



# Project Completion Report

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## GY0068

*Project Name:* **Basic Nutrition Program**

*Country:* **Republic of Guyana**

*Sector/Subsector:* **Social Investment**

*Original Project Team:* **Ashu Handa (RE3/SO3) Project Team Leader; Amanda Glassman (RE3/SO3); Ethel Muhlstein (RE3/SO3); Juan C. Perez Segnini (LEG); and Luis C. Antola (COF/CGY)**

*Project Number:* **GY0068**

*Loan Number (s), TC(s):* **1120/SF-GY**

*QRR Date:* **November 24, 2009**

*Final Approval Date of PCR:*

*PCR Team:* **Dorota Raciborska (consultant), Principal Author, and Members: Meri Helleranta (SCL/SPH), Ian Ho-A-Shu (SPH/CTT), Chena Bakarat (CCB/CGY), Leticia Ramjag (CCB/CGY), and Luis Tejerina (SCL/SPH).**



## Acronyms

<b>BNP</b>	Basic Nutrition Program
<b>CFNI</b>	Caribbean Food and Nutrition Institute
<b>FHP</b>	Family Health Programme
<b>FPU</b>	Food Policy Unit
<b>GAA</b>	GuyEnterprise Advertising Agency
<b>GDP</b>	Gross Domestic Product
<b>GoG</b>	Government of Guyana
<b>HCW</b>	health care worker
<b>HIES</b>	Household Income and Expenditure Survey
<b>HIPC</b>	Heavily Indebted Poor Countries
<b>HIS</b>	Health Information System
<b>HSDU</b>	Health Sector Development Unit
<b>IADB</b>	Inter American Development Bank
<b>IEC</b>	Information, Education, and Communication
<b>LAC</b>	Latin American and Caribbean
<b>M&amp;E</b>	Monitoring and evaluation
<b>MCH</b>	Maternal and Child Health
<b>MICS</b>	Multiple Indicator Cluster Survey
<b>MLHSSS</b>	Ministry of Labor, Human Services and Social Security
<b>MoH</b>	Ministry of Health
<b>MRS</b>	Micronutrient Survey
<b>NNS</b>	National Nutrition Strategy
<b>PAHO</b>	Pan-American Health Organization
<b>RHO</b>	Regional Health Officer
<b>SDI</b>	Social Development, Inc.
<b>SHV</b>	Senior Health Visitor
<b>SIMAP</b>	Social Impact Amelioration Program
<b>WHO</b>	World Health Organisation
<b>NPAN</b>	National Plan of Action on Nutrition

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1. Borrower Evaluation (Consolidated with Minutes from the Exit Workshop)
2. Summary of Final Evaluation
3. Project Profile for GY-L1028 *Expansion and Integration of Basic Nutrition Program*



## I. Basic Information

BASIC DATA (AMOUNTS IN US\$)							
<b>PROJECT NO:</b> GY0068	<b>TITLE:</b> Basic Nutrition Programme						
<b>Borrower:</b> Co-operative Republic of Guyana	<b>Date of Board Approval:</b> Dec-17-2002						
<b>Executing Agency (EA):</b> Ministry of Health	<b>Date of Loan Contract Effectiveness:</b> May-19-2003						
	<b>Date of Eligibility for First Disbursement:</b> Nov-17-2003						
<b>Loan(s):</b>	<b>Months in Execution</b>						
<b>Sector:</b>	* from Approval: 77						
	* from Contract Effectiveness: 72						
<b>Lending Instrument:</b> Investment	<b>Disbursement Periods</b>						
	<b>Original Date of Final Disbursement:</b> May-19-2007						
	<b>Current Date of Final Disbursement:</b> May-19-2009						
	<b>Cumulative Extension (Months):</b> 24						
	<b>Special Extensions (Months):</b>						
	<b>Loan Amount(s)</b>						
	* Original Amount: 5,000,000.00						
	* Current Amount: 5,000,000.00						
	* Pari Passu (if applicable): 84.49%						
<b>Poverty Targeted Investment (PTI):</b> Yes	<b>Disbursements</b>						
<b>Social Equity (SEQ):</b> Yes	* Amount to date: 5,000,000.00 (100%)						
<b>Environmental Classification:</b> C	<b>Total Project Cost (Original Estimate):</b> 6,410,000.00						
	<b>Redirectioning</b>						
	<b>Has this Project?</b>						
	Received funds from another Project <input checked="" type="checkbox"/> See p. 5.						
	Sent funds to another Project <input type="checkbox"/>						
	N/A <input type="checkbox"/>						
	<table border="1"> <thead> <tr> <th>To/From Project Number</th> <th>From Sub-Loan Number</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1604 / SF- GY</td> <td></td> <td>830,000.00</td> </tr> </tbody> </table>	To/From Project Number	From Sub-Loan Number	Amount	1604 / SF- GY		830,000.00
To/From Project Number	From Sub-Loan Number	Amount					
1604 / SF- GY		830,000.00					
	* Current amount adjusted for redirectioning: 5,830,000.00						
	<b>On Alert Status</b>						
	Is project currently designated "on alert" by PAIS: No						
	If yes then why is the project on alert (DO , IP Ratings and/or relevant PAIS indicators):						
	Comments on relevance of "on alert" status for this project (if applicable):						

Summary Performance Classifications				
DO	<input type="checkbox"/> Highly Probable (HP)	<input checked="" type="checkbox"/> Probable (P)	<input type="checkbox"/> Low Probability (LP)	<input type="checkbox"/> Improbable (I)
IP	<input type="checkbox"/> Highly Satisfactory (HS)	<input checked="" type="checkbox"/> Satisfactory (S)	<input type="checkbox"/> Unsatisfactory (US)	<input type="checkbox"/> Very Unsatisfactory (VU)
SU	<input type="checkbox"/> Highly Probable (HP)	<input checked="" type="checkbox"/> Probable (P)	<input type="checkbox"/> Low Probability (LP)	<input type="checkbox"/> Improbable (I)



## II. The Project

### a. Project context

#### Nutrition challenges in Guyana

The design of the Basic Nutrition Program (BNP) was built on the premises of national surveys on child malnutrition showing only moderate improvement in key indicators since 1993 and incorporated the learns from several earlier interventions for which evaluations results were available.

Ten years before the BNP was designed, Household Income and Expenditure Survey (HIES) survey (1993) estimated that over one third of Guyanese children under five years of age, in the poorest quintile suffered from mild to severe malnutrition.<sup>1</sup> Chronic malnutrition (low height-for-age or stunting) was predominant in the interior of the country where Amerindian communities are concentrated while acute malnutrition (weight-for-height or wasting), was found to be concentrated in the rural coastal area of the country. The incidence of both chronic and acute malnutrition was low in the first months of life, but increased sharply beyond six months of age. Child malnutrition strongly correlated with certain socioeconomic factors, such as the mother's low level of education, lack of access to drinking water, being a member of a large family, and living in female-headed households.

Table 1 summarizes the results of the four surveys conducted since 1993 and in which the results from MICS 2000 provided the starting point for the BNP. This atypical distribution of acute versus chronic malnutrition is divergent from that observed in other Latin American and Caribbean (LAC) nations and in Africa, where chronic malnutrition rates are generally five times greater than those of acute malnutrition. Also when compared to countries at similar levels of Gross Domestic Product (GDP), acute malnutrition rates are as high as those reported in countries that suffer from famine and food shortages.

Table 1		
Prevalence of malnutrition in children under 5 years of age in Guyana <sup>2</sup>		
Survey	Chronic Malnutrition (Height-for-age)	Acute Malnutrition (Weight-for-height)
HIES, 1993	12.4	7.7
MRS, 1997	10.1	11.5
MICS, 2000	10.8	10.6

***Micronutrient deficiencies.*** The 1997 Micronutrient Survey (MRS) identified iron deficiency anemia as the primary micronutrient deficiency in Guyana. Iodine and Vitamin A deficiencies were also identified, but at a much lower level. Iron deficiency anemia is one of the primary causes of maternal death and is also a major cause of childhood mortality. Other often irreversible consequences of iron deficiency are impaired physical growth, and potentially permanent effects on neurological functions involving cognition, emotional behavior, attention span and learning capacity. In adulthood, anemia results in decreased capacity for physical work, weakened immunity, and alterations in the reproductive process. In 1997, the MRS found 47.9% of children aged 0 – 4 years and 51.7% of pregnant women

<sup>1</sup> Malnutrition, even in its milder forms, can increase the likelihood of morbidity and mortality from a number of different diseases. It is associated with up to 56% of all childhood mortality and impairs early growth and cognitive development among children. Even in adults it can lower immunity levels and work capacity. Young children and pregnant women are most at risk of malnutrition.

<sup>2</sup> Rates shown are percentages of children at two or more standard deviations below the age- and gender-specific reference median. All four surveys have utilized the same criteria for data collection and analysis.



to be anemic.<sup>3</sup> Yet while oral iron tablets (ferrous gluconate) have been provided for pregnant women attending antenatal clinics, poor patient compliance with their tablets due to their side-effects has been a major constraint. In 2000, only 20% of pregnant women reported taking this form of iron.

### Past nutrition interventions

In Guyana, from the early 1990s and until 2008, the IDB and the World Bank supported a three-phase Social Impact Amelioration Program (**SIMAP I, II, III**). This was part of an effort to mitigate the effects of stabilization and structural adjustment policies on poor primarily rural households. SIMAP was considered “the cornerstone of the Government’s poverty alleviation activity,” and was administered under the Ministry of Labor, Human Services, and Social Security (MLHSSS). It employed a demand-driven approach to engage communities in the design and implementation of projects. Given the strong association between poverty and high levels of malnutrition, a food and nutrition program was financed under SIMAP, which distributed milk and rice, and provided nutrition education to pregnant and lactating women in targeted communities.

However, assessments conducted in 1997 and 2000 of the **SIMAP I** and **II** (Loans 912/SF-GY and 985/SF-GY) food distribution component found that it had no sustained effect on weight gain among infants or attendance of mothers at health centers. This was due to the type of foods distributed<sup>4</sup> and the lack of follow-up education and counseling. Further problems with implementation were attributed to lack of basic skills and training of community workers hired under the program. As a result, the milk and rice distribution subprogram was discontinued under SIMAP III (Loan 1085/SF-GY).

In 1998, the Government of Guyana (GoG) developed a National Plan of Action on Nutrition (NPAN), to address the malnutrition challenges facing the country. The NPAN set out priority areas for intervention, including food and micronutrient supplementation, fortification, complementary feeding, education, and management of sick children. A nutrition subprogram, redesigned based on the NPAN, was executed under SIMAP II (Loan 985/SF-FY).

Meanwhile, a decision was made to explore options for a nutrition program outside the scope of SIMAP. In 2001, the Multiple Indicator Cluster Survey (MICS) conducted by UNICEF, revealed that levels of wasting in coastal communities and of stunting in Amerindian communities of Guyana continued to be high. Motivated by these high levels of malnutrition, and the failure of SIMAP to address the problem, the Bank provided a grant in the form of a technical cooperation to develop the BNP in Guyana in 2002. In view of limited funding availability, the decision was taken to focus on the primary nutritional problems of young children and pregnant women, namely wasting (acute malnutrition) in young children (up to 24 months), and anemia in young children and pregnant women. Associated factors identified were poverty, poor child feeding practices, a lack of knowledge and understanding of the importance of good nutrition, and the failure of the primary health care system to deliver good quality and effective nutrition counseling. Thus the program’s emphasis was on nutrition education, promotion of breastfeeding, and reduction of acute malnutrition and iron deficiency. That same year, a loan agreement to finance a pilot Basic Nutrition Program (1120/SF-GY) was signed. The GoG agreed that the Ministry of Health

<sup>3</sup> CFNI / PAHO (1997). An Assessment of the Vitamin A, Beta-Carotene, Iron and Iodine Status in the Population (Ministry of Health, Guyana)

<sup>4</sup> The selected foods, rice and milk, are readily shared with other family members, thereby diluting the program’s impact on the target beneficiaries.



(MoH) would execute this more focused nutrition intervention, with emphasis on integrated management of mother/child nutrition and behavioral change.

### **The socio-economic context – poverty in Guyana**

Only five years before signing of the BNP loan in 2002, beginning with the December 1997 elections, the country faced significant external economic shocks (due to deteriorating export prices for primary products, rising petroleum prices, and loss of preferential markets), internal shocks (including El Niño drought followed by flooding), recurring political unrest, and an increase in violent crime, all of which undermined economic performance. As a result, real GDP growth stagnated, averaging only 0.4% during 1998-2001. In fact, Guyana's economy would have contracted if it had not been for increased social spending. But despite the government's substantial policy efforts, declining economic growth and export performance further deteriorated Guyana's macroeconomic indicators in 2001: the public sector deficit increased to 7% of GDP, the external current account deficit increased to 18.8% of GDP, and private investment decreased to a decade low of 8% of GDP, while the rate of inflation decreased to 1.5%.

Thus at the time when the BNP was approved the Bank's strategy with Guyana sought to support the country in achieving sustainable economic growth, improving governance and efficiency of public sector management, and strengthening social programs. It was closely aligned with Guyana's first Poverty Reduction Strategy Paper, completed in 2002. The pipeline also included a comprehensive Health Sector Program to improve the quality of primary care services and strengthen institutional capacity.

### **Food price inflation and its impact on program execution**

In recent years, macro-economic stability has been maintained and GDP growth improved to 5.1% in 2006, 5.4% in 2007, and 3.2% in 2008. During that same period, food price inflation was consistently higher than total inflation (in 2007, 20.6% vs 14.1%, respectively). Between January 2006 and March 2008, the price of six staple foods (wheat, rice, corn, vegetable oils, sugar, soybeans) increased by 30.1%. Although inflationary pressures declined in 2008 and 2009, the June 2007 to June 2008 inflation rate for Georgetown remained at 7.4% for all items, but was 14.7% for food, resulting in a serious challenge to Guyana's ability to maintain adequate food and nutrition security for its population. Children under six years and pregnant women in poor households tend to be particularly at risk during periods of food insecurity. Also problems of low birth weight in infants, already a concern, at 11% in 2000 and 18.6% in 2006, could be exacerbated. Of additional concern would be the impact of the significant increase in the price of powdered milk (121% between December 2005 and June 2008) on infant and maternal nutrition. In part, as a response to food price inflation, in the second half of 2008, the GOG requested the reallocation of unused funds from the Public Management Modernization Program (PMMP) (Loan 1604/SF-GY) to the BNP to avoid a financing gap towards the related interventions when financing from BNP would come to an end at the end of 2008.

## **b. Project Description**

### **i. Development objective**

The objective of the program was to reduce malnutrition among women and young children in poor communities in Guyana.





## ii. Components

The program focused on three areas of intervention: **(i)** improving child feeding practices, which included nutrition training for health centre staff, distribution of IEC materials, and a food coupon scheme, **(ii)** anemia reduction, which included purchase and distribution of micronutrients to young children and pregnant women;<sup>5</sup> and **(iii)** institutional strengthening and impact evaluation, which included the development and implementation of a management information system, an evaluation of the proposed interventions, and technical assistance and training. None of the components were restructured during program implementation.

**1. Child feeding (US\$3.5 million).** In order to increase the levels of exclusive breastfeeding during the first six months of life and improve complementary feeding between six and 24 months, this component financed **(i)** training in basic nutrition and communication skills for health centre staff, and an Information, Education and Communication (IEC) program at health care centers, via media, and in communities; and **(ii)** distribution of food coupons to increase economic access to appropriate weaning foods for the poorest families.<sup>6</sup>

**2. Anemia reduction (US\$1.0 million).** This component aimed to reduce the prevalence of anemia in children six to 24 months old and in pregnant women, by improving compliance with pre- and post-natal micronutrient supplementation regimens. The component financed the purchase and distribution of micronutrient Sprinkles<sup>7</sup> and the accompanying training and IEC activities. A pilot study was conducted to test the use of Sprinkles by pregnant women, and to explore whether adherence to an iron supplement would be improved with the use of Sprinkles.

**3. Institutional strengthening and impact evaluation (US\$0.75 million).** In order to strengthen the capacity of the MoH in the area of Monitoring and Evaluation (M&E) of nutrition programs, the program supported: **(i)** the development, testing, and implementation of nutrition and Maternal and Child Health (MCH) information system modules, in coordination with other initiatives in this area, via the addition of a nutrition module to the Household Income and Expenditure Survey (HIES) and the construction of nutritional risk map and nutritional cost monitoring system; **(ii)** a rigorous evaluation of the interventions supported in Components 1 and 2, using before and after testing techniques, qualitative studies, and monitoring of intermediate and final outcome indicators; **(iii)** technical assistance to the MoH for various activities related to designing the coupon scheme, reviewing nutrition-related curricula in nursing schools, and studying community-based initiatives for reducing malnutrition among Amerindians in the Hinterland areas.

<sup>5</sup> The BNP did not distribute the micronutrient supplement (sprinkles) to pregnant women, except during the period of the pilot study, when it was distributed to women attending the study's 13 intervention centres.

<sup>6</sup> The coupons were distributed by health centres and could be exchanged at designated shops for whole milk powder and plantain, barley flours and cornmeal. These commodities were selected because they are commonly used to prepare infant porridges, and are more likely to be targeted to the beneficiary child. The coupons were worth US\$5 per month, and at the start of the project were estimated to meet the average porridge needs of the target children. However, as food prices rose, quantities obtained with the coupon did not provide porridge for the entire month. The coupons were intended firstly as an incentive for better clinic attendance, and secondly as a tool for nutrition education (namely, to instruct mothers in the appropriate preparation of thick, nutritious porridge), and thirdly as a means to tackle poverty.

<sup>7</sup> Children's Sprinkles contained iron, Vitamin C and low levels of Vitamin A and zinc. Pregnant women's Sprinkles contained iron, folic acid, and vitamin C. Both were manufactured locally under license by the New Guyana Pharmaceutical Company.



### III. Results

#### a. Outcomes

ACHIEVEMENT OF DEVELOPMENT OBJECTIVES (DO)				
Development Objective(s) (Purpose)			Key Outcome Indicators	
1. Reduce malnutrition among women and young children in poor communities. 1.1. The level of wasting in young children reduced by 30%, from 15% to 10%, by the end of the project <sup>8</sup> 1.2. The anemia in young children reduced by 30%, from 50% to 35%, by the end of the project 1.3. The anemia in pregnant women reduced by 30% from 50% to 35% by the end of the project <i>Classification: HP</i>				
Planned Outcomes			Outcomes Achieved	
Baseline	Intermediate	End of Project		
1.1. 0 (15 Apr 2004)		30 (15 Dec 2008)	1.1. 49.10	(26 Nov 2008)
1.2. 0 (15 Apr 2004)		30 (15 Dec 2008)	1.2. 30.30	(26 Nov 2008)
1.3. 0 (15 Apr 2004)		30 (15 Dec 2008)	1.3. Not achieved because the intervention was not implemented	(4 Oct 2009)
Reformulation [ X ] N/A				
PPMR Retrofitting [ X ] N/A				
Summary Development Objective(s) Classification (DO):				
[ X ] Highly Probable (HP) [ ] Probable (P) [ ] Low Probability (LP) [ ] Improbable (I)				
Briefly justify DO classification, based on degree to which planned targets were met, explaining the differences between planned and achieved outcomes as well as any other relevant factors. Include references to evidence that can support these results.  The Basic Nutrition Program has become part of the Maternal and Child Health Care Program of the Ministry of Health. The Ministry has used its own funds to expand the programme to an additional 126 centers, thereby ensuring that all major health centers in Guyana are part of the program.  The evaluation of the impact of sprinkles and coupons on beneficiaries attending the program in the 79 health centers, conducted by the M&E consultant, indicates that the prevalence of anemia among children receiving the intervention was reduced by 30.3%, while the prevalence of wasting was reduced by 49.1%. The component aiming to reduce anemia among pregnant women was not implemented, because the resources were shifted to support other components as well as project management. The reports received indicate that the Program, with its focus on the reduction of child and maternal mortality, is highly likely to achieve its results.				
Country Strategy. Given the results described above, briefly discuss how the project contributed to the Bank's strategy in the country.  The Bank's country strategy, which benefited from the broad stakeholder consultation on the Poverty Reduction Strategy Paper (PRSP), includes as key objectives strengthening the implementation capacity of the public sector and the reduction of poverty. In the area of Health, the PRSP indicates that "to improve the nutritional status of the entire population with emphasis on the poor, priority attention will be given to expanding services to pregnant and lactating women below the poverty line."				

#### b. Externalities

As a result of the significant program impacts on reducing child malnutrition, nutrition became a flagship program of the MoH, and the GoG has made the decision to institutionalize BNP interventions under a newly established Family Health Programme (FHP), which incorporates the Ministry's Maternal and Child Health Program.

M&E reports represent a robust and highly valuable element of the programme. They have shed light onto the etiology of inadequate complementary feeding practices, and will serve to improve the programme in its next phase, as well as provide needed but typically scarce evidence about the long-term impact of nutrition interventions. The

<sup>8</sup> While national figures at the time of project preparation indicated a prevalence of 10% for wasting, the figure of 15% was used as a baseline since the BNP targeted the poorest communities. This assumption was in line with the results of the MICS (2001) indicating that 19.6% of children, whose mothers were categorized to the lowest level of educational attainment, were wasted.



BNP's contributions to the MCH's child growth monitoring system, as well as other elements of a national surveillance system, will continue to provide valuable data to monitor food and nutrition trends and evaluate future nutrition programs.

