (Southern Africa, parts of Asia), stockpiled local military rations could mitigate some cultural familiarity problems.

The difficulty with this strategy is both in quality control and ensuring a constant supply of rations in times of emergency. It is unlikely, for example, that the Russian army would be willing to provide military rations to Chechen civilians who might then pass them on to rebel forces. Similar problems could arise with Indian rations for Pakistani noncombatants or Chinese rations for Indian civilians. And in the event of a regional catastrophe, military rations are likely to be used to feed military forces and not given out freely to civilians.

The U.S. would likely encounter the same nutritional problems feeding malnourished civilians with foreign military rations as they did with MREs, namely

that the calorie-dense meals are likely to be dangerous to the recipients. Each military meal would need to be adapted to meet shelf-life requirements and dietary restrictions that they may not currently be able to meet. Finally, the added expense of ensuring nutritionally appropriate, unspoiled foods are included in each ration batch (currently monitored by the American military's Veterinary Command) may outweigh any cost-saving benefits.

NGO Recipients of Targeted Drops

One alternative strategy for HDR air dropped delivery, which was widely criticized for reaching only those strong enough to acquire them, and for potentially delivering HDRs into minefields or other dangerous hazards, is to have NGOs on the ground willing to receive the packets. This has been done successfully in South Sudan for years, with WFP workers receiving air dropped bags of grain for distribution to the local population. This concept of NGOs collecting HDRs for redistribution was first suggested by the American NGO Partners International in Afghanistan. The idea is that NGOs would volunteer and coordinate with the military to receive air dropped rations in dangerous regions during conflict. These NGOs would then distribute the rations, presumably based on UNHCR guidelines.

NGO collection and redistribution poses several challenges. It clearly abandons any separation between military and humanitarian actors in conflict. The humanitarian worker becomes a legitimate target by receiving and redistributing military rations to local populations during conflict. It is unlikely that any military

would want to place humanitarian workers in that situation, knowing that they could provide no protection but may be liable for, or contribute to, the death of an aid worker in combat.

HDR distribution by air is also done in some cases (i.e. Kosovo) in order to remove foreign relief workers from the region, and adding additional American civilians to a conflict zone would certainly complicate targeting decisions. HDRs are individually distributed to avoid pallet-loads harming individuals on the ground and to ensure that large food stocks do not reach enemy forces. It is not clear how an NGO would collect thousands of individual HDR packets scattered over acres of land for eventual organized redistribution.

Leaflets

In response to the widespread critique that HDRs are printed in inappropriate languages (French, English and Spanish), the military should prepare leaflets in local languages to be dropped along with the HDR explaining the contents and purpose of each packet. Days after HDR drops began in Afghanistan, the military was dropping cartoon-like leaflets showing Afghan civilians collecting and eating from the yellow food pouches. The only word printed on these fliers was ‘*halal*’ in Arabic, meaning acceptable under Muslim dietary laws.

Such fliers could be prepared with additional writing and graphics (detailed descriptions of the meals inside, food contents, purpose of the meals, how to use moist towelettes, what not to eat inside the packet.) prior to an emergency and stockpiled in preparation for use. The minimal effort required to prepare 60 different

sheets that could be stored electronically and quickly retrieved and printed en masse would be minimal. If distributed along with HDRs, these leaflets would make progress in informing recipients of exactly what rations they were receiving.

Reduced Food Contents

One means of reducing the cost of HDRs in order to accommodate such life-saving products as space-blankets and simple medications would be to reduce the quantity of food in each pouch. The current requirement for 2100Kcal is low, but in emergencies coping mechanisms kick in and it is likely that a recipient will augment the HDR meal with additional local foods. Reducing the size of the main course may provide the extra money needed to include both soap and condoms, for example.

While this alternative should be considered, it requires further study of the life-saving value provided by added non-food items versus modified caloric intake. HDRs may be shared among family members, which would compound the impact of reduced calories per packet. HDRs are also a powerful tool in combating the essence of food insecurity and shock – they are the next meal for families with nothing left to eat.

SECTION VIII: Conclusions

The HDR is a good product when used to meet its limited intended mission: short-term feeding in emergency situations. It originated from good intentions, and as Secretary Rumsfeld said, those who receive the packets are probably extremely grateful for the assistance. But the defense community must continually work to strengthen the product.

According to the Humanitarian Assistance and Demining Directorate of the U.S. Department of Defense, the “nutritional value of HDRs should be reviewed every 3 – 5 years to incorporate any findings that may affect its ability to nourish and strengthen its remedial value.”¹¹⁰ This opens up the opportunity for the addition of soap, micronutrient sprinkles and other vital improvements to HDRs. The minor modifications suggested in this paper are financially modest, and although end-user studies are required, may significantly improve the life-saving potential of the product.

Equally important, an improved HDR will assist the military in the public diplomacy war that accompanies any mission abroad. It will demonstrate the American commitment to providing the best, and most effective product possible to noncombatants in need of assistance. Without continuous study and improvement, the effectiveness of the HDR will someday be questioned by the public, and updating the packet to address modern complex emergencies will help demonstrate the continued relevance of the packet.

The humanitarian daily ration is emblematic of the challenges faced by the military in post-modern conflict. It conflates military and humanitarian missions,

dropped from warplanes to feed noncombatants. The large-scale use of HDRs will be criticized in any conflict where it becomes a symbol of American military action, and the defense community must be prepared to meet these public challenges. The HDR is a product that, in the short-term, can save lives. It is not a substitute for mass ration distribution and other concerted humanitarian relief efforts, but is an integral part of the initial international response to emergencies. So long as the HDR is continually improved based on the best current data available, it will remain an effective product in mitigating humanitarian disasters.

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