### c. Outputs

IMPLEMENTATION PROGRESS (IP)			
<b>Components (Outputs):</b>			
<b>1. Component 1: Child Feeding</b>			
Total cost of Component 1: \$1,356,154      Counterpart: \$ 111,940      IDB: \$ 1,244,214			
IDB Disbursement: 100%			
1.1 The breastfeeding initiation rate nationwide increased from 60% to 75% by the end of the Project			
1.2 Percent of mothers practicing appropriate child complementary feeding practices increased from 50% to 70% <sup>9</sup>			
1.3 Number of food coupons distributed and used appropriately by the end of the Project			
Classification: <b>HS</b>			
<b>Key Output Indicators:</b>			
<b>Planned Outputs</b>			<b>Outputs Achieved</b>
<u>Baseline*</u>	<u>Annual/Intermediate</u>	<u>End of Project</u>	<u>End of Project</u>
1.1B 60 (15 Apr. 2004)		1.1E 75 (15 Dec. 2008)	1.1 90 (26 Nov. 2008)
1.2B 50 (15 Apr. 2004)		1.2E 70 (15 Dec. 2008)	1.2 53 (26 Nov. 2008)
1.3B 0 (15 Apr. 2004)		1.2E 168,000 (15 Dec. 2008)	1.3 209,093 (26 Nov. 2008)
* (if applicable)			
<b>Briefly explain differences between planned and actual outputs (if applicable).</b>			
The program has expanded to 79 health centers countrywide; to date a total number of 209,983 coupons has been distributed, exceeding the number projected.			
[    ] N/A			
<b>Restructuring. Indicate if this component was restructured (date of approval by Manager). Briefly discuss the consequences of these changes.</b>			
[ <b>X</b> ] N/A			
<b>2. Component 2: Anemia reduction</b>			
Total cost of Component 2: \$ 955,950      Counterpart: \$ 0      IDB: \$ 955,950			
IDB Disbursement: 100%			
2.1 At least 50% of the women that participate in the Programme are in compliance with the iron supplementation by the end of the Project			
2.2 70% of children that participate in the Project are in compliance with the iron supplementation by the end of the Project			
Classification: <b>S</b>			
<b>Key Output Indicators:</b>			
<b>Planned Outputs</b>			<b>Outputs Achieved</b>
<u>Baseline*</u>	<u>Annual/Intermediate</u>	<u>End of Project</u>	<u>End of Project</u>
2.1B 0 (15 Apr. 2004)		2.1E 50 (15 Dec. 2008)	2.1 94 (26 Nov. 2008)
2.2B 0 (15 Apr. 2004)		2.1E 70 (15 Dec. 2008)	2.2 75 (26 Nov. 2008)
* (if applicable)			
<b>Briefly explain differences between planned and actual outputs (if applicable).</b>			
To date, the BNP programme distributing sachets of Sprinkles to infants has been implemented in 79 health centers, exceeding the target set by over 41,000 beneficiaries. However, distribution of Sprinkles to mothers did not take place, because the resources were redirected to finance other programme components. The GoG has begun distributing children's Sprinkles at another 126 centers utilizing its own funds. A pilot study testing the acceptability of Sprinkles to pregnant women was successfully implemented among 400 pregnant women, and showed that the rate of anemia among pregnant women was the same regardless of the form of iron (tablets or Sprinkles) consumed. However, compliance with iron supplementation was 49% higher with Sprinkles than with iron tablets (94% and 55%, respectively).			
[    ] N/A			
<b>Restructuring. Indicate if this component was restructured (date of approval by Manager). Briefly discuss the consequences of these changes.</b>			
[ <b>X</b> ] N/A			

<sup>9</sup> As per WHO guidelines. See p. 2 of this document.



### 3. Component 3: Institutional strengthening and impact evaluation

Total cost of Component 2: \$272,154 Counterpart: \$0 IDB: \$272,154

IDB Disbursement: 100%

3.1 The total number of primary health care providers trained in nutrition education counseling and anemia identification and treatment, by the end of the Project.

Classification: **S**

#### Key Output Indicators:

Planned Outputs			Outputs Achieved
Baseline*	Annual/Intermediate	End of Project	End of Project
3.1B 0 (15 Apr. 2004)		3.1E 100 (15 Dec. 2008)	3.1 100 (26 Nov. 2008)
* (if applicable)			

Briefly explain differences between planned and actual outputs (if applicable).

[ ] N/A

Restructuring. Indicate if this component was restructured (date of approval by Manager). Briefly discuss the consequences of these changes.

[ X ] N/A

#### Summary Implementation Progress Classification:

[ ] Highly Satisfactory (HS) [ X ] Satisfactory (S) [ ] Unsatisfactory (U) [ ] Very Unsatisfactory (VU)

### d. Project costs

Category	Total Project Cost – Planned (US\$000)		Total Project Cost – Actual (US\$000)		% Difference	
	IDB	GoG	IDB	GoG	IDB	GoG
<b>1. Administration</b>	<b>982</b>	<b>49</b>	<b>954</b>	<b>174</b>	<b>-2.9</b>	<b>+255.1</b>
1.1 Salaries	697	44	573	130	-17.8	+195.5
1.2 M&E	226	0	235	0	+4.0	0
1.3 Operating costs	59	5	146	43	+147.5	+760.0
<b>2. Direct costs</b>	<b>3,813</b>	<b>1,198</b>	<b>3,770</b>	<b>906</b>	<b>-1.1</b>	<b>-24.4</b>
2.1 Coupons	1,251	1,194	1,307	155	+4.5	-87.0
2.2 Sprinkles – children	564	0	564	731	0	+100.0
2.3 Sprinkles – pregnant women	352	0	392	0	+11.4	0
2.4 Media & communications	880	0	622	19	-29.3	+100.0
2.5 Training materials & delivery	766	4	885	1	+15.5	-75.0
<b>3. Technical assistance</b>	<b>110</b>	<b>0</b>	<b>226</b>	<b>15</b>	<b>+105.5</b>	<b>+100.0</b>
3.1 Studies	110	0	226	15	+105.5	+100.0
<b>4. Contingencies</b>	<b>45</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>-100.0</b>	<b>-100.0</b>
<b>5. Financing costs</b>	<b>50</b>	<b>151</b>	<b>50</b>	<b>172</b>	<b>0</b>	<b>+13.9</b>
5.1 Interest	0	105	0	89	0	-15.2
5.2 Credit fee	0	46	0	83	0	+80.4
5.3 Supervision and inspection	50	0	50	0	0	0
<b>Grand Total</b>	<b>5,000</b>	<b>1,412</b>	<b>5,000</b>	<b>1,267</b>	<b>0</b>	<b>-10.3</b>

**Briefly explain any differences:** In February 2009 the GoG (MoH and Ministry of Finance) requested the reallocation of US\$200,000 in IDB and counterpart resources from line items 1.1, 2.1, 2.4, 2.5, 3.1, and 4, to line items 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, and 3.1 (CGYDOCS #54032). A further shift of US\$77,000 in counterpart resources occurred, and in the end the GoG counterpart financing was reduced by US\$145,000, or 10.3%, relative to the planned budget.

## IV. Project Implementation

### a. Analysis of critical factors

**Risks identified in loan proposal.** At the time of design, the project team identified the following risks as significant:

(i) Shortage of qualified personnel caused by low salaries that induce a high staff turnover and a constant need to retrain workers. This risk was partially mitigated by



establishing a continuous training system and by strengthening nutrition training to primary health care workers. However, the staff shortage did have a negative impact on the quality and quantity of nutrition counseling offered to mothers.

(ii) Leakage of the food coupon through acceptance of coupons for purchase of ineligible items. This risk was mitigated by training shopkeepers and performing random monitoring of compliance with program rules.

(iii) Food price gauging by retailers. Shopkeepers may raise the price of items eligible for purchase with the coupons. This risk was mitigated by an on-going, random monitoring system for shopkeepers and certification of retail outlets in the immediate vicinity of the health center.

With the exception of (i), the risks were adequately mitigated and did not pose problems in the implementation; the following implementation issues arose and were addressed:

**HR issues.** In Guyana, human resource constraints are wide-spread and have impacted the program implementation at all levels. General shortage of qualified personnel (health care workers, HCWs) limits significantly the provision of clinical services for mothers, young children, and pregnant women. During project execution, health centers experienced high staff turnover; low salaries and a disorganized work environment prevented the retention and attraction of more experienced staff. Under these circumstances, health centers attracted young and relatively inexperienced applicants, who, once they acquired some experience, moved to other more financially rewarding positions. Even the Health Sector Development Unit (HSDU) responsible for managing the program suffered relatively high level of staff turnover, which impeded continuity, optimal management, and coordination.

To counteract the human resource shortage, the program conducted extensive capacity building. This institutional strengthening component, executed by the Caribbean Food and Nutrition Institute (CFNI) with the support of the Food Policy Unit (FPU) of the MoH, provided repeated training for all levels of health care workers, including midwives, MEDEX, nurses, community health workers, and some physicians, as well as FPU and MCH staff, Regional Health Officers (RHOs), and Senior Health Visitors (SHVs). Achievements of the program are highly commendable in view of the challenges that persist in this area due to attrition, migration, and other factors. Notably, despite the challenges, some health centres and regions were able to achieve more than others. The BNP's evaluation found that health centres in Region 5 and in Amerindian communities performed significantly better than the other BNP centres. It would be useful to examine in-depth how these positive results were achieved.

**Phased implementation.** The health centers' entry into the BNP via certification by the Bank (confirming that the given center's personnel have been trained), and the implementation of BNP interventions, had proceeded in a phased manner.<sup>10</sup> Sprinkles distribution began in January 2005, followed by food coupons six months later, and health centre staff training and the IEC campaign began at the end of 2006. This staggered implementation has meant that prior to project end some health centers were not given the opportunity to take full advantage of the synergy between iron supplement (Sprinkles) and coupon distribution, and client education. On the other

<sup>10</sup> This phased implementation was due to delays in the awarding of the contracts for the retraining of health centre staff and the IEC campaign.



hand, phased implementation permitted collection of evaluation data to examine separately the impact of coupons, sprinkles, and the health centre staff training together with the IEC component; it demonstrated that all interventions are needed to maximize programme impact.

**Targeting of benefits.** The initial group of 49 poor communities was targeted for the distribution of Sprinkles and food coupons via health centers chosen based on SIMAP poverty map developed in the early 1990s. This subset included at least one health center that served predominantly Amerindian Communities in regions 1, 7, 8, 9 and 10. During SIMAP II it was determined that the map was out of date and failed to identify poor urban areas, especially new squatter settlements, which at the time contained 20% of Georgetown's population. Despite this fact, and in view of the highly positive results achieved by the BNP, the targeting mechanism seemed to have worked well.<sup>11</sup> When the program was expanded to include additional 30 health centers (for a total of 79 of 205 centers country-wide), those were selected based on proximity to the health centers targeted originally, rather than based on poverty measurements.

#### b. Borrower/executing agency performance

Borrower/Executing Agency			
<input type="checkbox"/> Highly Satisfactory (HS)	<input checked="" type="checkbox"/> Satisfactory (S)	<input type="checkbox"/> Unsatisfactory (U)	<input type="checkbox"/> Very Unsatisfactory (VU)
The performance of the MoH, the executing agency for the project, has been rated as satisfactory. Despite the delays in the implementation of some of the components, the major activities were completed in a timely fashion, and project interventions reached all beneficiaries as planned. Bank policies for procurement and financial reporting were adhered to, with no exception.			

#### c. Bank performance

Bank Performance			
<input type="checkbox"/> Highly Satisfactory (HS)	<input checked="" type="checkbox"/> Satisfactory (S)	<input type="checkbox"/> Unsatisfactory (U)	<input type="checkbox"/> Very Unsatisfactory (VU)
The performance of the Bank has been rated as satisfactory. The support provided by the Bank staff to the executing agency was timely and technically sound. The Bank accommodated requests for changes in project execution, as dictated by the changing economic climate and the diversity of local social conditions.			

### V. Sustainability

#### a. Analysis of critical factors and risks

**Government commitment and financial sustainability.** Recognizing the successes of the BNP, the GoG is highly committed to continuing the programme activities as part of day-to-day MoH operations. This commitment was made evident in the National Nutrition Strategy (NNS) developed in 2009. Counterpart financing for the BNP program was fairly substantial (over 20% of the loan amount), and contemplated in the original program document was a gradual transition to majority financing of the BNP by the GoG, which would have assured sustainability of BNP interventions. Yet, at the time of closing of the BNP, resources for the continuation of the BNP were not identified nor earmarked and the program activities were continued with remaining funds from PMMP (Loan 1604/SF-GY). In 2009 the Bank approved another US\$5,000,000 loan for the national expansion of the most successful BNP interventions and albeit the project

<sup>11</sup> The reduction in acute malnutrition achieved by the BNP indicates that the Program did indeed target households where poverty and its associated factors were constraints to better child nutrition.



entails a significant counterpart financing of 2,300,000US\$, sustaining the activities with purely government financing in 2014 remains a significant risk to perpetuity and to achieving lasting results.

**Food coupons.** At the time the programme was designed, a food coupon system providing nutritional support and aiming to encourage attendance at health centers, was deemed more efficient than physical food distribution tested under SIMAP. However, at closing of the BNP, HSDU staff considered the cost-to-benefit ratio to be excessive.<sup>12</sup> The program financed stipends for HCWs assigned the tasks of administering the coupon. This provided a needed incentive for performing duties associated with coupons, but contributed significantly to coupon administrative costs. Printing, HCW stipend, and shopkeeper and postal worker training costs alone exceed 20% of coupon value.

Furthermore, in the past two years the value of the coupon has depreciated by 50%, raising questions about financial sustainability and cost-benefit ratio.<sup>13</sup> Originally, the value of the food coupon was set to the Guyana dollar equivalent of US\$5/child/month, which at the time of design was estimated to provide 420 kilocalories per day. Although the coupon maintained its value against the US dollar, its real value in local currency declined by 17% between 2006 and 2008. At current food prices, the coupon buys a little more than half of the amount of milk and flour that it was intended to at the time of program design. Thus, the rise in food prices has compromised the originally envisaged nutritional support. Furthermore, coupon distribution and redemption was wrought with logistic difficulties, particularly in the Hinterland regions, and often occurred separately from health services, the usage of which it intended to promote.

#### **b. Institutional capacity**

**Institutionalization.** Reliance on the HSDU to implement the BNP, and on an external contractor to monitor and evaluate it, as well as the limited participation of the MoH's FPU and the MCH Department in the implementation of the program, have constrained the creation of management capacity at the MoH. Throughout the implementation and at project closing, only a small proportion of responsibilities rested with MoH staff. Given the challenges posed by scarcity of qualified human resources, geographically difficult to access populations, and financial constraints, the programme staff will need strong skills to manage the program and to coordinate its activities with communities and other partners to fully take advantage of scarce resources.

In this regard, the MoH has taken concrete steps that will help ensure sustainability. In 2007, a Technical Steering Committee for the BNP was formed, comprised of representatives of the MCH Department, FPU, the CFNI, GuyEnterprise Advertising Agency (GAA), and Social Development, Inc (SDI).<sup>14</sup> Its responsibilities include overall monitoring of programme performance, providing orientation and recommendations for

<sup>12</sup> No economic analyses were foreseen in the BNP loan document. However, a very rough estimate indicates that the cost per beneficiary was US\$60, and the cost effectiveness was US\$500 per case of moderate or severe wasting averted.

<sup>13</sup> Some stakeholders view the coupon as a form of social support that would be better managed in the context of social protection services provided by the Ministry of Labor, Human Services and Social Security (MLHSSS), and consider the distribution of coupons to the entire population an inefficient use of scarce resources. In the design of the expanded national programme, serious consideration will need to be given to reformulating the coupon component.

<sup>14</sup> CFNI, GAA and SDI were all key subcontractors under the BNP. CFI was contracted to carry out health centre staff training, GAA to prepare materials for the IEC campaign, and SDI to conduct the impact evaluation of the BNP.





expansion of successful pilot activities, and recommendations for the dissemination of project results. The MCH and FPU staff has received some essential training, and took on program responsibilities gradually, as its activities expanded nationally (e.g. IEC campaign, Sprinkles). Recently, an action plan was drawn up to transfer the remaining capacities and responsibilities for programme implementation, management, and M&E from HSDU to the MoH's Family Health Programme (FHP). Infrastructure and equipment purchased with BNP resources will aid in this transfer.

To date, all programme activities with the exception of coupon distribution are being moved to the MCH Department, which is part of the newly instituted FHP. Training, Sprinkles distribution, and M&E are being transferred to the relevant units in the MCH Department. The MoH has entered into agreement with the Regional Health Authority (RHA) in Region 6<sup>15</sup> to manage the program in all 11 of the Region's health centers. The programme expanded to three additional health centers in Georgetown through a partnership with the Mayor and the City Council. Finally, efforts continue to include the coupons component as part of the national social protection services administered by the MLHSSS.

**Management information system (MIS).** The BNP required a MIS to: (i) keep track of coupons, beneficiary characteristics, and coupon redemption; (ii) record quantity of Sprinkles distributed by health centers and beneficiary characteristics; and (iii) monitor costs and manage programme finances. The MIS (HSDU) personnel implemented two integrated databases—the Beneficiary Management System and the Inventory Management System—, as well as several forms, to keep track of Sprinkles and coupons issued and redeemed, according to health center and beneficiary (child and pregnant woman) characteristics. MIS data, entered manually by four dedicated clerks, was used to generate lists of beneficiaries and manage distribution, manage inventory and forecast restocking requirements, identify discrepancies between stocks and distribution, etc. All beneficiaries were assigned a unique identification number.

**Sustainability Classification SU:**

<input type="checkbox"/> Highly Probable (HP)	<input checked="" type="checkbox"/> Probable (P)	<input type="checkbox"/> Low Probability (LP)	<input type="checkbox"/> Improbable (I)
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## **VI. Monitoring and Evaluation**

### **a. Data collection and analysis**

M&E activities formed part of the third component of the project, along with institutional strengthening. Social Development Inc., a local private firm with expertise in epidemiology, nutrition, social research, and health information systems, was contracted to assist the MoH in the revision of information collected at clinics for monitoring and supervision.<sup>16</sup> SDI worked with the Health Information System (HIS) Unit and other MoH staff on the revision and design of indicators, which are routinely reported to the MCH Department and FPU, analyzed the data, and authored reports.

<sup>15</sup> Guyana is sub-divided into ten administrative regions, of which four are hinterland regions where most of the Amerindian peoples reside. Each region has a RHA. Decentralization to these RHAs is in progress.

<sup>16</sup> The loan document originally contemplated that Bureau of Statistics would conduct the M&E activities. Because the Bureau did not have the capacity to handle monitoring of sprinkles and coupons distribution, this was done through the MIS department of HSDU. The impact evaluation was contracted to SDI because of its experience in research, nutrition and nutritional epidemiology.





Under its contract to conduct the BNP's impact evaluation, SDI collected survey data at the start of the programme, at mid-term, and at its completion, from a selected sample of beneficiaries. Anthropometric data was gathered on weight and height of children, and blood samples to determine hemoglobin levels in the sample children. In addition to anemia and growth indicators monitoring, SDI conducted four qualitative in-depth studies and two pilot studies,<sup>17</sup> employing questionnaires, interviews, and observation, which provided a far more complete picture of the impact of the BNP and the challenges it was facing.

Data analyses, comprehensive and of high quality, involved simple frequency distributions and statistics. Tests of significance (t-tests, analysis of variance, chi-squares) were applied to identify differences between survey rounds and between control and intervention groups. Simple bivariate analyses were conducted to examine relationships between different variables, and multiple regression analysis to develop profiles of nutritional vulnerability. However, some pivotal constraints related to data collection were caused by (i) delayed implementation of some programme interventions (see section IVa), (ii) smaller than expected sample sizes,<sup>18</sup> and (iii) delays in replacing faulty equipment (HemoCue for measurement of hemoglobin levels and Grafco Infantometer for measuring lengths of babies). These constraints required an adjustment of the study methodology, from longitudinal to cross-sectional study format. It is important to appreciate that the evaluation measured effectiveness and not efficacy. Almost all data collection and interviews were carried out by SDI's trained research team. A number of quality control measures were implemented throughout the evaluation: standardization tests, refresher training, supervisory visits, and duplication of data entry.<sup>19</sup>

Evaluation results indicate that BNP performed well relative to the set targets for outcomes. Final prevalence of anemia among children in the intervention group was nearly 40% lower than in the control group; the prevalence of moderate and severe wasting among children in the intervention group was 27% lower than in the control group; in the pilot study of pregnant women, compliance with the Sprinkles regimen increased by 73% relative to control group receiving iron tablets, although anemia prevalence reduced equally in both groups among those women who took either supplement for more than five months.<sup>20</sup> Baseline breastfeeding initiation rates were found to be substantially higher than described in the loan document, and the impact of BNP interventions on this indicator was relatively small. Rates of appropriate complementary feeding increased by 8%, to 56%, not enough to reach the BNP target

<sup>17</sup> The four qualitative studies were on coupon use; sprinkles use; breastfeeding practices; and on complementary feeding knowledge, attitude and practices. The two pilot studies examined: (i) a community nutrition counselors program aiming to assist new mothers to improve breastfeeding practices; and (ii) the impact of Sprinkles on anemia in pregnant women and their uptake relative to iron tablets currently used by the MoH.

<sup>18</sup> Smaller than expected numbers of beneficiaries were due to: a likely over-estimation of the number of beneficiaries by the health centers, and non-attendance by some children due to scheduling conflicts and heavy rains and flooding. In the pilot study of Sprinkles use by pregnant women, late registration for antenatal clinics (in the third trimester or even in the last month) as well as sooner than expected delivery, migration, delayed Sprinkles distribution, and flooding reduced the sample size.

<sup>19</sup> Capacity building was an integral part of SDI's work. In addition to the evaluation-specific training received by SDI researchers (all Guyanese), two completed Masters programs in public health nutrition (in the UK), and two completed first degrees at the University of Guyana.

<sup>20</sup> In the future, strategies for reducing anemia prevalence among pregnant women should be re-examined, particularly with a focus on reaching women as early as possible in pregnancy.



of 70%. Important lessons for future program activities emerged from the evaluation (section VIc).

#### **b. Future Monitoring**

Considering the wide-spread difficulties associated with retaining qualified personnel, future challenge resides in *institutionalizing* the M&E capacity at the MoH, at the central as well as at the local level. Prior to the BNP, many deficiencies made it difficult to assess level and trends in child growth and nutrition from clinical data. For instance, not all clinics possessed the necessary equipment to measure and report child weight; thus far, only child weight (not height) has been recorded; the little data that was collected is mainly from urban and coastal clinics; the data is aggregated at the clinic level before being passed to the MoH, making cross-tabulations and other basic data analysis virtually impossible; finally, attendance and hence coverage is highest among children under 12 months old, as clinic attendance rates decline significantly after that age. For these and other reasons, over the past 15 years, Guyana has relied on surveys to obtain data on malnutrition, and the HIS has been severely limited as a tool for nutrition surveillance, planning, and monitoring.

The BNP, through the work of SDI and technical assistance provided by the Pan-American Health Organization (PAHO), was instrumental in helping the MoH initiate the designing of Food and Nutrition Surveillance System. One important component is the nutrition module for the HIS, which will collect data on anthropometry and caring practices. FPU staff was trained and received new equipment, and new international standards for growth monitoring were implemented. It is expected that, as the System expands nationally with the support of the Bank and eventually with national financing, all M&E will be based on data collected via these components. Intermittent evaluations of the sort conducted for the BNP will continue to be needed to allow the nutrition interventions to evolve as population needs and economic circumstances change, and to identify areas for further research. However, it remains to be seen whether the capacity created at the MoH will be retained and appropriately utilized.

### **VII. Lessons Learned**

#### **a. Effectiveness**

By tackling important aspects of young child nutrition the BNP has achieved its outcome targets with regard to reducing the prevalence of anemia and wasting among children aged 6 – 24 months, and has formed the basis of a national nutrition program.

Greater and more creative support needs to be given to the HCWs, to help them deliver nutrition education to the population as well to reinforce the mass media messages via face-to-face contact, to encourage change in beliefs, traditions and practices (particularly those related to child feeding and care), and to improve the quality of interaction with the client.

In order to ensure appropriate child feeding (including breastfeeding and complementary feeding) and set realistic output targets, the programme needs to take into account daily constraints faced by mothers related to life-work balance.

Behavior change is not easy; it takes time, and requires synergies among the various programme components and interventions; e.g. implementation of the training, communication and distribution of nutritional supplements (such as Sprinkles) needs to be simultaneous. Successful and sustained behavior change in the Guyanese context



also requires the engagement of other family members (grandmothers, fathers), who have been shown to negatively influence mothers in child feeding practices. This may be best addressed through community-based initiatives.

All BNP interventions were low cost and sustainable with the exception of the coupons. Therefore should the coupon scheme be continued their purchasing power needs to be adjusted in response to food price inflation, and in order to have an impact and to mitigate high overall cost, their distribution would need to be targeted to the most vulnerable families in terms of child malnutrition.

#### **b. Sustainability**

Sustainability needs to be built up from the earliest stages of the programme, to ensure smooth and effective eventual transfer of responsibilities to line ministries.

In order to counteract HR shortage and turnover, continuous training must be available for programme personnel and for HCWs in general, who should be consistently prepared to adapt to taking on varied and multiple programme functions.

The BNP has provided physical resources (anthropometric equipment, audiovisual equipment) and improved human resources that will serve for future nutrition activities.

#### **c. Institutional capacity**

Partnering with communities and NGOs in marketing nutrition messages will be advantageous and necessary (to take full advantage of scarce resources, particularly in Hinterland areas), but will require strong coordination skills.

Analyses and findings of research and evaluations should be routinely disseminated to health center staff, so that they may gain a better understanding of their achievements and outstanding challenges and improve their analytic capacity.

A technical steering committee with a legitimate and active role is essential to ensure effective communication among the implementers of the various programme activities at all levels, and an overview of the programme's management.

#### **d. Knowledge**

Adequately funded and rigorous impact evaluation as in the case of the BNP, combining quantitative and qualitative components, provides invaluable insights and makes learning and programme improvement possible. M&E is critical to the success of any programme and should be built into it from the start.

Better understanding of, and greater focus on, the etiology of maternal anemia and other factors affecting women's health in childbearing age is needed, in order to create optimum state of health *before* pregnancy. Teenage pregnancies, short birth spacing, women's diets, and timely and regular attendance at antenatal clinic are all issues that need attention.



## **Basic Nutrition Programme 1120/SF-GY**

### **Minutes from Basic Nutrition Programme Exit Workshop**

**September 10, 2009**

#### **1.0 Introduction**

The participatory project evaluation workshop for the Basic Nutrition Program was held on September 10, 2009 at the Georgetown Club. Twenty-five (25) persons were invited from the various agencies, namely, Ministry of Health, Ministry of Labour, Human Services and Social Security, Ministry of Finance, Ministry of Amerindian Affairs and the Inter American Development Bank. Of this number, twelve (12) persons including the Minister of Health, the IDB Resident Representative and other key officials from the Bank, attended the opening session. The list of participants is attached as Annex 1.

The objectives of the Workshop were:

- Assess the results of the program in keeping with the achievement of the development objective
- Identify project challenges and sustainability issues.
- Identify lessons learnt that can be applied to the design of future similar projects.

The participatory evaluation was addressed at two levels. At the first level, an overview of the BNP program was given, and presentations were delivered on the IEC Intervention, the BNP MIS database and the results of the project. In the second part of the workshop, participants were given the opportunity to discuss the presentations and to share their experiences with the program. In order to establish a common basis for discussion and encourage informed and meaningful interactions during the workshop, a matrix was developed and circulated to all participants. The matrix represented a consolidation of key Achievements, Challenges and Lessons Learned gleaned from project reports including, progress reports and the mid term evaluation report.

The participants were engaged in an active discussion where outputs and outcomes of the possible future impacts initiated by the project and their benefits were discussed. A summary of the main points identified by the participants is as follows:

## **2.0 General Overview of the Basic Nutrition Program**

The program began in 2004 and initially targeted children aged 6-24 months in 49 health centres in poor communities in Regions 1-10. In 2007, it was expanded to an additional 30 health centres and in April 2009, three more centres were added.

The program was implemented under three components, namely (i) Child feeding, (ii) Anaemia Reduction, and (iii) Capacity Building and Institutional Strengthening.

## **3.0 Overview of the IEC Intervention**

Information, Education and Communication (IEC) was an integral part of the components. The IEC focused on early and exclusive breastfeeding, appropriate feeding practices, registration of mothers and the appropriate use of the sprinkles and the food coupons. The target audience included mothers, fathers, HCWs, shopkeepers and postmasters, through trainings, mass media campaigns and community based interventions.

The challenges encountered were lack of adequate human resource, high staff turnover, low level of literacy of target audience and the lack of culturally-relevant materials/interventions for the indigenous population.

Among the lessons learned are (i) there is a need for continuous refresher training of HCWs with regards to the use of the IEC materials and communicating to the mothers, (ii) materials developed must be culturally-friendly and specifically suited for the indigenous population and should be complemented by direct interventions, and (iii) partnerships with CBOs would be advantageous in order to establish direct and sustained and community involvement (support groups)

## **4.0 Overview of MIS Database**

Under the project, the MIS was required to (i) record and keep track of the coupons issued by health centres (ii) record the quantities of Sprinkles issued by health centres,

and beneficiary characteristics, and (iii) facilitate a cost monitoring system and financial management of the project.

The lessons learned are (i) relook at the turn around time for the exchange of issued coupons, the current processing time is too short, (ii) the entry of returned coupons into the information system should be automated since it is very time consuming, (iii) data entry and reporting should be decentralized so as to save time and cost and provide closer ownership of the process (iv) the database should be extended to include poverty data that can be used for priority targeting.

### **5.0 Project Results (Evaluation Report)**

In 2004 an impact evaluation of the project was conducted by Dr. Suraiya Ismail, of Social Development Inc. The evaluation comprised of both quantitative and qualitative assessments of the mother's knowledge, the child nutritional status and child feeding practices.

Summary findings of the evaluation were presented at the workshop which included as follows:

- There is a need for improved nutrition counseling at health centers so that mothers and care givers are more knowledgeable.
- Based on positive results, it was noted that the health centers in the Amerindian communities and Region 5, should be used as best practice models to craft interventions for other centers
- In Amerindian communities, emphasis should be placed on diet diversity, sanitation and safe water supply.
- Sprinkles distribution and other BNP activities reduced the prevalence of anaemia by approximately 30%
- Coupon distribution and other BNP activities reduced the prevalence of wasting by approximately 30%.
- The BNP has substantially raised the profile of nutrition in the Ministry of Health and in Guyana.

### **6.0 Overall Lessons Learned**

In summary, overall project lessons learnt are as follows:

1. The need to institutionalize training of the health workers in order to sustain behavioural change momentum
2. Sharpen public awareness programs to meet the needs of the target audience. Innovative concepts, like drama and Community-based initiatives can prove to be successful especially when traditional communication modalities are not having any impact
3. Given the cross-cutting nature of nutrition interventions, a multi-sectoral approach is the preferred option
4. Develop early M&E capacity in order to tweak interventions based on emerging data and evidence,
5. An IT solution can produce lower administrative costs
6. Amerindian interventions are to be culturally-friendly.

*(Original signed)*

.....  
Ian Ho-A-Shu  
Social Development Specialist  
Inter-American Development Bank

*(Original signed)*

.....  
Dr. Shamdeo Persaud  
Chief Medical Officer  
Ministry of Health  
**Chief Medical Officer  
MINISTRY OF HEALTH**



**Annex 1**  
**List of Participants**

<b>Senior Government Officials:</b>	Dr. Leslie Ramsammy, Minister of Health Dr. Shamdeo Persaud, Chief Medical Officer Dr. Janice Woolford, Director, MCH
<b>IDB Officials:</b>	Mr. Marco Nicola, Resident Representative Dr. Meri Hellaranta, Social Development Specialist Mr. Ian Ho-A-Shu, Social Development Specialist Ms. Leticia Ramjag, Operations Analyst

**Representatives of Participating Institutions:**

<b>Ministry of Health</b>	Ms. Yvette De Freitas, Public Health Nutritionist Ms. Gillian Trim, Nutrition Surveillance Officer Ms. Ninian Blair, National Breastfeeding Coordinator Ms. Nicola Butts, Coordinator of Social Mobilisation Committee
<b>Ministry of Labour, Human Services and Social Security</b>	Ms. Geetangeli Geer
<b>Ministry of Amerindian Affairs</b>	Mr. Autry Haynes
<b>PEU</b>	Mr. Roland Birkett, MIS Director Mr. Paul Clarke, Technical Manager Ms. Debra Francis, Training Coordinator
<b>Final Evaluation Consultant</b>	Dr. Suraiya Ismail, Director SDI

**THE IMPACT EVALUATION OF THE  
GoG / IDB BASIC NUTRITION PROGRAM**

**INTEGRATED REPORT**

**July, 2009**

Prepared by:

Suraiya Ismail, Co-director, Social Development Inc.

Terry Roopnaraine, Co-director, Social Development Inc.

## EXECUTIVE SUMMARY

With funding from the Ministry of Health and the InterAmerican Development Bank (IDB), the Basic Nutrition Program (BNP) began in 2003 with the primary objective of reducing malnutrition in young children from depressed communities in Guyana. It had four main interventions: the distribution of Sprinkles®<sup>1</sup> and food coupons, the retraining of health centre staff in basic nutrition and communication skills, and an information, education and communication (IEC) campaign. The first two interventions were targeted to children aged 6 – 24 months attending BNP health centres, while the latter two had national coverage. The original BNP encompassed 49 health centres, a further 30 health centres being added later. In 2007-2008, the coverage of sprinkles distribution was extended to all non-BNP centres by the Ministry of Health.

In 2004, Social Development Inc was contracted to undertake an impact evaluation of the BNP. The evaluation comprised quantitative and qualitative components. The original quantitative evaluation design was longitudinal, with control (N=421) and intervention (N=498) groups. This design was later replaced by a simple cross-sectional before/after design, to accommodate changes in the BNP implementation schedule. Cross-sectional studies included a study of coastal communities (N=1600), of Amerindian communities (N=179), and of non-BNP communities (N=505). A further study (N=584) examined the nutrition advice given by health centre staff and recalled by mothers after a clinic visit.

The longitudinal study evaluated only the impact of sprinkles and coupon distribution, while the cross-sectional studies assessed the impact of all four BNP interventions. Outcome indicators included weight for length (wasting), height for age (stunting), haemoglobin levels, breastfeeding rates and compliance with complementary feeding guidelines. A questionnaire was administered to obtain information on the socio-economic and demographic characteristics of the samples. It included questions on anaemia and exposure to IEC materials for the cross-sectional studies.

Four in-depth studies were included in the qualitative component: a study of the use of sprinkles, another explored the use of food coupons, a breastfeeding study and a study of knowledge, attitudes and practices in relation to complementary feeding. Each study included around 50 mothers, health centre staff and, in the case of the coupon study, shopkeepers. These studies employed anthropological techniques (in-depth semi-structured interviews, observations, and key informant interviews) to answer questions regarding behaviours, attitudes and practices, and reasons for these that cannot be well-addressed by means of a questionnaire administered to a large sample of respondents.

A pilot study, with both quantitative and qualitative components, was also carried out to examine the possibility of using sprinkles<sup>2</sup> to provide iron and folic acid to pregnant

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<sup>1</sup> “Sprinkles” is a micronutrient supplement in the form of a powder packed in daily dose sachets, and to be mixed with food. Children’s sprinkles in Guyana were primarily an iron supplement, but contained also Vitamins C and A and zinc.

<sup>2</sup> “Sprinkles” for pregnant women had exactly the same composition as the iron tablet. Both contain iron, folic acid and vitamin C.

women. The primary objective of this study was to assess compliance, and whether this novel form of iron supplement was preferred to the conventional iron tablet currently distributed to pregnant women in Guyana.

## **Main findings**

### Prevalence of anaemia and the use of sprinkles for children

Sprinkles distribution and other BNP activities reduced the prevalence of anaemia by around 30%, thus meeting the BNP target for this indicator. Figures for the individual studies are as follows:

Longitudinal study:

- The final prevalence of anaemia in the intervention group was nearly 40% lower than in the control group;

Cross-sectional studies:

- Coastal communities: 28.5% reduction in prevalence
- Amerindian communities: 24.5% reduction
- Non-BNP communities: 33.3% reduction.

The qualitative study on the use of sprinkles for children provided the following information:

#### *Consumption Patterns*

Sprinkles are most commonly mixed with food, porridge or drinks and are only rarely consumed plain. Foods to which sprinkles were added were soft complementary foods such as mashed potato and ‘crush’. Supplemented drinks included ‘tea’, milk, juice and (rarely) water. A substantial majority of mothers reported that they only added sprinkles to porridge. The prevalent explanation for this was that it was the best way to guarantee complete consumption of the supplement, because children were more likely to finish a serving of porridge than a plate of food. As was the case with the consumption of plain sprinkles, age is clearly an important factor here: of the thirteen children who were given sprinkles without porridge, only two were below the age of one year. Predictably, as children receiving sprinkles grow older, porridge supplementation becomes relatively less prevalent, while in general diversity of supplementation practices increases.

#### *Dilution*

Across the study sample, nine mothers (~17%) reported sharing their sprinkles with someone in their own or a neighbouring household. Mothers on the whole do not have a clear idea of what the sprinkles are designed to do. Mothers who shared sprinkles gave various explanations for the practice, among them curing diarrhoea and ‘opening the appetite’. The perceived effects or benefits of sprinkles are diverse enough to at least partially explain the sharing phenomenon: because most women do not know that the sprinkles are principally designed to address iron deficiency among children between 6 and 24 months of age, sprinkles are shared among non-targeted children of the household, family or neighbouring households for a variety of reasons.

### *Parental Acceptability and Ease of Use*

Sprinkles are highly acceptable to parents. An overwhelming majority report that the sprinkles are easy to use and convenient. Only three mothers stated that they had experienced problems of dampness penetration in their sprinkles. While seven mothers expressed a neutral opinion about sprinkles usage, only one mother had a strongly negative opinion about the sprinkles, because she believed that the sprinkles had caused her daughter to suffer diarrhoea. With few exceptions, mothers also reported that they were not worried or concerned about anything relating to the sprinkles. Where mothers expressed concerns about sprinkles, these related to the use of damp sprinkles (acceptable or not), what the lot number on the sprinkles box referred to, and to the opposing perceptions that sprinkles were causing diarrhoea and constipation.

### *Acceptance by Children*

With a single exception, acceptance of sprinkles by children is universal, even in the light of the fact that many children know that the sprinkles have been added, either because they taste them or because they have seen their mothers adding them. That said, some acceptance problems were observed when children were offered sprinkles in certain kinds of foods or drinks.

### *Knowledge and Communication*

Knowledge about sprinkles among beneficiaries (mothers in this case) was limited. When asked if they knew what sprinkles contained, only ten mothers mentioned iron. A very small number (2) mothers were familiar with the concept of anaemia or ‘weak blood’, and while almost all mothers said that they recognized the importance of administering sprinkles to their children, few were able to offer a coherent reason why. Given the widespread ignorance of anaemia, it is unsurprising that no mothers made the connection between sprinkles and anaemia prevention. A small number of mothers were familiar with the idea of a supplement to address deficiencies in the daily diet.

### *Effects of Sprinkles*

A significant majority (42, or ~81%) of mothers interviewed said that they had noticed some changes in their children since starting sprinkles. These changes varied from informant to informant, but included improved sleep, sleeplessness, weight gain, greater appetite, higher activity and alertness levels, constipation, diarrhoea, stool colour, reduced morbidity and a healthier ‘look’. One mother mentioned improvement in blood test results (haemoglobin). It should be noted that ‘negative’ changes (diarrhoea, constipation, sleeplessness) were very much in the minority.

### *Distribution*

Informants across the study group were almost universally satisfied with the distribution system; just one respondent said that she felt that the quantity of sprinkles packets in the box was too great. According to the mothers, the system was running smoothly. No criticisms of the distribution operations were communicated to our field.

### *Sustainability*

Interview results show strong potential for sustainability. When asked whether they were planning to continue using the sprinkles, all respondents (even the mother whose child

had rejected the sprinkles) replied in the affirmative. Clearly this is something which only time can confirm, but these responses, backed as they are by widespread positive opinion about sprinkles, suggest that mothers are indeed pleased enough with the intervention to want to continue with it.

### Prevalence of wasting and the use of food coupons

Coupon distribution and other BNP activities reduced the prevalence of wasting by around 30%, thus meeting the BNP target for this indicator. Figures for the individual studies are as follows:

Longitudinal study:

- The final prevalence of moderate and severe wasting in the intervention group was nearly 27% lower than in the control group;

Cross-sectional studies:

- Coastal communities: 37.1% reduction in the prevalence of severe wasting
- Amerindian communities: No significant reduction<sup>3</sup> in the prevalence of wasting
- Non-BNP communities: No significant reduction. This is expected since no coupons were distributed at these centres.

The qualitative study on the use of coupons discusses the following issues:

#### *Understanding and knowledge*

Interviews with mothers indicated that virtually all understand that coupons are to be redeemed towards milk and porridge ingredients. However, mothers' knowledge of the programme was not found to extend much farther than this. No mother interviewed was able to explain why she was receiving coupons; indeed, an overwhelming majority stated that they had received little or no information from their health centre, beyond the basic concepts that the coupons are to 'bring them (babies) up,' that they (mothers) should collect coupons regularly, and that the coupons are targeted at children under two years of age. A smaller number of mothers also stated that they could not remember what they had been told at the health centre, or that someone else in their family had gone to collect the coupons and that they (the mother) had therefore missed any information provided there. Key informant interviews with health centre staff broadly contradict these accounts: personnel reported that mothers were systematically provided with a range of relevant information about coupons, porridge and young child feeding.

#### *Satisfaction: Variety*

A slight majority of mothers (30/52 or 58%) interviewed responded that they were happy with the selection of porridges (barley, cornmeal and plantain) and that their children were willing to consume all three types; indeed, in many cases, informants pointed out that even before the programme started, their children were eating these foods, so no real transition was involved in joining the coupons programme. However, 22 mothers (42%) noted that their children had expressed strong preferences for one or two types

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<sup>3</sup> The prevalence of wasting among young Amerindian children is normally very low (3.2% in this evaluation). This is supported by many studies, all of which identify stunting is the major form of malnutrition among Amerindian children, as found also by this BNP evaluation.

exclusively. According to mothers, some shops were willing to provide any combination of porridges asked for, while others were less flexible and required mothers to take all the types listed on the coupon. Although the number of mothers who responded that their children preferred only one or two types of porridge is significant, it should be noted that 50/52 mothers stated that their children liked at least one type of porridge (i.e. outright rejection of all three types only occurred in two households). This is an overwhelmingly large majority and seems to indicate that the available selection of porridges is sufficient.

Questions about milk elicited a more varied range of responses. Virtually universally, mothers articulated a clear distinction between ‘loose’ milk and branded packaged (‘tin’) milk, with the former being generally regarded as lower quality. The milk provided for redemption by beneficiaries of the coupons scheme is (like most milk associated with State- or donor-sector interventions) bulk, unbranded milk (in this case whole, not skimmed). While a majority of the mothers interviewed accepted the bulk milk offered by the coupon scheme, a significant minority (16 mothers, or 31% of the sample) eschewed this in favour of branded tinned milk, such as Fernleaf, Klim or Kerrygold. In three communities (Ann’s Grove, Vergenoegen and Woodley Park), either shopkeepers or clinic personnel noted that their clients preferred branded milk and were willing to pay extra for it.

#### *Satisfaction: Quantity*

The intention of the intervention is to provide a sufficient supply of complementary foods for one weaning child for one month. However, success in achieving this target is mixed: interview data shows that of the 52 mothers in the study, only 11 managed to make both the milk and the porridge last a month. Health centre personnel were more uniformly positive about the quantities of foods obtainable with the coupons: all except one (who felt that the amounts were genuinely insufficient) stated that, although mothers did indeed sometimes complain about the amounts, these quantities were sufficient to provide for one child’s complementary feeding needs for a month.

#### *Operations: coupon distribution at health centres and redemption at shops*

With the exception of some very minor difficulties in the first month of the programme, this has been going very well from the point of view of the beneficiaries: opinions were universally positive. Two health centre respondents made the point that the coupon distribution had added to their already heavy workload, especially in terms of extra paperwork. Shopkeepers and mothers consistently reported that redemption of coupons was a well-functioning process.

#### *Training*

Shopkeepers reported that they attended a satisfactory short training exercise at a Georgetown hotel, which covered the basic information necessary to carry out their role in the coupons programme, focusing chiefly how to manage the coupon redemption process and associated paperwork. Health centre personnel also offered positive assessments of the training they had received.

#### *Supplementation vs. supplementation in the household*

An important and highly relevant finding of the June 2006 BNP evaluation (longitudinal study) was that among children from the intervention group, the prevalence of wasting



was 27% less than that found in the control group.<sup>4</sup> This result appears to indicate quite unambiguously that some degree of dietary supplementation is taking place among beneficiary children. Less clear is the mechanism by which this is occurring. With few exceptions, mothers stated that they had not increased the amount of food purchased for the beneficiary children. Instead, they had ‘substituted’ the coupon foods for the milk and porridge ingredients which they were purchasing prior to entering the programme. By this logic, the target children’s food intake should not have increased and there should have been no observable difference in wasting rates between the intervention and control groups. One possible explanation is that, even though the coupons might not serve as a full food supplement for the target children, they do at least guarantee a regular and nutritious porridge feeding. In households such as these, in an economically marginal position, this would indeed make a significant difference in wasting rates. Furthermore, the coupons are part of an overall programmatic approach, one of the goals of which has been to encourage mothers to think more about complementary feeding processes.

Mothers were asked whether the coupons helped them to save money (in other words, whether they were practicing substitution or supplementation with respect to the diet of the target child), and if so, what they were spending the money on. The majority stated that they were substituting with respect to the *porridge needs* of the target child. However, when asked what they spent the saved money on, a range of answers was offered: while some mothers stated that they used the ‘extra’ cash to buy clothes, nappies, snacks or medicines, or used it to pay household utility bills, or saved it, many responded that they used the money to buy extra food for the baby, or else foodstuffs (greens, flour, rice, eggs and fruit were mentioned) for the family. The implication of this result is that while *substitution* was taking place with respect to the porridge needs of the target child, *supplementation* was occurring with respect to other household food needs—including, of course, other complementary food needs of the target child. In other words, the coupon benefit appears to serve a dual purpose: ensuring a regular porridge feed for the target child and acting as a cash transfer at the household level.

### *Dilution*

Interviews with mothers, 44 of whom addressed the issue of dilution, produced the following results: 18 stated that they shared the milk and porridges with persons other than the target child; of these, 3 were breastfeeding mothers who said that they themselves consumed the porridge foods, while the remaining 15 shared the foods with other children in the household. Mothers who stated that they did not share the porridge or milk with anyone other than the target child numbered 26, but it is important to note that of these ‘non-sharers’, 10 had a single child. Key informants (health centre personnel) also acknowledged that they had either observed intra-household sharing of suspected it was happening.

### *Misuse of Coupons*

We were unable to find any evidence of fraudulent practices related to coupons, on the part of any stakeholder in the programme. It is possible that at some level, these practices exist, but in our opinion, their impact on the programme is probably insignificant.

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<sup>4</sup> ‘Report of the final evaluation of the GoG / IDB Basic Nutrition Program’s Batch 1 health centres’. Social Development Incorporated, June 2006.

### *Sustainability and Perceived Benefits*

The majority of mothers interviewed on the topic of the future stated that they would try to continue with the complementary feeding practices they had learned from this programme, although some stated that they would not be able to sustain the variety of porridges and branded milk if they were required to assume the burden of purchasing the items themselves. It is difficult to say with any certainty how many would be able to sustain this variety of foods if they had another child at some future date after the intervention has ended. Health centre personnel are guardedly optimistic about the future, suggesting that most mothers would certainly want to continue with these complementary feeding practices, but at the same time questioning how many would be able to afford it. The fact that mothers themselves perceive changes in their babies' growth and development, is probably the single most important factor in ensuring at least some degree of stable behaviour change in future complementary feeding practices.

### Prevalence of stunting

No target for the reduction in the prevalence of stunting was set in the BNP's logical framework.<sup>5</sup> However, figures for the individual studies are as follows:

Longitudinal study:

- The final prevalence of moderate and severe stunting in the intervention group was nearly 21.3% lower than in the control group;

Cross-sectional studies:

- Coastal communities: 10.1% reduction in the prevalence of severe stunting
- Amerindian communities: The prevalence of stunting rose substantially, by 28%.
- Non-BNP communities: The prevalence of stunting rose by 32%.

### Breastfeeding

Rates of the initiation of breastfeeding were found to be high in all studies, over 90%, substantially higher than the figure quoted in the BNP's logical framework. However, by three months, post-intervention rates had fallen to 88.6% in the coastal communities, 98% in the Amerindian communities<sup>6</sup>, and 92% in the non-BNP communities. While improvements in breast feeding rates between pre and post intervention were seen in all studies, they were significant only in the coastal communities.

Young child feeding guidelines promote prolonged breast feeding. The BNP's logical framework's target for breastfeeding at 12-15 months is a rate of 65%. The average 12-15 months rate achieved by the BNP was 57%, indicating a shortfall of 8%. Changes between pre and post intervention rates at 12-15 months for each study are as follows:

- Coastal communities: increase from 50.5% to 55%

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<sup>5</sup> The aetiology of stunting differs from that of wasting. To tackle stunting, a project would need to improve diet diversity, which is not achieved by the provision of the coupon's porridge ingredients. Moreover, stunting is cumulative if the child remains in a poor environment, and its prevalence normally rises as the child gets older.

<sup>6</sup> Breast feeding practices in Amerindian communities are excellent

- Amerindian communities: increase from 73% to 78.5%
- Non-BNP communities: slight decrease from 56% to 54%

Exclusive breast feeding is recommended for the first six months of the infant's life. Improvement in rates of exclusive breast feeding can be assessed only by means of the qualitative study on breast feeding, which has too small a sample size to allow an assessment of statistical significance.<sup>7</sup> It is important to note that the figures quoted by the Ministry of Health for exclusive breast feeding are in reality figures for infants who are predominantly, but not necessarily exclusively, breast fed.

The study on breastfeeding provided the following information:

*Knowledge and Understanding of Breastfeeding and its Benefits*

Mothers were found to be able to articulate an impressively wide range of benefits deriving from breastfeeding. Compliance issues appear to related more to practical implementation and use of knowledge about breastfeeding.

*Compliance with Breastfeeding Guidelines: Breastfeeding on Demand*

The key finding here was that mothers do breastfeed on demand, but that in addition to this, they sometimes wake their babies to offer them a feed. This is related to the 'hungry baby' syndrome, in which mothers express a concern that their babies are not feeding often enough of their own accord. In terms of on-demand feeding, the direct result of this was that many mothers would wake their children up to feed them if they (the babies) did not themselves wake up within 2-3 hours after a prior feed. We did not find cases of mothers attempting to train their babies to feed only at certain times. Nor did we find evidence of significant numbers of mothers feeling ashamed of breastfeeding in public places or in the presence of family members. In this case, we do see a significant change from baseline to post-intervention: at BF1, 14 first-time mothers and 12 mothers of two or more responded that they did this; by BF2, these figures had fallen to 4 and 6 respectively.

*Compliance with Breastfeeding Guidelines: Exclusive Breastfeeding*

Responses to the line of questioning about exclusive breastfeeding show a substantial drop from baseline, where 21 mothers asserted that they exclusively breastfed, to BF2, in which only 8 made this claim. Examining the positive interview responses from BF1 together with the negative responses from BF2 shows us that, in fact, many mothers who began with the intention of exclusive breastfeeding felt unable to continue doing so over the intervening months. Thus, in effect, we observe a drop by the second round of interviewing. Again, we see the effects of the 'hungry baby' syndrome: mothers felt, over the course of the first six months of breastfeeding, that their milk was not sufficient to

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<sup>7</sup> Assessing exclusive breast feeding in a large sample by means of a structured questionnaire and in the presence of health centre staff would give grossly misleading and inflated results. Many mothers will claim to have breastfed their infants exclusively initially, but further probing in a home setting reveals that most will actually have given a variety of other beverages (water, juice, thin porridge, infant formula) because they felt that their milk was inadequate ("hungry baby" syndrome) or that the baby needed more fluid in a hot climate.

satisfy their babies. As a result, some introduced formula and others, concerned about thirst, introduced water and juices.

#### *Compliance with Breastfeeding Guidelines: Duration of Breastfeeding*

Results from this part of the study are very encouraging. With the exception of a few mothers who said that they would wean their babies at 12 months (2 mothers), 17 months (1 mother) and 24 months (3 mothers), and 2 mothers who said they had not given the matter any thought and did not know, all mothers responded that they would continue breastfeeding until the baby weaned him/herself.

#### *BNP Breastfeeding Promotion Activities and Mothers*

The key issue here concerns coverage and reinforcement: too many mothers reported that they had little exposure to the BNP breastfeeding promotion activities: in all, 14 mothers out of the total sample of 43 (just under one-third) felt that the IEC messages had influenced their breastfeeding choices. In no case had the brochures been explained to mothers (at least not within their ability to recall it), and in fact no mother was able to physically produce the brochure at the time of interview. Although some mothers do report effective exposure to breastfeeding promotion activities, and add that these activities have helped them make a decision to breastfeed, a significant number do not fall into this group. These mothers need to be covered by the programme interventions.

#### *BNP Breastfeeding Promotion Activities and Health Centre Personnel*

Health centre personnel are on the whole positive about the breastfeeding promotion activities they have carried out. They feel that the information has been both well-received and well-absorbed by mothers, although some of the key informants point to the low education levels of some of the mothers, noting that this can be an obstacle to knowledge uptake. Most felt that breastfeeding figures had improved in their community as a result of promotion activities. Health centre personnel also noted positive changes in attitudes of mothers towards breastfeeding, and contended that these shifts are a result of breastfeeding promotion. Nurses have an excellent, highly constructive attitude towards the breastfeeding promotion activities.

#### Complementary feeding

The recommended age for the introduction of complementary foods is six months. At pre-intervention, 46.8% of coastal mothers, 45.7% of Amerindian mothers, and 48.9% of non-BNP mothers were complying with this recommendation. At post-intervention, rates rose to 52.6% for coastal mothers, 51.6% for Amerindian mothers and 61.4% among non-BNP mothers. The increases were significant for Amerindian and non-BNP mothers only. All post-intervention figures are substantially below the BNP target of 75%.

Issues arising from the qualitative study of knowledge, attitudes and practices in relation to complementary feeding provide some explanations for these disappointing figures:

### *Knowledge of good nutrition and child feeding practices*

Knowledge about these topics was, even at the KAP2 stage, variable and heavily biased towards growth and health. At KAP2, all health centres averaged below 3 out of 4 points for the four-part question about these topics. Very few mothers recognised the importance of good nutrition and child feeding for mental development and activity/energy.

### *Introduction of complementary foods*

According to the knowledge test scores in KAP2, there has been some definite improvement in mothers' understanding of the appropriate moment for introducing complementary feeding. There is still room for improvement here, and programme interventions could be more pro-active about pushing back the moment of introduction of complementary foods. The exception is St. Cuthbert's, where mothers achieved perfect scores even before the interventions began.

### *Selection of foods for complementary feeding*

Foods used for complementary feeding are porridges, largely obtained with coupons, together with a range of different crushes: potato, yam, eddoe, eggs. Steamed greens are popular, as is fish. Meat is less common, and rice is avoided because of its 'heaviness.' The selection of these foods appears to be based upon established cultural concepts of which foods are light, digestible, steamed, soft and bland.

### *Mothers' understanding of the difference between transitional foods and family foods*

Most mothers in this study did not comply with the best practice food introduction schedule, and there was a clear disjunction between local beliefs about an appropriate timeline and the best practice schedule. The most common food introduction sequence found in this study was:

*breastfeed—stop breastfeeding, often too early—introduce thin porridge in a bottle and complex crush—continue crush and start introducing family food—move to family food*

### *Beliefs, taboos and cultural practices*

Food taboos, while extremely widespread, do not seem to present an obstacle to the uptake of nutritional knowledge. Substitutes for taboo foods are always available: in nutritional terms, it does not matter whether children are fed chicken instead of pork, or scaly fish instead of skinfish. Among Indo-Guyanese mothers, it may be the case (a larger sample would be required to determine the real extent of this) that fasting is too often extended to babies.

### *Preferred foods when children are unwell*

Young children suffering from minor ailments and discomforts such as colds, flu, teething and vaccine reactions were switched to predominantly liquid diets. In cases where the mother was still lactating, breast milk would be offered more frequently. Other liquids mentioned by mothers included juices, thin porridge, soups, sugary soft drinks and snack foods.

### *Economic constraints on complementary feeding*

Our data (which is not rigorous poverty mapping) suggests that as long as the coupon initiative can be sustained, there is no real problem. However, effects of macroeconomic changes, especially among vulnerable groups, are difficult to predict at the micro-level. The closure of a sugar estate or similar income shock could create immediate and severe problems, making it impossible for mothers who are now only just able to afford transitional foods to buy these foods.

### Knowledge of anaemia

The cross-sectional quantitative studies asked mothers if they had heard of anaemia, and if they had, could they name any consequences of anaemia or iron-rich foods. Except for Amerindian mothers, results were disappointing. Pre-intervention 55% of coastal mothers and 57% of non-BNP mothers claimed they had heard of anaemia. However, of these, 53% (coastal) and 52% (non-BNP) were unable to name either a consequence of anaemia or an iron-rich food. Post intervention figures showed virtually no improvement in this situation.

In Amerindian communities, however, results were very encouraging. While at baseline (pre-intervention), 45.5% of mothers in Amerindian communities stated that they had of anaemia, the figure rose to 71% post-intervention. And of these 71%, 93% were able to name at least one consequence of anaemia and 91% were able to name at least one iron-rich food. The difference between the Amerindian communities and the coast and non-BNP (most of which are also coastal) communities is striking. The evaluation team strongly urges the Ministry of Health to investigate how health professionals in the Amerindian communities are able to achieve such impressive increases in the knowledge of their community mothers, and whether coastal health professionals could follow the example of their colleagues in Amerindian communities.

### Exposure to IEC materials

Health centre staff were urged by the BNP to make full use of the BNP's IEC materials in their advice sessions and group talks on clinic days. Analysis of evaluation data has revealed that use of these materials can substantially overcome the disadvantage of a poor educational background. Exposure to IEC materials was assessed by a score that summed exposure to posters, brochures and radio or TV infomercials on sprinkles, breast feeding and anaemia. Percentages of mothers achieving above average scores pre and post-intervention were as follows:

- Coastal communities: an increase from 10% to 41%
- Amerindian communities: an increase from 14% to 40%
- Non-BNP communities: an increase from 27% to 52%

It is important to note that mothers in at least some of the Amerindian communities would have limited access to television or radio, and thus their scores reflect exposure to

posters and brochures to a much greater extent than the mothers of the coastal communities.

### Messages from health professionals

A study was conducted in selected coastal communities, as part of the impact evaluation, to determine the nutrition advice given to mothers at regular preschool child clinic sessions and mothers' recall of the advice ("exit poll" study). The main findings of this study support those from the cross-sectional studies discussed above. Importantly, the study demonstrated regional differences in health centre performance: Region 5 performed better than other regions, and practices at these health centres could be examined to guide improvements elsewhere.<sup>8</sup>

The qualitative study on complementary feeding also found that this is an issue that needs considerable attention. Passive interventions such as television and radio spots, posters and billboards may be effective, but it is difficult to establish the extent of this. What appears to be lacking is constant reinforcement through active intervention. (talks, workshops, home visits, community nutrition counsellor initiatives).

### Sprinkles for pregnant women: a pilot study

Guyana offers an iron supplement in the form of an iron tablet to all pregnant women attending antenatal clinics. Compliance is generally poor because of the side effects of the pill. The objective of this study was to determine if compliance was better with iron supplementation recommendations if the supplement was in the form of sprinkles rather than the conventional iron tablet. Both the qualitative and quantitative studies demonstrated much better compliance with sprinkles, and significantly fewer side effects were reported.

The majority (70%) of women interviewed preferred sprinkles to the iron tablets they had taken in previous pregnancies. Sprinkles were used almost exclusively by the target women, and not shared with other members of the family. Sprinkles were used in food, drink, or both. While some women reported negative side-effects, in general these were fewer than those experienced with iron tablets. Moreover, despite reported changes in taste and texture of food and drink associated with the addition of sprinkles, most women found the sprinkles to be acceptable, easy to use, and of perceived beneficial effects. A significant proportion of informants did not have a clear understanding of what sprinkles contain and what purpose they serve. Furthermore, a substantial majority of informants replied that the only information they had received about the sprinkles concerned how they should be used (dosage and mixing instructions). Almost none referred to any other kind of information being provided at the clinics.

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<sup>8</sup> In 2007, Region 5 was recognized as the "best performing region".



The limiting factor in the reduction of anaemia in pregnancy is late registration for antenatal clinics. The study found that the supplement should be taken for at least five months during pregnancy to achieve an impact, and few women achieve this duration of supplementation.

### **BNP achievements: a summary discussion of key issues**

The BNP has achieved a great deal. In the communities that it has functioned, it has achieved its targets of 30% reductions in the prevalence of anaemia and of wasting. It has also improved child feeding practices, although the improvements could be greater. These are the outcomes that have been measured by the impact evaluation. There are other achievements that are at least as important as these measurable outcomes:

- The BNP has substantially raised the profile of nutrition in the Ministry of Health and in Guyana. The fact that the Ministry has committed itself to continuing all BNP interventions (except coupon distribution)<sup>9</sup> is a tribute to both the Ministry and the BNP.
- A comprehensive Food and Nutrition Strategy for Guyana is under preparation.
- Through its surveillance-related activities, the BNP has supported:
  - Growth monitoring activities, including the shift to the new growth charts. This has entailed substantial capacity-building, the procurement of new anthropometric equipment, and the expansion of growth monitoring to include the measurement of both wasting and stunting.
  - The development of a framework for a comprehensive national food and nutrition surveillance system. This has included risk-mapping, the routine collection of food price and nutrient cost data, and a nursery school surveillance system. Some of these activities are in progress.
  - Capacity-building within the Food Policy Division in data management and analysis.

These are indeed impressive achievements. The major challenge now is to sustain and improve on the BNP's achievements, and to ensure that scaling up the program to a national level does not result in a dilution of its impact. Specific issues that need continued attention are:

- Improving the knowledge and understanding of good nutrition among Guyanese households, as a first step towards achieving sustained behaviour change in relation to young child feeding practices. Improving diet diversity and complementary feeding practices and reducing levels of stunting, especially in Amerindian communities.
- Sustaining compliance with the use of sprinkles. This demands a much better understanding on the part of mothers of the consequences of anaemia and why sprinkles are an important means of anaemia prevention.
- Finding innovative ways to improve the nutrition advice provided at health centres and overcoming the constraints imposed by staff shortages.

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<sup>9</sup> A more limited and targeted distribution of food coupons, possibly through the Ministry of Labour, Human Services and Social Security, is under consideration.

- Finding innovative ways to overcome the challenge of staff shortages. The achievements of the centres in Region 5 and in Amerindian communities has demonstrated that much more can be achieved, even in the face of staff shortages.<sup>10,11</sup> These centres should be examined to glean lessons learned.

The following lessons learned are derived largely from the experience of conducting the impact evaluation and of relating to the BNP's management and other contractors:

- Good communication is needed between a program's management staff and its contractors. More specifically, a multi-faceted program such as the BNP requires a functioning technical steering committee.
- All interventions need to start in a timely fashion.
- Issues of sustainability and handover to the Government and its line ministries need to be given more serious attention at the start of the program.
- Program management needs to respond to the challenges and shortcomings identified by the program's evaluation, and not only to its positive findings.
- There must be a broad-based recognition that behaviour change takes time, and may not occur fully within the life of any one program. Recognition is also needed that a holistic approach is needed for a program to achieve its full positive impact on the nutritional status of a population.

The BNP has been an excellent example of interweaving research and action. It has measured the real effectiveness of a national program rather than the efficacy of a limited research study. The BNP's evaluation assessed achievements in the face of realities and constraints that confront all national programs.

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<sup>10</sup> S.Ismail and T.Roopnaraine (2007) Interim report of the evaluation of the GoG / IDB Basic Nutrition Program's interventions at Batch 1 & Batch 2 health centres.

<sup>11</sup> S.Ismail (2008) Extended impact evaluation of the GoG / IDB's Basic Nutrition Program Phase 2: Impact of the BNP on Amerindian communities.

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## **Abbreviations**

AG	- Afro-Guyanese
AM	- Amerindian
BF	- Breast feeding (BF1 and BF2 refer to the baseline and final interviews for the breast feeding study)
BNP	- Basic Nutrition Program
HC	- Health centre
HSDU	- Health Sector Development Unit
IDB	- InterAmerican Development Bank
IEC	- Information, Education and Communication
IG	- Indo-Guyanese
KAP	- Knowledge, Attitudes and Practice (KAP1 and KAP2 refer to the baseline and final interviews of the KAP qualitative study)
KII	- Key Informant Interviews
MoH	- Ministry of Health
PMU	- Project Management Unit
SDI	- Social Development Inc.
SPSS	- Statistical Package for the Social Sciences
SWOC	- Strengths, Weaknesses, Opportunities and Constraints
WHO	- World Health Organization

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## 1.0 Introduction and Background

Guyana's Basic Nutrition Program (BNP), funded through a loan from the InterAmerican Development Bank and by the Ministry of Health, was signed in 2003. Interventions began in January 2005.

The goal of the BNP is to reduce malnutrition among pregnant women and young children in Guyana. The Program's specific objectives include:

- i. To reduce wasting (low weight for height) in young children by 30% in poor communities;
- ii. To reduce the prevalence of anaemia in young children by 30% in poor communities;
- iii. To reduce the prevalence of anaemia in pregnant women by 30% in poor communities;
- iv. To improve breastfeeding practices (initiation, breastfeeding rates and rates of exclusive breastfeeding);
- v. To improve young child feeding practices.

The main activities of the BNP are:

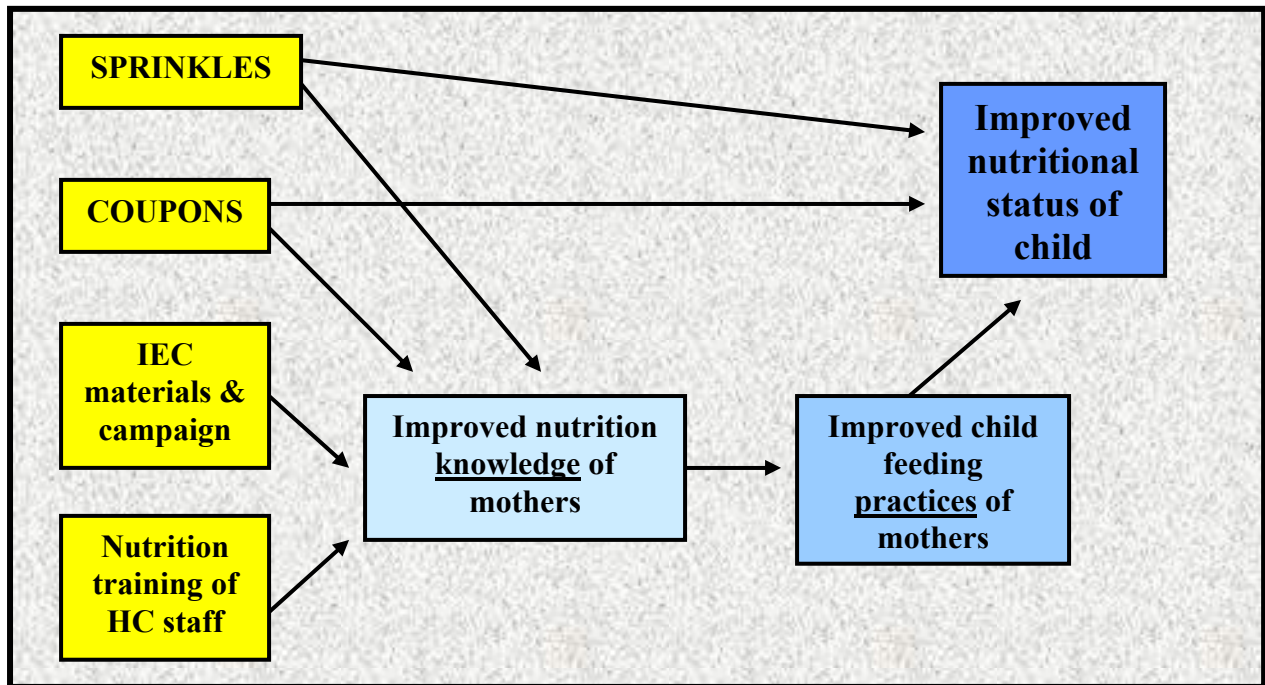
- i. The distribution of food coupons to all children aged 6-24 months in the catchment areas of selected health centres in Guyana's poorest districts. These coupons enable mothers to acquire specific foods for young child complementary feeding;<sup>12</sup>
- ii. The distribution of iron supplements in the form of 'sprinkles' packaged as daily dose sachets to be mixed with children's food. These too are distributed to all children aged 6-24 months in the catchment areas of selected health centres in Guyana's poorest districts;
- iii. The distribution of iron supplements, also in the form of daily dose 'sprinkles', to pregnant women attending antenatal clinics, following the conduct of a pilot study to assess the relative compliance of sprinkles and iron tablets;
- iv. A programme of nutrition training for health staff, and an information, education and communication (IEC) campaign to improve young child feeding practices. This includes all aspects of breastfeeding and appropriate complementary feeding practices.
- v. Improving growth monitoring and promotion activities at health centres, and to contribute to the development of a national nutrition surveillance system for Guyana.

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<sup>12</sup> The coupon has the value of US\$5 per month. The mother exchanges the coupon at selected shops for 2 lbs of powdered milk and her choice of flours (barley, cornmeal and plantain).

Figure 1 is the conceptual framework for the BNP, its interventions and its intended outcomes.

**Figure 1      Conceptual framework of the BNP**



The BNP was scheduled to end in 2007. Interventions i and ii were targeted originally to mothers and children attending 49 health centres across Guyana. In 2007, coverage was expanded to a further 30 health centres, and the BNP was extended to 2009. Interventions iv and v had national coverage.

Also in 2007, it was agreed that the Ministry of Health should assume responsibility for the distribution of sprinkles to all non-BNP health centres, with the ultimate goal of assuming responsibility for sprinkles distribution nationally when the BNP ended in June 2009.

The distribution of food coupons to all mothers attending BNP centres will end in mid-2009. However, it is possible that some targeted distribution may continue, likely with the involvement of the Ministry of Labour, Human Services and Social Security.

Social Development Inc. (SDI) was contracted in June 2004 to carry out the impact evaluation of the BNP. With the extension of the BNP in 2007, the evaluation was extended to 2009. It was also expanded to cover samples of the new BNP and of the non-BNP centres. SDI has submitted a number of interim reports (see Annex 3). This report is the final, integrated report of the impact evaluation of Guyana's Basic Nutrition Program.

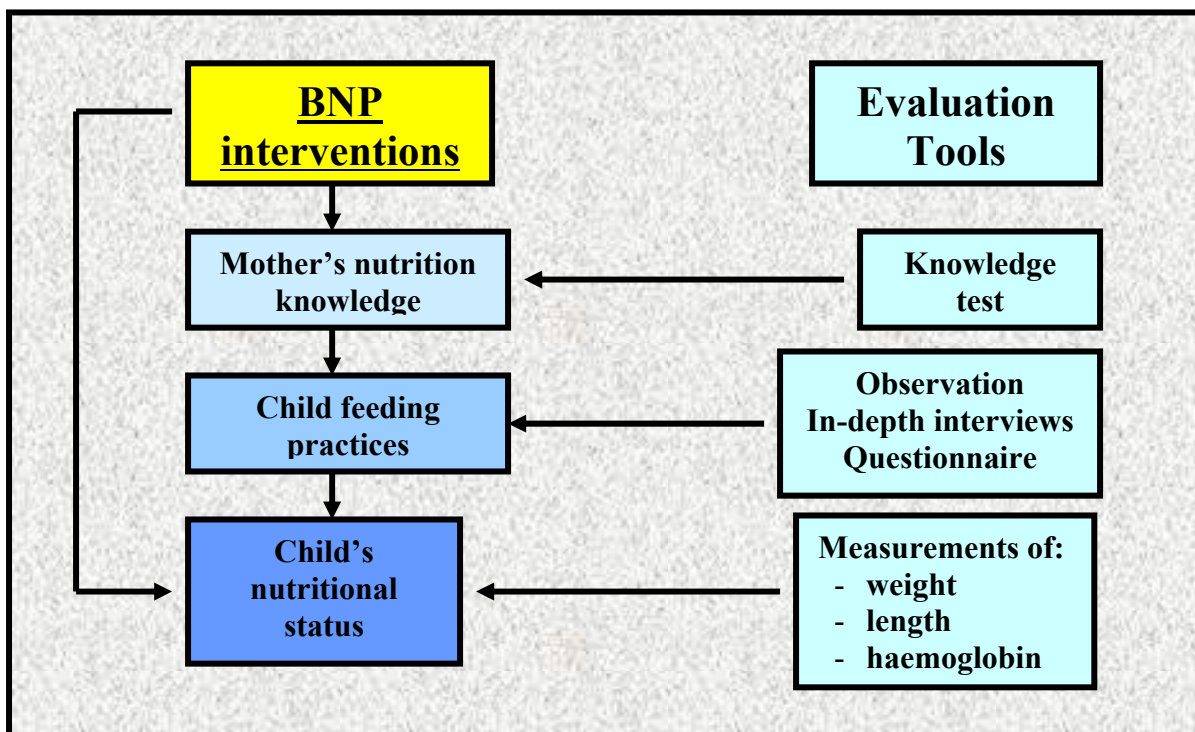
## 2.0 Methods

The original evaluation design included the following:

- A quantitative component to assess the extent to which the Program's objectives and targets are met. This component is sub-divided into the following:
  - a Young Child Study, to assess the impact of the Program on the nutritional status and haemoglobin levels of children aged 6 – 24 months.
  - a Pregnant Women Study, to compare the acceptability of “sprinkles” with that of the iron tablets normally distributed by the health centres at antenatal clinics.
- A qualitative component, comprising four studies on small sub-samples selected from the main sample for the quantitative component. The studies are on:
  - Breast feeding practices
  - Complementary feeding: knowledge, attitudes and practices (KAP study)
  - Use of food coupons
  - Acceptability and use of sprinkles.

Figure 2 shows the evaluation tools used to assess the BNP outcomes.

**Figure 2 Framework for the evaluation of the BNP**

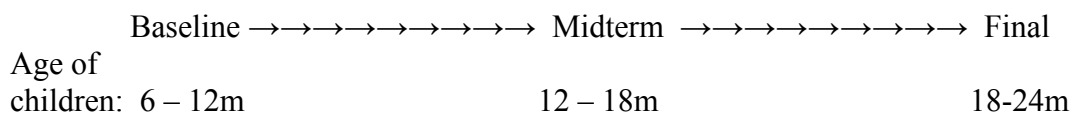




## 2.1 Quantitative component: study design, evaluation tools, fieldwork methodology, and data management

### 2.1.1 Study design

Through negotiation and consultation with the BNP's Project Management Unit (PMU), it was agreed that the original 49 BNP health centres would be divided into two batches (Batch 1 and Batch 2), each of which would be further subdivided into intervention and control groups. Distribution of sprinkles and coupons would begin at Batch 1 intervention centres once baseline data collection had been completed, and at Batch 1 control centres once final data collection had been completed. Children included in the intervention and control centres would be 6-12 months of age at baseline and 18-24 months at final data collection:



The original study design was thus longitudinal, with intervention and control groups. This design was in fact followed for Batch 1 centres. Three constraints were experienced:

- The sample sizes were smaller than anticipated from the figures provided by the health centres for numbers of children registered at these centres.
- The distribution of coupons did not begin until after midterm data collection. Thus the comparison of baseline and midterm data assessed the impact of sprinkles only, while the comparison of midterm and final data assessed the combined impact of sprinkles and coupons.
- The retraining of Batch 1 health centre staff and the distribution of IEC materials did not take place until well after final data collection. This longitudinal study thus did not evaluate the impact of these interventions.

It was intended that Batch 2 centres would be treated in a fashion similar to Batch 1. However, for budgetary reasons, the PMU decided that it wished to bring forward the distribution of sprinkles and coupons to all remaining health centres, thereby removing the possibility of a control group. At this point, I decided to shift to a simple before / after design (cross-sectional studies) for all remaining health centres.

Ultimately, we had six batches of health centres (see Annex 2), revised and renamed as follows:

Batch 1: the original intervention group for the longitudinal study (coastal centres);

Batch 2: the next batch of coastal centres to receive sprinkles and coupons (part of cross sectional study);

Batch 3: the original control group for the longitudinal study (coastal centres). An additional round of data collection was conducted at these centres to allow them to be included in the cross-sectional sample.

Batch 4: Health centres serving Amerindian communities, with a cross-sectional study design. These centres are a mix of the original BNP centres, and the new centres that entered the Program following its extension.

Batch 5: New BNP centres entering the BNP after its extension and expansion (all coastal), also part of the cross-sectional sample;

Batch 6: Non-BNP centres, where sprinkles were distributed by the Ministry of Health.

The findings of the longitudinal study are presented in Section 4.0, showing the impact of sprinkles and coupons. The combined impact of all four BNP interventions is seen in the cross-sectional studies (coastal communities and Amerindian communities), presented in Section 5.0.

Section 6.0 presents the results of three studies conducted during the course of the BNP evaluation:

- Pregnant women's study, to compare the acceptability of sprinkles with that of the conventional iron tablet;
- "Exit poll" study, to examine what nutrition advice is given and recalled by mothers after a clinic visit;
- Impact of sprinkles only at non-BNP centres.

For the cross-sectional studies (revised Batches 2 – 6, as described above), all children measured at both baseline (pre-intervention) and final (post-intervention) data collections were aged between 12 and 24 months. Children under 12 months were excluded from the cross-sectional samples so as to ensure that at final data collection all children would have been exposed to the interventions for a minimum of six months.

For the pregnant women's study, the samples included women in the first two trimesters of pregnancy at baseline. The final data collection was carried out when these women were in the last month of pregnancy.

For the exit poll study, we interviewed mothers of children aged 6 – 24 months, attending BNP health centres, as they left the health centre on a regular well-baby clinic day. We also interviewed nurses at these centres and observed group lectures.

Annex 6 (Calendar of events) tabulates the start of each intervention in relation to periods of data collection at the six batches of health centres.

### **2.1.2 Evaluation tools**

For all young child studies (i.e. excluding the exit poll study and the pilot study of sprinkles for pregnant women), data were gathered by means of a questionnaire and measurements. The questionnaire, administered to the mother or primary caregiver, obtained information on the following:

- Identification information, including address, names of mother and child
- Date of visit and child's date of birth, to calculate the child's age
- Child's sex, ethnicity and birth weight (from child's health record card)
- Mother's age, education, religion, marital status and occupation
- Number of children under 5 in the home
- Father's occupation
- Current breast feeding status and breast feeding history
- Child feeding practices
- Mother's nutrition knowledge and her exposure to IEC materials<sup>13</sup>

The following measurements were also taken from the sample children in all young child studies:

- Weight: measured in duplicate to the nearest 20g on a Detecto mechanical beam balance scale.
- Length: measured in duplicate to the nearest 0.5cm on a Grafco Infantometer.
- Haemoglobin: measured in duplicate to one decimal place in g/dl using microcuvettes and a HemoCue®.

For the pregnant women's study, haemoglobin was measured on enrolment and during the final month of pregnancy, as close to delivery as possible. In addition, the following information was gathered by means of a questionnaire, at enrolment:

- Identification information
- Date of visit
- Expected date of delivery
- Weeks of gestation (current)
- Woman's age, education, marital status, religion, ethnicity, occupation
- Father's occupation
- Parity
- Reproductive history
- Family planning information

In the final month of pregnancy, the woman was asked whether she had taken iron tablets, sprinkles<sup>14</sup> or any other form of iron supplement and, if so, for how long in each case.

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<sup>13</sup> These data were gathered only in the cross-sectional studies; the re-training of health centre staff in basic nutrition and the distribution of IEC materials had not started when final data collection took place at the Batch 1 health centres (longitudinal study). However, the qualitative studies on breast feeding and the KAP study assessed these questions on a subsample of the original Batch 1 mothers.

For the exit poll study, no measurements were taken, and data were collected on one occasion only. A questionnaire was administered to mothers of children aged 6 – 24 months, to gather the following information:

- Mother's education, ethnicity, age, and her child's age
- Whether the mother had listened to a group lecture and, what information she recalled from the lecture
- IEC material<sup>15</sup>: whether seen on display and/or handed to mother, used and/or explained by nurse
- Whether the nurse provided individual counseling, the mother's recall of advice given, and whether an opportunity was provided to ask questions.

### ***2.1.3 Fieldwork methodology***

Initially, all SDI field researchers were trained in questionnaire administration and measurement methodologies by the consultant trainer, who also developed the training manual. Subsequent refresher training and training of new SDI field researchers was undertaken by the team leader and by a senior field researcher (Samantha Downer). Training involved role play, standardization tests and field practice.

Field researchers were also trained as trainers of health centre staff. The original fieldwork plan required assistance in data collection from health centre staff, with frequent supervisory and supportive visits carried out by the SDI team. This was the method used for the baseline data collection for the longitudinal study. However, as data collection proceeded, it became increasingly obvious that many health centre staff were reluctant to provide assistance, or were unable to do so because of staff shortage and other commitments. We then decided to handle all data collection ourselves. At most health centres, we continued to receive extensive cooperation in the form of suitable space to undertake our data collection and the identification of mothers with children in the required age groups for inclusion in our samples.

Except for the exit poll study, the data collection at each health centre for each survey round was conducted over a period of 2 – 3 months, with SDI researchers attending all preschool child clinics during the data collection period. Since children under the age of 12 months are required to attend these clinics once per month and children aged 12 – 24 months once every two months, we expected to be able to capture most BNP target children during the 2 – 3 months data collection period.<sup>16</sup>

### ***2.1.4 Data management***

Training was provided to field researchers in questionnaire coding and data entry. Questionnaires were coded by SDI staff, generally upon return from fieldwork, or very

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<sup>14</sup> The sprinkles prepared for this pilot study had exactly the same formulation as the iron tablets normally distributed to pregnant women at health centres in Guyana.

<sup>15</sup> This included brochures, posters and DVDs

<sup>16</sup> See Section 2.1.5 Constraints for further comment on the samples achieved.

soon thereafter. A 10% subsample of questionnaires was checked for accuracy in coding at regular intervals by the team leader.

Questionnaire templates were developed using the software EpiInfo 6. Each questionnaire was entered twice, once each in separate files by different data entry clerks (duplicate data entry method). The two data files were validated and corrections made to data entries. Still in EpiInfo 6, age (from date of birth and date of visit) and nutritional status indicators (from weight, length, age and sex – for further details, see Annex 5 Nutrition Notes) were calculated. The file was then exported to SPSS®<sup>17</sup> for statistical analyses. Prior to analysis, nutritional status indicators, haemoglobin values and birth weights were grouped according to standard WHO cut-offs (see Annex 5).

Two scores were also calculated: anaemia score and the IEC exposure score. The anaemia score (out of a maximum of 7 points) was calculated only for respondents who stated that they had heard of anaemia. The score comprised two parts: knowledge of the consequences of anaemia (poor growth, poor mental development, poor health and lack of energy), and knowledge of dietary means of prevention (iron-rich foods: meats, legumes, green leafy vegetables). The IEC score was based on exposure to posters, brochures and radio or television advertisements on breastfeeding, sprinkles and anaemia. In the case of brochures, we also asked if these were given to the mother to take home.<sup>18</sup>

Data analyses involved simple frequency distributions, calculations of means, standard deviations, and medians, and crosstabulations. Tests of significance (t-tests, analysis of variance, chi-squares) were applied to identify differences between survey rounds and between control and intervention groups, using  $p < .05$  to identify statistically significant findings. Simple bivariate analyses were conducted to examine relationships between different groups of variables, and multiple regression analysis to develop profiles of nutritional vulnerability.

## 2.2 Qualitative studies methods

As described in 2.1.1 above, the qualitative component of the BNP evaluation comprised four discrete sub-studies:

- Breast feeding practices
- Complementary feeding: knowledge, attitudes and practices (KAP study)
- Use of food coupons
- Acceptability and use of sprinkles (among pregnant women and children aged 6-24 months at time of research).

Key research questions for these sub-studies were as follows:

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<sup>17</sup> SPSS = Statistical Package for the Social Sciences

<sup>18</sup> For both scores, knowledge and exposure were assessed by simple yes/no responses to each question i.e. if the item / condition was mentioned, seen or heard.

### *Breastfeeding*

- Knowledge and understanding of breastfeeding and its benefits: how much do mothers know and understand about the advantages of breastfeeding?
- Compliance or non-compliance with breastfeeding best practice guidelines: how closely do mothers adhere to established breastfeeding guidelines? Why or why not? What are some of the constraints and enabling factors?
- Basic Nutrition Program activities: how successful have IEC and health centre-based training been in encouraging mothers to comply with breastfeeding best practice guidelines?

### *Complementary feeding*

- When were complementary foods introduced and why?
- What foods are used for complementary feeding? What informs the selection of foods?
- Do mothers understand the difference between transitional foods and family foods?
- What foods are preferred when a child is unwell?
- What do mothers understand about the importance of good nutrition and child feeding practice?
- What kinds of beliefs, taboos and cultural practices might limit the uptake of nutritional advice?
- How clear is the message from health professionals?
- What kinds of constraint does economic status place upon complementary feeding?

### *Sprinkles (pregnant women and children aged 6-24 months)*

- How do mothers and pregnant women use sprinkles? What foods do they mix them with? Are dosage guidelines understood and adhered to?
- Acceptability: how acceptable are sprinkles to pregnant women and young children? Does either group report any reaction to perceived changes in taste or texture of foods? In particular, do pregnant (non-primigravida) women prefer sprinkles or the traditional iron pill?
- Do mothers and pregnant women understand the purpose of iron supplementation? How clear is the link between iron and anaemia?
- Do mother and pregnant women perceive benefits deriving from the use of sprinkles?
- Purchasing and social marketing: would it be feasible to implement a small charge for sprinkles? Would mothers and pregnant women be willing to pay for the supplement?
- Distribution and communication: how well do mothers and pregnant women feel sprinkles are being distributed? Does the supply chain work well? Are messages about the use of sprinkles clearly communicated to users?

For each sub-study, these key research questions were used to develop data collection instruments. For the breastfeeding, coupons and sprinkles studies, semi-structured

interview guides were used for mothers and, where applicable, pregnant women. Additionally, Key Informant guides were created for each of these sub-studies and used for interviews with health centre personnel and shopkeepers participating in the coupons program. For the complementary feeding sub-study, a KAP (Knowledge, Attitudes and Practice) approach was used. This tri-partite technique tested knowledge via a short, scored test, while attitudes were explored with an in-depth interview and practice was examined through direct observation.

A group of three field researchers was hired and trained in qualitative data collection techniques, with emphasis on in-depth, ethnographic-style interviewing and the careful development of good rapport with informants. The research instruments were then field-piloted; this exercise served both as a trial run for the instruments and also as an opportunity for field researchers to put their training into practice and to ensure competence in the technical aspects of data recording. The guides were then revised according to the results of the pilot study before final deployment in the field.

The sub-studies were carried out with different sample groups in seven health centres: Ann's Grove, Bushlot, Goed Intent, Herstelling, St. Cuthbert's, Vergenoegen, and Woodley Park. These were all Batch 1 centres and were chosen to ensure reasonable coverage with respect to ethnicity. The sprinkles and coupons studies employed a single round of data collection, while the breastfeeding and KAP studies were both carried out twice. Data collection was carried out according to the following schedule:

Sprinkles studies:

- a) Children: July-August, 2005
- b) Pregnant women: September-October, 2005

Sprinkles key informant interviews: November, 2005

Coupons study: January-February, 2006

Coupons key informant interviews (HC staff and shopkeepers): April-May, 2006

Breastfeeding Round One: September-October 2006

Breastfeeding Round Two: March-April 2007

Breastfeeding key informant interviews: May 2007

Complementary feeding (KAP) Round One: July-August 2006

Complementary feeding (KAP) Round Two: March-April 2007

All interviews were recorded on cassette tape or digital media, before being transcribed verbatim to Microsoft Word documents.<sup>19</sup> Analysis of interview data was carried out

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<sup>19</sup> SDI transitioned from analogue to digital data recording over the course of the BNP evaluation.

using a qualitative data analysis (QDA) software package called HyperResearch 2.0. This programme requires the researcher to load all interview source material as text files, together with the master codelist to be used in analysis. The codelists used for these datasets were based around categories and themes of interest designed to allow simple text searching, but also included a number of identifier and switch codes which facilitated sub-sample selection by ethnicity, number of children or health centre, the counting of affirmative or negative answers, and more complex Boolean searches.

## **2.3 Constraints and limitations**

A number of constraints and limitations were experienced during the course of the impact evaluation, some of which related to fieldwork and its logistics, and some to the methodology. We experienced also constraints that related to the realities of evaluating an active and evolving programme, such as the BNP, rather than a controlled research study. This issue, namely measuring effectiveness versus efficacy, is discussed further in Section 6.0.

### *Sample sizes*

A number of factors affected the sample sizes achieved for the young child studies:

- Attendance at preschool child clinics normally falls after the age of 12 months, when most immunizations have been completed. While we expected this to happen at the control centres (longitudinal study) where no food coupons were distributed, we found that it often occurred also at intervention centres. We discovered that at some intervention centres, coupons were not being distributed at regular preschool clinic sessions, but rather at special sessions held solely to distribute sprinkles and coupons. This defeats one of the objectives of the food coupon intervention, which was to encourage regular clinic attendance.
- At the start of each study we were given the numbers of beneficiaries expected at each participating health centre. These figures were used to estimate target sample sizes for each centre. However, in some cases it proved impossible to reach these targets, leading us to the conclusion that the original numbers that we were given were gross over-estimates of the real number of beneficiaries at these health centres.
- Heavy rains and flooding affected attendance. This was especially the case in January 2005, when most coastal communities experienced severe flooding.

The following factors affected the sample size achieved for the pilot study of sprinkles for pregnant women:

- Late registration for antenatal clinic was common; many pregnant women did not begin attending antenatal clinic until the third trimester, sometimes even the last month of pregnancy. These women could not be included in the sample because their exposure to the iron supplement would have been for too short a duration.
- The final haemoglobin measurement was missed in a number of cases because the woman delivered earlier than expected or because the expected date of delivery was wrong. In some cases also, the woman moved to another community during



- the last month of pregnancy, either to be closer to a hospital or to stay with her mother.
- At some intervention centres, the distribution of sprinkles started late, and thus some women had to be excluded because, again, their exposure to the iron supplement was too brief.
  - Heavy rains affected attendance, as for the child studies.

### *The interventions*

The original study design required that all four BNP interventions (sprinkles, food coupons, re-training of health centre staff and the IEC campaign) should start simultaneously at the intervention centres of Batch 1, immediately after the baseline data collection for the longitudinal study. In the event, sprinkles distribution only started on time, and coupon distribution began six months later. The re-training of health centre staff and the IEC campaign did not begin until much later, almost a year after the final data collection for the longitudinal study. On the positive side, however, is the fact that the staggered start of interventions unintentionally created a study design that allowed us to tease out the impact of the different interventions.

The original evaluation design called for two longitudinal studies, each with control and intervention groups. However, because of delays in program implementation (specifically delays in the awarding of the contracts for the retraining of health centre staff and the IEC campaign), the budget expenditure rate was too slow. To speed it up, the BNP's management decided to bring forward the distribution of sprinkles and coupons to all centres, thereby eliminating the possibility of a control group. This compelled us to move to a cross-sectional study design.<sup>20</sup>

### *Fieldwork issues*

Cooperation by health centre staff was variable, often for reasons (such as limited space and staff shortages) beyond their control. In some instances we found it difficult to find a suitable space to conduct our work. Some health centre staff also provided excellent support by assisting with the questionnaire administration, the measurements, and by providing good access to mothers and child record cards. Others were unable to help us. We finally took the decision to increase our field staff and undertake all data collection ourselves.

Replacing faulty equipment<sup>21</sup> was difficult, and replacements were often not obtained in good time. A problem with the HemoCue is that there seems to be no technician in Guyana who can repair this instrument. The Grafco Infantometer (length board) is not a robust instrument, and we experienced many breakages.

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<sup>20</sup> In addition, as a late response to the 2005 floods UNICEF decided to start distributing sprinkles to two centres that were originally part of our control sample before final data collection was conducted at these centres.

<sup>21</sup> It was agreed at the start of the evaluation that all equipment would be provided by the Ministry of Health or would be available for our use at health centres. Guyana's Social Impact Amelioration Program had purchased HemoCues and length boards for all health centres.

### *Methodological limitations*

There are a number of acknowledged constraints inherent in both quantitative and qualitative methods. On the one hand, a large quantitative survey allows one to measure statistically significant change, such as a reduction in the prevalence of anaemia or wasting. On the other hand, time, funding and responder-fatigue limit the level of detail that can be obtained with a large sample. Qualitative small-sample studies cannot identify statistically significant change, but are invaluable in identifying reasons for behaviours, attitudes and practices. Briefly, large surveys can tell you what change has occurred, and in-depth qualitative studies can contribute to the understanding of why (or why not) change has happened.

There are other methodological constraints that are specific to this impact evaluation:

- The age of the children in the cross-sectional quantitative samples (12 – 24 months) meant that a great deal of the young child feeding data collected (such as breastfeeding in infancy, age of introduction of solid foods) is historical. This brings up not only limitations of recall but also the fact that many of these key decisions were taken by the mother before her exposure to the IEC campaign and to the improved skills and knowledge of the health staff. In line with this, our findings show that more change in young child feeding practices took place in the 12 – 18 month group than in the older 18 – 24 month group. This constraint is far less applicable to the qualitative studies which used a much younger sample, and used the same mothers for before/after interviews.
- Even if questionnaires were not administered by health centre staff but rather by SDI researchers, for logistical reasons the interviews were conducted at the health centres. In some cases, it was not possible to achieve total privacy and mothers may thus have felt compelled to give “correct” responses with regard to their breastfeeding and complementary feeding practices if a nurse was nearby. Except in a few cases, the qualitative interviews were conducted in the home, which also enabled observation of the mother preparing the child’s porridge, of food hygiene practices and of the general cleanliness of the environment.
- Ideally, the qualitative studies should have been carried out via fully residential fieldwork, in which field researchers live in the study communities for the duration of the research. For a number of practical reasons, this was not possible in this study. While we are satisfied with the depth of response which the field researchers achieved in the end, we also acknowledge that, with more ‘contact time’ to develop rapport, informants might have been willing to open up more.
- Direct observation of food hygiene and preparation practices for the qualitative complementary feeding study was logistically difficult. Although the field researchers arranged home visits with the informants, the timing of these visits did not always necessarily coincide with the normal times of food preparation. This is limitation inherent in non-residential field research: unless the researcher lives in informants’ homes for a period of time, systematic observation will be a challenge.
- Sample attrition was a factor in the qualitative complementary feeding study. Between Round One and Round Two, three mothers dropped out of the study.

### 3.0 The samples

#### 3.1 Quantitative sampling

Table 1 gives the sample sizes achieved for longitudinal and cross-sectional studies. For all studies except the study of Amerindian centres, haemoglobin was measured on a 50% sub-sample. At Amerindian centres, haemoglobin was measured on all sample children.

**Table 1 Sample sizes of evaluation studies (quantitative)**

Studies		Number of health centres	Number of children		
Type	Group <sup>22</sup>		Baseline	Midterm	Final
Longitudinal	Intervention (Batch 1)	13	498	403	377
	Control (Batch 2)	11	421	251	417
Cross-sectional; Pre / post-intervention	Coastal (Batches 2,3,5)	35	1600		1655
	Amerindian (Batch 4)	6	179		192
	Non-BNP (Batch 6)	12	505		459
Post-intervention	Exit Poll	15			584
Pilot; longitudinal; pregnant women	Intervention (sprinkles)	13	191		120
	Control (iron tablets)	11	188		110

Table 2 shows the samples' socio-economic characteristics (Batches 1 – 6). There are substantial differences between the batches in socioeconomic characteristics, most related to the predominant ethnic group of the batch. Batch 3, for example, has a higher proportion of Indo-Guyanese than the other coastal batches (Batches 2 and 5) and the non-BNP batch (Batch 6). It also shows poorer maternal educational attainment, a higher proportion of young mothers, more married (or common law) mothers, and more housewives. However, when the three coastal batches (Batches 2, 3 and 5) are combined, the proportions showing these characteristics are similar to those seen in Batch 6, which consists also of largely coastal communities.

The Amerindian mothers (Batch 4) have significantly poorer educational attainment than coastal mothers and larger numbers of children under 5 years in the households.<sup>23</sup>

<sup>22</sup> All Batch numbers refer to the revised batches of health centres shown in Annex 2

<sup>23</sup> Extended families are more common in Amerindian communities.

**Table 2 Socioeconomic characteristics of the samples**

Characteristic	Categories	Percentage of samples						
		Batch 1	Batch 2	Batch 3	Batch 5	Batches 2, 3, 5	Batch 4	Batch 6
		Longitudinal	Coastal	Coastal	Coastal	All coastal	Amerindian	Non-BNP
Maternal age	< 20 yrs	20.6	10.1	16.7	11.9	12.7	12.8	14.9
	20 – 29 yrs	54.7	56.6	57.2	59.6	58.4	54.3	57.1
	> 29 years	24.7	33.3	26.1	28.5	28.9	33.0	27.9
Maternal education	None + partial primary	16.9	6.7	17.4	5.1	8.6	22.1	7.4
	Complete primary	24.6	14.9	15.9	10.6	12.9	36.9	13.8
	Partial secondary	30.4	49.3	36.7	44.8	43.6	22.7	40.0
	Complete secondary	24.2	19.0	27.1	30.6	27.3	18.3	31.3
	Tertiary	3.8	10.1	2.9	8.9	7.6	0	7.6
Marital status	Married / Common law	81.4	83.0	91.8	82.2	84.9	89.4	86.8
	Single / widowed / divorced	18.6	17.0	8.2	17.8	15.1	10.6	13.2
Ethnicity	African	28.6	22.8	7.5	19.8	17.2	3.5	19.0
	Amerindian	4.4	0.9	2.3	1.0	1.3	52.3	4.0
	East Indian	45.9	28.1	57.5	33.1	38.4	1.1	39.4
	Mixed, European, Chinese	21.1	48.2	32.7	46.1	43.0	43.1	37.6
# of children under 5 in household	1	58.1	55.0	63.0	63.9	61.8	47.9	59.3
	2	28.5	35.6	30.0	30.7	31.5	39.9	32.7
	≥ 3	13.4	9.5	7.1	5.4	6.7	12.2	8.0
Mother's occupation	Housewife	85.0	71.5	83.9	71.0	74.5	70.7	75.4
	Unskilled labour	2.2	5.9	2.1	3.7	3.7	0	3.4
	Skilled labour	1.2	2.4	0.9	2.8	2.2	13.5	2.0
	Office / service worker	6.0	15.3	8.5	15.1	13.4	11.1	10.9
	Professional, business	5.6	4.9	4.6	7.4	6.2	4.8	8.4
Father's occupation	Unskilled labour	36.5	28.8	34.5	20.5	25.9	20.1	29.3
	Skilled labour	47.9	51.5	45.9	54.2	51.4	65.9	49.3
	Office / service worker	8.3	12.7	8.5	13.5	12.0	4.5	8.6
	Professional, business	7.3	7.0	11.1	11.8	10.7	9.5	12.8
Sex of sample child	Male	47.2	49.2	51.7	50.8	50.7	48.8	52.8
	Female	52.8	50.8	48.3	49.2	49.3	51.2	47.2
Age of sample child	12 – 18 months		53.0	53.8	57.0	55.3	53.9	59.6
	18 – 24 months		47.0	46.2	43.0	44.7	46.1	40.4

### 3.2 Qualitative sampling

#### *Sprinkles (targeted to children 6-24 months)*

A purposive sample of 52 mothers with children aged 6-24 months was further stratified by ethnicity: 21 informants were of Afro-Guyanese ethnicity, 21 of Indo-Guyanese origin and 10 were Indigenous (Amerindian). Furthermore, within each ethnic group, informants were split into two subgroups: mothers with one child, and those with two or more children. This was done as evenly as possible. It is important to note that ethnicity and health centre are in some cases (such as St. Cuthbert's, a predominantly Amerindian community) coterminous. In addition to the household interviews, in-depth key informant interviews were carried out with a representative from the health centre in each of the seven communities. This sample is shown below in Table 3.

**Table 3 Sprinkles (children 6-24 months) sample**

	Ann's Grove	Bushlot	Goed Intent	Herstellling	St. Cuthbert's	Vergen-oegen	Woodley Park	TOTAL
AG1	1	1	3	1	0	0	3	9
AG2+	5	1	0	2	0	1	3	12
IG1	1	1	0	1	0	5	3	11
IG2+	0	5	0	2	0	0	3	10
AM1	0	0	0	0	5	0	0	5
AM2+	0	0	0	0	5	0	0	5
KII	1	1	1	1	1	1	1	7
TOTAL	8	9	4	7	11	7	13	59

#### **Key**

AG = Afro-Guyanese; IG = Indo-Guyanese; AM = Amerindian  
 1 = one child 6-24 months; 2+ = two or more children, at least one of whom was 6-24 months old at the time of interview  
 KII= Key Informant Interview

#### *Sprinkles (pregnant women)*

This sub-study is based upon fifty semi-structured interviews carried out with pregnant but non-primagravida women in seven health centres. The purposive sample was further stratified by ethnicity: 21 informants were of Afro-Guyanese ethnicity, 21 of Indo-Guyanese origin and 8 were Indigenous (Amerindian). In addition to the household interviews, in-depth key informant interviews were carried out with a representative from the health centre in each of the seven communities (the same interviews as used for the sprinkles-young children sub-study). The sample is shown in Table 4.

#### *Coupons*

This study was based upon fifty-two semi-structured interviews carried out with mothers in seven health centres. The purposive sample was further stratified by ethnicity: 20 informants were of Afro-Guyanese ethnicity, 22 of Indo-Guyanese origin and 10 were

Indigenous (Amerindian). Furthermore, within each ethnic group, informants were split into two subgroups: mothers with one child, and those with two or more children. This was done as evenly as possible. In all study households, at least one child fell within the age range 6-24 months at the time of research, ensuring that the household was an eligible coupon recipient. Additionally, 8 key informant interviews were carried out with owners of shops designated as coupon redemption points, and a further 7 with personnel from health centres in the study communities. This sample is shown in Table 5 below.

**Table 4 Sprinkles (pregnant women) sample**

	Ann's Grove	Bushlot	Goed Intent	Herstelling	St. Cuthbert's	Vergen-oegen	Woodley Park	TOTAL
AG	8	6	3	3	0	1	0	21
IG	3	1	4	6	0	2	5	21
AM	0	0	0	0	8	0	0	8
KII	1	1	1	1	1	1	1	7
TOTAL	12	8	8	10	9	4	6	57

**Key**

AG = Afro-Guyanese; IG = Indo-Guyanese; AM = Amerindian  
KII= Key Informant Interview

**Table 5 Coupons sample**

	Ann's Grove	Bushlot	Goed Intent	Herstelling	St. Cuthbert's	Vergen-oegen	Woodley Park	TOTAL
AG1	1	0	3	1	0	0	4	9
AG2+	7	1	0	2	0	0	1	11
IG1	1	0	0	1	0	4	4	10
IG2+	0	8	0	1	0	1	2	12
AM1	0	0	0	0	5	0	0	5
AM2+	0	0	0	0	5	0	0	5
KII (shop)	1	1	2	1	1	1	1	8
KII (HC)	1	1	1	1	1	1	1	7
TOTAL	11	11	6	7	12	7	13	67

**Key**

AG = Afro-Guyanese; IG = Indo-Guyanese; AM = Amerindian  
1 = one child 6-24 months at the time of interview; 2+ = two or more children, at least one of whom was 6-24 months old at the time of interview  
KII = key informant interview (shop and HC: Health Centre)

### *Breastfeeding*

This study was carried out with mothers and health personnel in seven health centres. The purposive sample of 43 mothers was further stratified by ethnicity: 18 informants were of Afro-Guyanese ethnicity, 16 of Indo-Guyanese origin and 9 were Indigenous (Amerindian). Moreover, within each ethnic group, informants were split into two subgroups: mothers with one child, and those with two or more children. This was done as evenly as possible. The breastfeeding sample is shown in Table 6 below.

**Table 6 Breastfeeding mothers Sample**

	Ann's Grove	Bushlot	Goed Intent	Herstelling	St. Cuthbert's	Vergen-oegen	Woodley Park	TOTAL
AG1	1	5	1	1	0	0	1	9
AG2+	3	4	2	0	0	0	0	9
IG1	0	1	5	0	0	1	2	9
IG2+	0	2	1	2	0	2	0	7
AM1	0	0	0	0	3	0	0	3
AM2+	0	0	0	0	6	0	0	6
KII	1	1	1	1	1	1	1	7
TOTAL	5	13	10	4	10	4	4	50

### **Key**

AG1: Afro-Guyanese mother, 1 child;

IG1: Indo-Guyanese mother, 1 child;

AM1: Amerindian mother, 1 child;

KII: Key Informant interview

AG2+: Afro-Guyanese mother,  $\geq 2$  children

IG2+: Indo-Guyanese mother,  $\geq 2$  children

AM2+: Amerindian mother,  $\geq 2$  children

### *Complementary feeding*

This KAP study was carried out with mothers in seven health centres. The purposive sample was further stratified by ethnicity: 18 informants were of Afro-Guyanese ethnicity, 19 of Indo-Guyanese origin and 10 were Indigenous (Amerindian), for a total of 47.<sup>24</sup> Moreover, within each ethnic group, informants were split into two subgroups: mothers with one child, and those with two or more children. This was done as evenly as possible. In all study households, at least one child fell within the age range 6-24 months at the time of research. Key informant interviewing was not done for the KAP study.

The stratified sample is shown in Table 7 below.

<sup>24</sup> The research design originally called for a sample of 50 mothers; however, in the transition between KAP1 and KAP2, three dropped out. These were #17, #23 and #34. In addition to this attrition, KAP2 observation tables were not completed for mothers #7, #14, #30, #36, #44, #46 for a variety of logistical reasons. However, because these mothers had completed all other components of both rounds of KAP, they were included in the study, even though their observation tables were not.

**Table 7 KAP Sample**

	Ann's Grove	Bushlot	Goed Intent	Herstelling	St. Cuthbert's	Vergen-oegen	Woodley Park	TOTAL
AG1	2	3	1	0	0	1	3	10
AG2+	2	0	1	2	0	1	2	8
IG1	0	1	1	1	0	2	4	9
IG2+	1	0	3	4	0	1	1	10
AM1	0	0	0	0	5	0	0	5
AM2+	0	0	0	0	5	0	0	5
TOTAL	5	4	6	7	10	5	10	47

**Key**

AG1: Afro-Guyanese mother, 1 child;

IG1: Indo-Guyanese mother, 1 child;

AM1: Amerindian mother, 1 child;

AG2+: Afro-Guyanese mother,  $\geq 2$  childrenIG2+: Indo-Guyanese mother,  $\geq 2$  childrenAM2+: Amerindian mother,  $\geq 2$  children**4.0 Impact of sprinkles and food coupons**

In this section we present the main findings of the longitudinal study (see Section 2.1.1). This study demonstrates the impact of sprinkles alone (baseline to midterm data collections) and of sprinkles plus coupons (midterm to final data collections). Also included in this section are the findings from the qualitative studies on the use of sprinkles and of food coupons, which provide valuable information on acceptability of the iron supplement and of the coupon foods, and how these are used in the household. The final two BNP interventions (retraining of health centre staff and the IEC campaign) had not started during the period of the longitudinal study.

**4.1 Quantitative component: longitudinal study**

Table 8 summarizes the findings on the nutritional status of the sample children.<sup>25</sup> An important point to note in order to correctly interpret the findings is that haemoglobin levels, weight for length and length for age all vary with age, especially in a low income population. This is a child's most vulnerable period, a period of transition to an adult diet when foods other than breast milk play an increasingly important role. It is also the period when exposure to environmental influences is greatest: the child walks, explores its environment and socializes, thereby increasing its risk of exposure to sources of disease. It is therefore essential to compare changes in the intervention group with changes in the control group, and not simply to examine the data longitudinally.

<sup>25</sup> See Annex 5 (Nutrition notes) for an explanation of these terms.

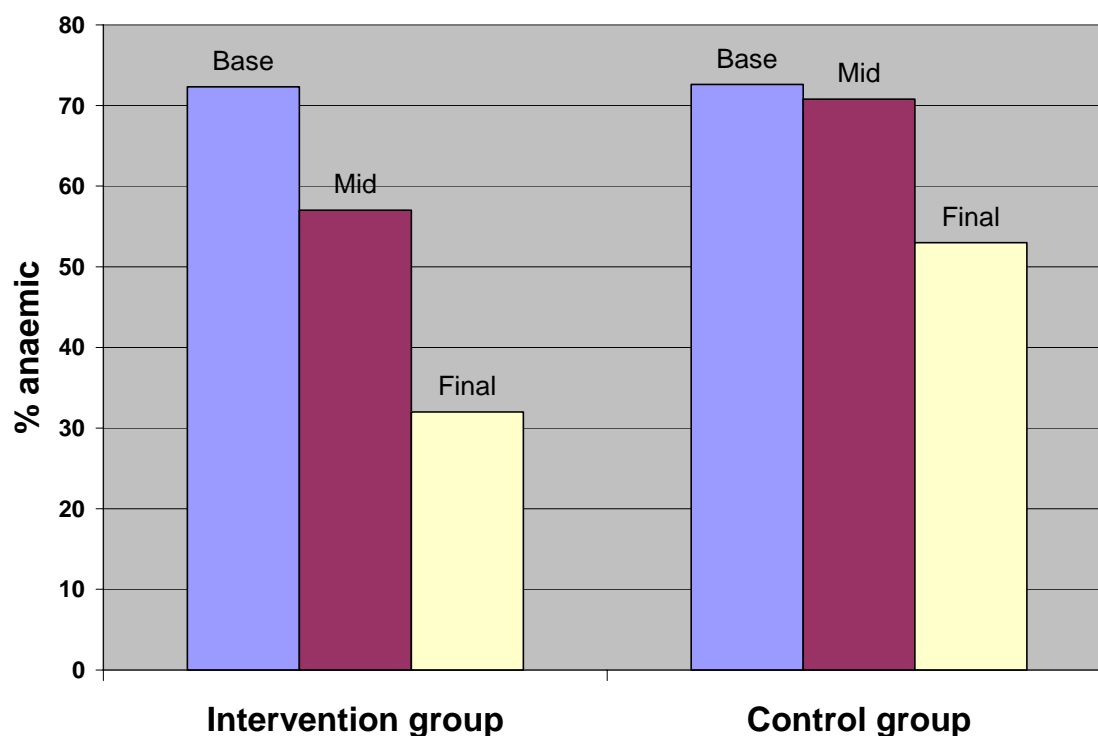


**Table 8      Nutritional status of children: longitudinal study**

Nutritional status indicator <sup>26</sup>	Group	Percent of samples		
		Baseline	Midterm	Final
<b>1. Percent low birth weight</b>	Intervention	15.5		
	Control	10.8		
<b>2. Percent anaemic (*)</b>	Intervention	72.3	57.0	32.0
	Control	72.6	70.8	53.0
<b>3. Percent wasted (*) (moderate + severe)</b>	Intervention	27.9	39.7	32.6
	Control	28.7	36.9	44.5
<b>4. Percent stunted (*) (moderate + severe)</b>	Intervention	31.1	35.8	31.0
	Control	24.4	42.0	39.4

(\*) At final data collection, the prevalence of anaemia and of wasting was significantly lower in the intervention group as compared to the control group. There was no significant difference in stunting.

**Figure 3      Prevalence of anaemia by group: longitudinal study**



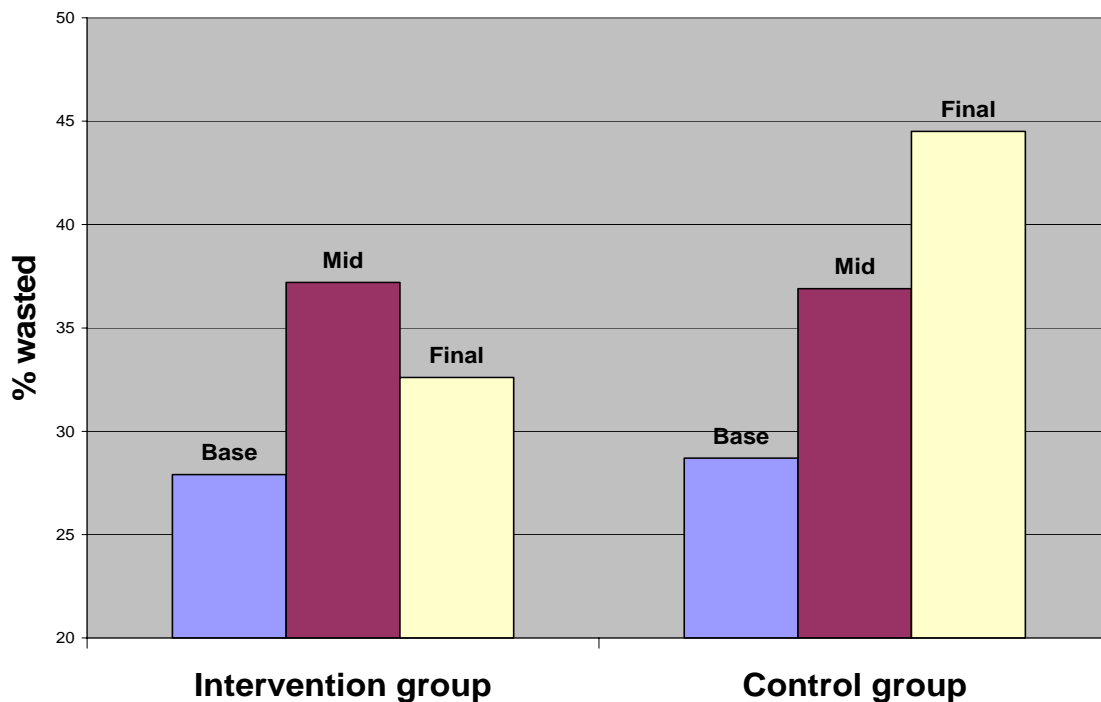
<sup>26</sup> Low birth weight: <2.5 kg; Anaemic:<11 g/dl; Moderate and severe wasting/stunting: >-1SD below reference median

Haemoglobin levels rose from 10.3 g/dl to 11.4 g/dl in the intervention group, from baseline to final data collection. In the control group they remained the same between baseline and midterm, but rose between midterm and final data collection. A similar pattern is reflected in the prevalence of anaemia: from 72.3% to 32% in the intervention group, and 72.6% to 53% in the control group (Figure 3). Mean haemoglobin levels and the prevalence of anaemia are significantly different between intervention and control groups at the final survey round. At this final point, the prevalence of anaemia in the intervention group is nearly 40% lower than in the control group.

Foods obtained with the coupon may have contributed a little to the reduction in the prevalence of anaemia, but the contribution would be small since these foods are not rich sources of iron. However, the coupon study did show that some mothers used money saved by the free coupon foods to increase the purchase of fruits and vegetables, and this may have had some impact on the prevalence of anaemia.

Coupon distribution began at intervention centres about 1 month before the midterm data collection. At the midterm survey round there was no significant difference in the mean percent of median weight for length and in the prevalence of wasting between the intervention and control group. The prevalence of wasting normally increases in the age range 6 – 24 months in a low income population, and this is what we see in the control group (Table 8, Figure 4). However, in the intervention group, we see the situation reversed: mean weight for length rose and the prevalence of wasting fell between midterm and final surveys. At final data collection, children in the intervention group displayed significantly less wasting (nearly 27% less) than those in the control group.

**Figure 4 Prevalence of wasting by group: longitudinal study**



The impact of food coupons on nutritional status would be largely limited to an impact on wasting, and indeed there is no significant difference in the prevalence of stunting between intervention and control groups by the final survey round. The prevalence of stunting did however rise significantly between baseline and final survey in the control group, but not in the intervention group.

## **4.2 Qualitative results**

### ***4.2.1 Sprinkles for children aged 6-24 months***

#### *Consumption Patterns*

As was found to be the case for sprinkle consumption among pregnant women (SPREG 2005),<sup>27</sup> sprinkles are most commonly mixed with food, porridge or drinks and are only rarely consumed plain. Across the study group, seven mothers reported giving their children sprinkles straight from the packet. In no case however was this the only means of administering the sprinkles: all of these mothers also added the sprinkles to food, porridge or drinks. Interestingly, although three of these mothers had simply experimented once or twice with plain sprinkles, the remaining four stated that their children preferred to eat the sprinkles in this way. Note that all of these children were more than one year old at the time of interviewing. Foods to which sprinkles were added were of course soft complementary foods such as mashed potato and ‘crush’. Supplemented drinks included ‘tea’, milk, juice and (rarely) water. A substantial majority of mothers (21) reported that they only added sprinkles to porridge. The prevalent explanation for this was that it was the best way to guarantee complete consumption of the supplement, because children were more likely to finish a serving of porridge than a plate of food. Twelve mothers stated that they added sprinkles to porridge and to food, while four noted that they mixed sprinkles with both porridge and with drinks. A further four said that they added sprinkles to both drinks and food. Only three reported that they only added sprinkles to foods, while six responded that they mixed sprinkles exclusively with drinks. One mother stated that she added sprinkles to food, porridge and drinks, and one other reported that her although daughter rejected the sprinkles completely, she was persevering with porridge, food and drinks.

As was the case with the consumption of plain sprinkles, age is clearly an important factor here: of the thirteen children who were given sprinkles without porridge, only two were below the age of one year. Predictably, as children receiving sprinkles grow older, porridge supplementation becomes relatively less prevalent, while in general diversity of supplementation practices increases.

#### *Dilution*

While the SPREG 2005 study found that sprinkle use by pregnant women was on the whole a successfully targeted initiative (only one of the fifty informants of the SPREG

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<sup>27</sup> *Report of a Pilot Study of Sprinkles for Pregnant Women*. GOG / IDB Basic Nutrition Program’s Impact Evaluation (SDI 2005).

2005 study, or 2%, reported sharing sprinkles), results from the present research among mothers of children receiving sprinkles paint a somewhat different picture. Across the study sample, nine mothers (~17%) reported sharing their sprinkles with someone in their own or a neighbouring household.

Why should dilution levels among mothers be so much higher than those among pregnant women? Two explanations suggest themselves, both of which relate to the information which has been provided to beneficiaries. The first is simply that in the case of the pregnant women's sprinkles intervention, the sprinkles are targeted unambiguously at pregnant women. Tellingly, in the sole case of sharing which was found among the pregnant women sample, the sprinkles were shared with another pregnant woman. It seems probable that if beneficiaries were told that the sprinkles were to be taken by pregnant women, they would tend to share only with other pregnant women. However, in the case of children's sprinkles, mothers are told that the sprinkles are good for children. Given that there are more children among friends and family than there are other pregnant women, it makes sense that sharing is more prevalent among this sample. The second point relates to an issue described in greater detail below: mothers on the whole do not have a clear idea of what the sprinkles are designed to do. Mothers who shared sprinkles gave various explanations for the practice, among them curing diarrhoea and 'opening the appetite'. The perceived effects or benefits of sprinkles are diverse enough to at least partially explain the sharing phenomenon: because most women do not know that the sprinkles are principally designed to address iron deficiency among children between 6 and 24 months of age, sprinkles are shared among non-targeted children of the household, family or neighbouring households for a variety of reasons. As one mother reported *'One of my friends comes here and I give them some of it, because he said that the boy getting diarrhoea and so, so I just tell he to use some of it and he said it helping it'* (SPMO510). Another said that she gave sprinkles to her older son *'Just to see if it [would] improve his appetite, cause they say it give you appetite'* (SPMO01).

#### *Parental Acceptability and Ease of Use*

Sprinkles are highly acceptable to parents. An overwhelming majority report that the sprinkles are easy to use and convenient. Only three mothers stated that they had experienced problems of dampness penetration in their sprinkles. While seven mothers expressed a neutral opinion about sprinkles usage, only one mother had a strongly negative opinion about the sprinkles, because she believed that the sprinkles had caused her daughter to suffer diarrhoea. Very rarely (two cases) did mothers note that they had been discouraged from using the sprinkles by their neighbours. Both of these mothers, however, continued to give their children the sprinkles in spite of this advice. With few exceptions, mothers also reported that they were not worried or concerned about anything relating to the sprinkles. Where mothers expressed concerns about sprinkles, these related to the use of damp sprinkles (acceptable or not), what the lot number on the sprinkles box referred to, and to the opposing perceptions that sprinkles were causing diarrhoea and constipation.

### *Acceptance by Children*

With a single exception, acceptance of sprinkles by children is universal, even in the light of the fact that many children know that the sprinkles have been added, either because they taste them or because they have seen their mothers adding them. That said, some acceptance problems were observed when children were offered sprinkles in certain kinds of foods or drinks. As we suggest above, porridge stands out as the most widely acceptable medium for administering the sprinkles. Of the eight mothers who reported problems of sprinkle rejection among their children, five stated that their children had rejected the sprinkles when added to food. These mothers now administered the sprinkles in porridge. Two reported rejection problems even with porridge, although by the time of interviewing these had been overcome. The final case was mentioned above—one child refused to accept the sprinkles with any food, drink or porridge.

### *Knowledge and Communication*

As we found in the SPREG 2005 study, knowledge about sprinkles among beneficiaries (mother in this case) was limited. When asked if they knew what sprinkles contained, only ten mothers mentioned iron. A very small number (2) mothers were familiar with the concept of anaemia or 'weak blood', and while almost all mothers said that they recognized the importance of administering sprinkles to their children, few were able to offer a coherent reason why. Given the widespread ignorance of anaemia, it is unsurprising that no mothers made the connection between sprinkles and anaemia prevention. That said, a wide range of explanations for sprinkle use were offered, some of which, although failing to make an explicit connection with anaemia, were not completely inaccurate either, at least in a secondary sense. A small number of mothers were familiar with the idea of a supplement to address deficiencies in the daily diet. Other responses included 'opening the appetite', 'because the nurse or Medex says so', 'to keep the child healthy', 'to build the child up', 'because it is good for them', 'to help them put on weight', 'to help their development'. A single respondent mentioned that the sprinkles were to 'build the blood'.

The responses cited above are reflective of another finding which emerges from this research. One of the issues which was probed in interviews was the kind of information which mothers had received from health centre staff. Responses to this question clearly demonstrate the provenance of some of the common beliefs about sprinkles. While the majority of mothers reported that they had only received information about dosage and collection of sprinkles, or else admonitions not to sell, share or give sprinkles to children in the wrong age group, information received by other informants included a wide array of 'purposes' for giving their children sprinkles: opening the appetite, good for the baby, keeping the baby healthy, weight gain, preventing diarrhoea and building up. A small number of respondents mentioned iron and vitamins, and two said that they had heard about anaemia from the health centre.

### *Effects of Sprinkles*

A significant majority (42, or ~81%) of mothers interviewed said that they had noticed some changes in their children since starting sprinkles. These changes varied from informant to informant, but included improved sleep, sleeplessness, weight gain, greater

appetite, higher activity and alertness levels, constipation, diarrhoea, stool colour, reduced morbidity and a healthier 'look'. One mother mentioned improvement in blood test results (haemoglobin). It should be noted that 'negative' changes (diarrhoea, constipation, sleeplessness) were very much in the minority. We should also flag the fact that some, though not all, of these observed changes are congruent with the reasons provided by health centre staff for sprinkle use; this fact introduces the additional variable of suggestion. This qualitative component is not designed to be a physiological study, so these results reflect only mothers' perceptions of the effects of sprinkles; that said, it is also true that most of these perceived changes could be considered as secondary effects of successful sprinkle supplementation. Whether or not they have a physiological basis, they are important because they reflect an overall positive experience of sprinkle supplementation for mothers. This can only be a good thing in terms of program compliance and sustainability.

#### *Distribution*

Informants across the study group were almost universally satisfied with the distribution system; just one respondent said that she felt that the quantity of sprinkles packets in the box was too great. According to the mothers, the system was running smoothly. No criticisms of the distribution operations were communicated to our field.

#### *Sustainability*

As was the case in the SPREG 2005 study, interview results show strong potential for sustainability. When asked whether they were planning to continue using the sprinkles, all respondents (even the mother whose child had rejected the sprinkles) replied in the affirmative. Clearly this is something which only time can confirm, but these responses, backed as they are by widespread positive opinion about sprinkles, suggest that mothers are indeed pleased enough with the intervention to want to continue with it.

### **4.2.2 Coupons**

#### *Understanding and knowledge*

Interviews with mothers indicated that virtually all understand that coupons are to be redeemed towards milk and porridge ingredients. However, mothers' knowledge of the programme was not found to extend much farther than this. No mother interviewed was able to explain why she was receiving coupons; indeed, an overwhelming majority stated that they had received little or no information from their health centre, beyond the basic concepts that the coupons are to 'bring them (babies) up,' that they (mothers) should collect coupons regularly, and that the coupons are targeted at children under two years of age. A smaller number of mothers also stated that they could not remember what they had been told at the health centre, or that someone else in their family had gone to collect the coupons and that they (the mother) had therefore missed any information provided there.

Key informant interviews with health centre personnel tell a rather different story. According to these responses, mothers are provided with information on the following topics (this list compiled from all health centre key informant interviews):

- Importance of the Basic Nutrition Programme

- Purpose of coupons
- Benefits of coupons
- Whom the beneficiaries are (children aged 6-24 months)
- What foods should be bought with coupons
- Importance of keeping the programme targeted (no selling or sharing)
- How to make porridge (thick, with boiled milk)
- Importance of spoon feeding
- Food tolerance: start new foods in small quantities
- Children's weight and growth monitoring

According to health centre staff, this information is imparted to mothers on clinic days. A related finding concerns mothers' understanding of the objectives of the coupons. As we note above, data from semi-structured interviews with mothers strongly suggests that their knowledge in large part extends simply to the fact that they should go to the clinic to pick up the coupons, then to the shop to procure the weaning foods; by contrast, 6 out of the 7 health centre staff interviewed said that they believed the mothers fully understood the objectives of the programme.

There are many reasons why one would not expect perfect congruence from the interviews of these two groups; that said, the responses are uniformly contradictory. It is difficult to avoid the conclusion that there has been a breakdown in the provision of information to mothers.<sup>28</sup>

### *Stakeholder Satisfaction*

#### *Variety*

The coupon is intended to cover the cost of 2lb of milk and 2lb of flour, which should provide approximately 2 cups of porridge a day for a month. However, prices of coupon foods were found to vary substantially from one community to the next. It was decided that mothers should be allowed to exchange the coupon for 2lbs of milk, with the rest to be spent on a flour or flours of *her* choice. This system would mean that if the mother selected the cheapest flour, she would receive more than 2lbs of flour (except in St Cuthbert's), but if she selected the most expensive, she may have less than 2lbs. These guidelines were supposed to be distributed to the shopkeepers and the health centre staff by the BNP staff. It is not clear if this occurred, but our findings appear to indicate that some shopkeepers are failing to comply with them. At the training exercise, shopkeepers were urged to maintain adequate stocks of all three flours in order to accommodate mothers' preferences.

A slight majority of mothers (30/52 or 58%) interviewed responded that they were happy with the selection of porridges (barley, cornmeal and plantain) and that their children were willing to consume all three types; indeed, in many cases, informants pointed out that even before the programme started, their children were eating these foods, so no real

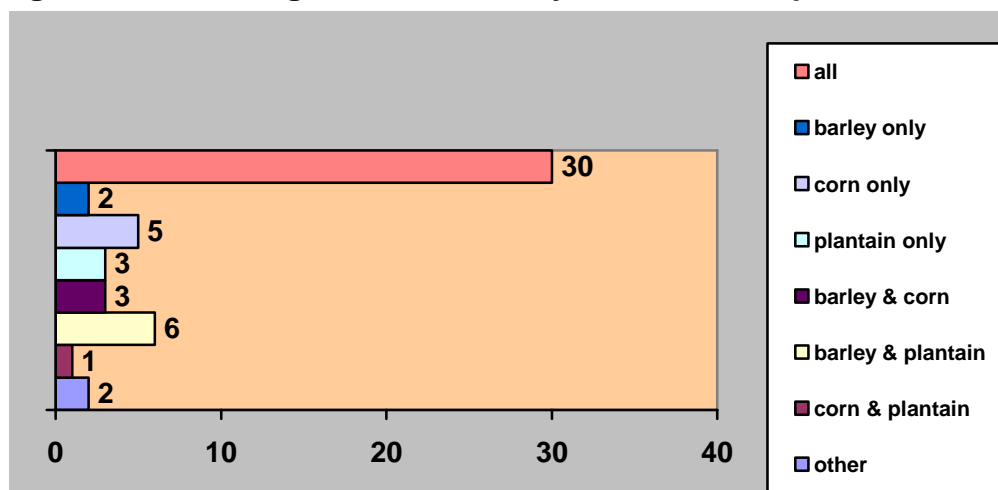
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<sup>28</sup> While it might be argued (by health centre personnel or other stakeholders) that these mothers are poor and often semi-literate, and that they are therefore more prone to forget the information provided by health centres, even this in turn begs the question of why systematic, participatory training has not been employed and reinforced by follow-up sessions.

transition was involved in joining the coupons programme. However, 22 mothers (42%) noted that their children had expressed strong preferences for one or two types exclusively. These specific preferential breakdowns are illustrated in Figure 5. In such cases, mothers stated that they made an effort to obtain only these preferred types from the shops. According to mothers, some shops were willing to provide any combination of porridges asked for, while others were less flexible and required mothers to take all the types listed on the coupon. In a small number of these latter cases, the unwanted porridge was either consumed by the nursing mother or else shared among the other children. Although the number of mothers who responded that their children preferred only one or two types of porridge is significant, it should be noted that 50/52 mothers stated that their children liked at least one type of porridge (i.e. outright rejection of all three types only occurred in two households). This is an overwhelmingly large majority and seems to indicate that the available selection of porridges is sufficient; indeed, when prompted, only three mothers responded that they would like other items added to the coupon list (juices, corn flakes and branded formula such as Nestum).

Key informant interviews with health centre personnel and shopkeepers largely support these findings, suggesting that on the whole, mothers are willing to accept at least one of the three kinds of porridge. Some shopkeepers pointed out that when the programme first began, mothers did not understand that they were only entitled to uplift foods listed on the coupons, and therefore requested items such as juice, biscuits and disposable nappies; now, however, mothers do understand what they are limited to. Interestingly, some shopkeepers stated that they themselves were willing to swap items around (again, this supports the findings from interviews with mothers), providing all of one kind of porridge or another, according to preference. Three of the eight shopkeepers interviewed declared that they had at times agreed to provide oatmeal porridge or flour when requested to do so, and one admitted to having supplied biscuits when these were requested. In such cases, shopkeepers argued that they had been willing to make the swaps because the foods they were substituting were also suitable baby foods.

**Figure 5 Porridge Preferences, by number of respondents**





Questions about milk, on the other hand, elicited a more varied range of responses. Virtually universally, mothers articulated a clear distinction between ‘loose’ milk and branded packaged (‘tin’) milk, with the former being generally regarded as lower quality. We should note here that this is neither a recent nor a unique phenomenon in Guyana, where food commodities such as milk powder and cooking oil, when sold from bulk containers rather than in branded packets, are seen as somewhat inferior. The milk provided for redemption by beneficiaries of the coupons scheme is (like most milk associated with State- or donor-sector interventions) bulk, unbranded milk (in this case whole, not skimmed). While a majority of the mothers interviewed accepted the bulk milk offered by the coupon scheme, a significant minority (16 mothers, or 31% of the sample) eschewed this in favour of branded tinned milk, such as Fernleaf, Klim or Kerrygold. It is interesting to note that while a small number of informants asserted that the shops in the communities were willing to make these switches without any extra charge, the majority of mothers seeking branded milk were willing to pay extra for it.<sup>29</sup> Key informant interviews with both shops and health centres in the study communities seem to support these findings: in three communities (Ann’s Grove, Vergenoegen and Woodley Park), either shopkeepers or clinic personnel noted that their clients preferred branded milk and were willing to pay extra for it. In St. Cuthbert’s, the shopkeeper remarked that the nurse held regular meetings with mothers to check their satisfaction. In this community, another small but significant finding was that of a mother who would collect the milk and porridge with the coupons, but then consume them herself because she was breastfeeding.

If, as the data indicates, a substantial minority of mothers are paying a significant amount of money (amounts cited were as much as G\$2000) in order to obtain branded milk, this invites us to think about ways in which this intervention might be modified to reduce this resource leakage. Could clinics, as part of mothers’ training campaigns, make more effort to convince beneficiaries that the unbranded milk is a good product and that they do not need to spend extra money to buy a branded tin? Could the ‘loose’ milk be affordably repackaged in such a way as to make it appear more commercial and branded? These and other possibilities should be explored when possible.

### *Quantity*

The intention of the intervention is to provide a sufficient supply of complementary foods for one weaning child for one month. However, success in achieving this target is mixed: interview data shows that of the 52 mothers in the study, only 11 managed to make both the milk and the porridge last a month. There are several possible explanations, not necessarily mutually exclusive, for this:

- Age of the target child: older infants will be less dependent upon milk and porridge as their dietary repertoire expands and they begin to consume increasing quantities of family foods. Worth noting is the fact that at the time of interview, among the 11 households where porridge foods lasted a full month, the target

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<sup>29</sup> This claim appears several times across the interviews, but it is difficult to understand why a shopkeeper would be willing to provide more expensive branded milk at the same cost as the loose ‘coupon’ milk. One possible explanation is that the shopkeepers could simply be passing the expense down to the beneficiaries by supplying a smaller quantity of the branded milk: this would also tally with the finding below that many mothers cannot make the porridge ingredients last the month which they are supposed to.

- children were aged 13, 29, 11, 15, 16, 10, 11, 24, 6, 14, 19 and 14 months of age, i.e. on the older side of the 6-24 month age range.
- Redemption/purchase choices of the mother: as noted above, women show considerable agency in expressing their preferences, and do at times buy branded products. Clearly, because branded products are more expensive, less will be obtained with the value of the coupon (see note above).
  - Dilution: clearly this reduces the number of days the target child can be fed from the coupon foods. Sharing the porridge ingredients with other children in the household will be addressed separately in greater detail below, but it is worth flagging the fact that the 11 households in which both milk and porridges lasted a full month were almost equally divided between the 21 'sharers' (households in which mothers explicitly stated that they shared porridge foods with children other than the target child) and the 26 'non-sharers' (households where mothers stated that they fed exclusively the target child with the coupon foods).<sup>30</sup> Even though this is a small sample, this result does suggest that dilution is not the only factor determining whether coupon foods last a month or not.

Responses from shopkeepers and health centre personnel who addressed the question of quantity were mixed. Three of the seven shopkeepers interviewed felt that the foods obtained with the coupons would not last a full month:

- Interviewer: ...and what about the amount...what they say about the amount that they getting?
- Respondent: Nobody never tell me about de amount.
- Interviewer: Okay so it, you figure it does last them out for de month or what?
- Respondent: No that can't last them for the month...I doubt whether it would last a child for the month but at least they say well it better than nothing at all so they accept it that way you know. (COUKII04)

Health centre personnel were more uniformly positive about the quantities of foods obtainable with the coupons: all except one (who felt that the amounts were genuinely insufficient) stated that, although mothers did indeed sometimes complain about the amounts, these quantities were in fact sufficient to provide for one child's complementary feeding needs for a month.

*Operations: coupon distribution at health centres and redemption at shops*

With the exception of some very minor difficulties in the first month of the programme, this has been going very well from the point of view of the beneficiaries: opinions were universally positive. Indeed, two informants (both from Bushlot) noted that their clinic staff were especially attentive and proactive, going as far as to hand-deliver the coupons at home, or to send a reminder when one mother forgot to collect her coupons. These favourable opinions were mirrored by the health centre personnel in key informant interviews, all of whom were happy with the way the system was functioning. That said, two health centre respondents made the point that the coupon distribution had added to

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<sup>30</sup> Five households did not address this question with sufficient clarity, or provided ambiguous answers.

their already heavy workload, especially in terms of extra paperwork. Shopkeepers and mothers consistently reported that redemption of coupons was a well-functioning process.

### *Training*

Shopkeepers report that they attended a satisfactory short training exercise at a Georgetown hotel, which covered the basic information necessary to carry out their role in the coupons programme, focusing chiefly how to manage the coupon redemption process and associated paperwork. Health centre personnel addressed questions about their training in greater depth (this is understandable, given that the training itself was more sophisticated and complex). Again, opinions were on the whole positive: six of the seven respondents said that they were happy with the workshop. One interviewee said that she felt the pace of the training was too fast. Respondents noted that the training was participatory and that questions were encouraged and answered by facilitators. Key messages mentioned by health centre personnel included:

- Programme objectives
- Target children's age group
- Importance of ongoing growth and nutritional status monitoring
- Importance of giving the coupons to the correct beneficiaries
- Importance of explaining to mothers what the coupons are for (and only for)
- Frequency of coupon delivery
- How to avoid counterfeit vouchers

### *Coupons in the domestic economy: supplementation, substitution and dilution*

Money, whether in the form of cash or coupons, is a fungible good. One of the central tasks of this research was therefore to determine what happens to the household food expenditure and consumption patterns once coupons are added to the budget. Of particular interest is the question of substitution versus supplementation: does the addition of G\$1000 per month, in the form of coupons, simply allow beneficiary families to save money because they no longer need to spend money on the food items available for redemption with the coupons (substitution) or does it actually increase overall food consumption (supplementation)? If in fact a given beneficiary family is practicing substitution rather than supplementation, what is the saved money being spent on? The coupons programme is a targeted intervention; that is, it is specifically aimed at children from 6-24 months of age and food items obtained with the coupons are not supposed to be shared with other children (or indeed adults) in the household. Given this, it is important to understand to what degree dilution is a factor as a result of intra-household sharing of the coupon foods.

### *Supplementation vs. substitution in the household*

Interviewer:	So the money that you are now saving from buying this cornmeal and stuff what you does do with the money you don't have to buy it so what you does spend the money on now it?
Respondent:	On other things like what I got to buy for she

Interviewer:	Like what?
Respondent:	Any other things like what I want, needed I does buy it for she.
Interviewer:	Okay, Would you like buy food more food for her?
Respondent:	Yes I does use the baby food on her I does use Gerber, sometimes I does buy fruits and so for she.
Interviewer:	So the money that you saving you would spend on her?
Respondent:	Yes. (COU23)

An important and highly relevant finding of the June 2006 BNP evaluation was that among children from the intervention group, the prevalence of wasting was 27% less than that found in the control group.<sup>31</sup> This result appears to indicate quite unambiguously that some degree of dietary supplementation is taking place among beneficiary children. Less clear is the mechanism by which this is occurring. With very, very few exceptions, such as the informant quoted at the beginning of this section, mothers stated that they had not increased the amount of food purchased for the beneficiary children. Instead, they had ‘substituted’ the coupon foods for the milk and porridge ingredients which they were purchasing prior to entering the programme. By this logic, the target children’s food intake should not have increased and there should have been no observable difference in wasting rates between the intervention and control groups. How, then, can we explain the difference?

One explanation could be that, although the coupon foods are not serving as a food supplement per se for target children, they may at least be guaranteeing these children a regular, reliable porridge feeding (although as we discuss below, these children are not receiving the full benefit of the porridges provided because some intra-household dilution is occurring). In households such as these, in an economically marginal position, this would indeed make a significant difference in wasting rates, even taking dilution into account. Not to be dismissed either is the fact that the coupons are part of an overall programmatic approach, one of the goals of which has been to encourage mothers to think more about complementary feeding processes.

A further clue is offered by interviews with mothers, where a series of follow-on questions sought to probe the issue of saving and spending within the domestic economy. Mothers were asked whether the coupons helped them to save money (in other words, whether they were practicing substitution or supplementation with respect to the diet of the target child), and if so, what they were spending the money on. Answers to these questions were interesting: with the exception of the small number of mothers mentioned above, the vast majority stated that they were substituting with respect to the *porridge needs* of the target child. However, when asked what they spent the saved money on, a

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<sup>31</sup> ‘Report of the final evaluation of the GoG / IDB Basic Nutrition Program’s Batch 1 health centres’. Social Development Incorporated, June 2006.

range of answers was offered: while some mothers stated that they used the ‘extra’ cash to buy clothes, nappies, snacks or medicines, or used it to pay household utility bills, or saved it in ‘box hand’ or gold, many responded that they used the money to buy extra food for the baby, or else foodstuffs (greens, flour, rice, eggs and fruit were mentioned) for the family. The implication of this result is that while *substitution* was taking place with respect to the porridge needs of the target child, *supplementation* was occurring with respect to other household food needs—including, of course, other complementary food needs of the target child. In other words, the coupon benefit appears to serve a dual purpose: ensuring a regular porridge feed for the target child and acting as a cash transfer at the household level.

### *Dilution*

However we explain it, the reduction in wasting is certainly a desirable and successful result for this programme. That said, the explanation above does indicate that the ‘extra’ \$1000 injected into the household income stream each month is, in most cases, being spread out and diluted. This is of course a common problem even in highly targeted food supplementation programmes: it is virtually inevitable that some substitution and resource dilution occurs, at least at the intra-household level. It is important to understand that there are two related dimensions to dilution. The first is the dilution of the ‘household transfer’ of \$1000, as discussed above: in most cases, this is spread throughout the household, meaning that although the target child will benefit from it as a member of the household, his advantage will be proportionally less than it would be if this money, saved from porridge purchases, were invested only in foodstuffs for him. The second dimension concerns the porridge foods themselves, which are also subject to some dilution, though this is not as widespread a phenomenon. Interviews with mothers, 44 of whom addressed this issue, produced the following results: 18 stated that they shared the milk and porridges with persons other than the target child; of these, 3 were breastfeeding mothers who said that they themselves consumed the porridge foods, while the remaining 15 shared the foods with other children in the household. Mothers who stated that they did not share the porridge or milk with anyone other than the target child numbered 26, but it is important to note that of these ‘non-sharers’, 10 had a single child. Taking this into account brings the figures much closer together and suggests that dilution at this level is a factor worth thinking about. Key informants (health centre personnel) also acknowledged that they had either observed intra-household sharing of suspected it was happening.

### *Misuse of Coupons*

We were unable to find any evidence of fraudulent practices related to coupons, on the part of any stakeholder in the programme. It is possible that at some level, these practices exist, but in our opinion, their impact on the programme is probably insignificant. According to shopkeepers, in the early stages of the programme, some beneficiaries attempted to obtain non-coupon items in shops (sugar, juice and other goods), but this was neither common nor widespread, and in any case appears to have ceased completely.

### *Sustainability and Perceived Benefits*

Interview results on the topic of sustainability are not necessarily robust predictors of future behaviour: there are simply too many different variables and parameters at work. However, if we accept this caveat, it is possible to suggest that results are indicative of

one direction or another. The majority of mothers interviewed on the topic of the future stated that they would try to continue with the complementary feeding practices they had learned from this programme, although some stated that they would not be able to sustain the variety of porridges and branded milk if they were required to assume the burden of purchasing the items themselves. This is in fact an unsurprising result given other findings presented here: one of the most important changes caused by the programme has been the variety of complementary foods available to mothers: instead of ‘flour pop’ (white flour porridge), or another single porridge item, mothers now have a range of possibilities open to them. It is difficult to say with any certainty how many would be able to sustain this variety of foods if they had another child at some future date after the intervention has ended. Health centre personnel are guardedly optimistic about the future, suggesting that most mothers would certainly want to continue with these complementary feeding practices, but at the same time questioning how many would be able to afford it. Their optimism stems at least in part from the fact that mothers on clinic visits *tell* them that they can see the impacts of the feeding on their children: babies feel heavier, look better, and have better appetites. This fact, that mothers themselves perceive changes in their babies’ growth and development, is probably the single most important factor in ensuring at least some degree of stable behaviour change in future complementary feeding practices.

## **5.0 Examining the combined impact of all BNP interventions**

As indicated in Section 2.1.1, after 2005 it was no longer possible to follow the planned longitudinal study design for the remaining BNP health centres. We therefore revised the health centre batches (see Annex 2) and shifted to a cross-sectional design. Batch 3 centres were the original control centres for the longitudinal study. These were re-assessed once all BNP interventions had been underway for at least six months. When the thirty new BNP centres came on board, we evaluated the impact of BNP interventions on mothers and children attending fourteen of these centres (Batch 5).

For all batches, we ensured that the interventions had been in progress for at least six months (sprinkles and coupons distribution), or completed (re-training of health centre staff and the IEC campaign) six months prior to final data collection. Staff at Batch 5 centres had in fact received their training prior to baseline data collection. These intervention periods are illustrated in the calendar of events given in Annex 6. Given that all centres in Batches 2, 3 and 5 are in coastal communities and that these centres were exposed to similar intervention periods, it is appropriate to consider them together (Section 5.2), and to treat the Amerindian communities of Batch 4 separately (Section 5.3).

## 5.1 Summaries of Breastfeeding and Complementary Feeding Studies

### 5.1.1 *Breastfeeding*

Overall, the BNP's breastfeeding promotion intervention has been an important one with real achievements behind it. That said, we must also recognise that the social and cultural obstacles to attaining the highest possible levels of compliance with best practice breastfeeding guidelines are considerable; overcoming these obstacles will require some strengthening and reinforcement of certain aspects of the intervention.

#### *Knowledge and Understanding of Breastfeeding and its Benefits*

Mothers were found to be able to articulate an impressively wide range of benefits deriving from breastfeeding. Compliance issues appear to related more to practical implementation and use of knowledge about breastfeeding.

#### *Compliance with Breastfeeding Guidelines*

Figures for (stated) compliance with breastfeeding best practice guidelines were low at both baseline and post-intervention; however, it may be the case that mothers were in fact more compliant than they reported in interviews, and simply lacked the ability to clearly articulate the guidelines. Nonetheless, it is important to be aware that there are some compliance issues which need to be addressed. While responses to questioning of first-time mothers about whether they would breastfeed their next child were overwhelmingly positive, key informants pointed particularly to the negative influence of other household members, especially senior women. Mothers felt significantly more supported in their breastfeeding by their communities (in the wide sense of that term) than by their health centres. Cultural and social obstacles to on-demand and exclusive breastfeeding continue to challenge even well-designed and well-implemented interventions. Mothers need to be empowered sufficiently, so that they have real strength of conviction to back up their existing (considerable) knowledge of the benefits of breastfeeding. They also need to be made more aware of the relationship between compliance with best practice breastfeeding guidelines and the many benefits of breastfeeding with which they are familiar.

#### *Breastfeeding on Demand*

The key finding here was that mothers do breastfeed on demand, but that in addition to this, they sometimes wake their babies to offer them a feed. This is related to the 'hungry baby' syndrome, in which mothers express a concern that their babies are not feeding often enough of their own accord. In terms of on-demand feeding, the direct result of this was that many mothers would wake their children up to feed them if they (the babies) did not themselves wake up within 2-3 hours after a prior feed. We did not find cases of mothers attempting to train their babies to feed only at certain times. Nor did we find evidence of significant numbers of mothers feeling ashamed of breastfeeding in public places or in the presence of family members. In this case, we do see a significant change from baseline to post-intervention: at BF1, 14 first-time mothers and 12 mothers of two or more responded that they did this; by BF2, these figures had fallen to 4 and 6 respectively.

### *Exclusive Breastfeeding*

Responses to the line of questioning about exclusive breastfeeding show a substantial drop from baseline, where 21 mothers asserted that they exclusively breastfed, to BF2, in which only 8 made this claim. Examining the positive interview responses from BF1 together with the negative responses from BF2 shows us that, in fact, many mothers who began with the intention of exclusive breastfeeding felt unable to continue doing so over the intervening months. Thus, in effect, we observe a drop by the second round of interviewing. Again, we see the effects of the ‘hungry baby’ syndrome: mothers felt, over the course of the first six months of breastfeeding, that their milk was not sufficient to satisfy their babies. As a result, some introduced formula and others, concerned about thirst, introduced water and juices.

### *Duration of Breastfeeding*

Results from this part of the study are very encouraging. With the exception of a few mothers who said that they would wean their babies at 12 months (2 mothers), 17 months (1 mother) and 24 months (3 mothers), and 2 mothers who said they had not given the matter any thought and did not know, all mothers responded that they would continue breastfeeding until the baby weaned him/herself.

### *BNP Breastfeeding Promotion Activities and Mothers*

The key issue here concerns coverage and reinforcement: too many mothers reported that they had little exposure to the BNP breastfeeding promotion activities: in all, 14 mothers out of the total sample of 43 (just under one-third) felt that the IEC messages had influenced their breastfeeding choices. In no case had the brochures been explained to mothers (at least not within their ability to recall it), and in fact no mother was able to physically produce the brochure at the time of interview. Although some mothers do report effective exposure to breastfeeding promotion activities, and add that these activities have helped them make a decision to breastfeed, a significant number do not fall into this group. These mothers need to be covered by the programme interventions.

### *BNP Breastfeeding Promotion Activities and Health Centre Personnel*

Health centre personnel are on the whole positive about the breastfeeding promotion activities they have carried out. They feel that the information has been both well-received and well-absorbed by mothers, although some of the key informants point to the low education levels of some of the mothers, noting that this can be an obstacle to knowledge uptake. Most felt that breastfeeding figures had improved in their community as a result of promotion activities. Health centre personnel also noted positive changes in attitudes of mothers towards breastfeeding, and contended that these shifts are a result of breastfeeding promotion. Four key informants interviewed said that they felt the mothers now (post-intervention) had sufficient knowledge to breastfeed properly.

Health centre personnel are also positive about the training they received. The only mild criticism offered by one of the six nurses who attended concerned the volume of material which needed to be covered in a week.



Nurses have an excellent, highly constructive attitude towards the breastfeeding promotion activities. While they acknowledge that these tasks make added demands on their already limited time, they also recognise the importance of the intervention and undertake it willingly.

### ***5.1.2 KAP Study of Complementary Feeding***

In this section, we summarise the key findings of the KAP study. We would note that the BNP complementary feeding initiative has achieved good results in several intervention areas. However, there are certain zones and thematic areas which could be strengthened; moreover, one needs to be aware of the fact that changing complementary feeding habits is an enormous challenge because of the many complex social and cultural variables which need to be taken into account, so shortfalls in expected results should not necessarily be interpreted as the result of flaws in programme design and implementation.

To present these results, we return to the key research questions: these are a useful device for organizing the key findings.

*What do mothers understand about the importance of good nutrition and child feeding practice?*

Knowledge about these topics was, even at the KAP2 stage, variable and heavily biased towards growth and health. At KAP2, all health centres averaged below 3 out of 4 points for the four-part question about these topics. Very few mothers recognised the importance of good nutrition and child feeding for mental development and activity/energy.

*When were complementary foods introduced and why?*

According to the knowledge test scores in KAP2, there has been some definite improvement in mothers' understanding of the appropriate moment for introducing complementary feeding. There is still room for improvement here, and programme interventions could be more pro-active about pushing back the moment of introduction of complementary foods. The exception is St. Cuthbert's, where mothers achieved perfect scores even before the interventions began.

*What foods are used for complementary feeding? What informs the selection of foods?*

Foods used for complementary feeding are porridges, largely obtained with coupons, together with a range of different crushes: potato, yam, eddoe, eggs. Steamed greens are popular, as is fish. Meat is less common, and rice is avoided because of its 'heaviness.' The selection of these foods appears to be based upon established cultural concepts of which foods are light, digestible, steamed, soft and bland. In households which extend food taboos to complementary foods, mothers will avoid selecting foods which come into conflict with cultural beliefs. Taboos do not appear to present an obstacle to proper complementary feeding.

*Do mothers understand the difference between transitional foods and family foods?*

In sum, no. Most mothers in this study did not comply with the best practice food introduction schedule, and there was a clear disjunction between local beliefs about an

appropriate timeline and the best practice schedule. The most common food introduction sequence found in this study was:

*breastfeed—stop breastfeeding, often too early—introduce thin porridge in a bottle and complex crush—continue crush and start introducing family food—move to family food*

*What kinds of beliefs, taboos and cultural practices might limit the uptake of nutritional advice?*

Food taboos, while extremely widespread, do not seem to present an obstacle to the uptake of nutritional knowledge. Substitutes for taboo foods are always available: in nutritional terms, it does not matter whether children are fed chicken instead of pork, or scaly fish instead of skinfish. Among Indo-Guyanese mothers, it may be the case (a larger sample would be required to determine the real extent of this) that fasting is too often extended to babies.

*What foods are preferred when child is unwell?*

Young children suffering from minor ailments and discomforts such as colds, flu, teething and vaccine reactions were switched to predominantly liquid diets. In cases where the mother was still lactating, breast milk would be offered more frequently. Other liquids mentioned by mothers included juices, thin porridge, soups, sugary soft drinks and snack foods.

*What kinds of constraint does economic status place upon complementary feeding?*

Our data (which is not rigorous poverty mapping) suggests that as long as the coupon initiative can be sustained, there is no real problem. However, effects of macroeconomic changes, especially among vulnerable groups, are difficult to predict at the micro-level. The closure of a sugar estate or similar income shock could create immediate and severe problems, making it impossible for mothers who are now only just able to afford transitional foods to buy these foods.<sup>32</sup>

*How clear is the message from health professionals?*

This is an area with room for improvement. Passive interventions such as television and radio spots, posters and billboards may be effective, but it is difficult to establish the extent of this. What appears to be lacking is constant reinforcement through active intervention. (talks, workshops, home visits, community nutrition counsellor initiatives).

## **5.2 Studies of coastal communities (Batches 2, 3 and 5)**

This section brings together the results of evaluations conducted at thirty-five BNP health centres in the coastal regions of Guyana (see Annex 2 for list of centres).<sup>33</sup> These are the

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<sup>32</sup> This statement of course applies to the time of research, during the first half of 2007. Since then, the cost of milk has risen sharply; moreover, the introduction of Value Added Tax in January 2007 has caused an overall increase in the cost of living.

<sup>33</sup> Thirty-four centres are in Regions 2 – 6, and one centre (Christianberg) is in Region 10; while not strictly a coastal centre, Christianberg is not in a hinterland region nor does it serve an Amerindian community.

most densely populated regions, and the total sample size for the coastal study was 1600 at baseline and 1655 at final data collections. The sample included mothers and children attending centres in or near the capital, Georgetown, as well as many centres in rural areas. Of the thirty-five centres, twenty-one were part of the original group of forty-five BNP centres, while the rest were the new centres that joined the BNP when it was extended.

### 5.2.1 Nutritional status of children from the coastal regions

Table 9 shows the prevalence of low birth weight, anaemia, wasting and stunting for the total sample. There were significant reductions in all indicators except in the prevalence of stunting. The prevalence of anaemia at final data collection was 28.5% lower than at baseline, slightly under the 30% target set in the BNP's logical framework, and the prevalence of wasting fell by 37% (exceeding the target of 30%).

**Table 9 Nutritional status of children: coastal communities**

Nutritional status indicator	Categories	Percent of samples	
		Baseline	Final
<b>1. Birth weight (*)</b>	Low (< 2.5 kg)	13.8	11.2
	Normal ( $\geq$ 2.5 kg)	86.2	88.8
<b>2. Anaemia (**)</b>	Non-anaemic ( $\geq$ 11 g/dl)	36.5	54.6
	Anaemic (<11 g/dl)	63.5	45.4
<b>3. Wasting <sup>34</sup>(**) (acute malnutrition)</b>	Not wasted	34.3	35.0
	Mild + moderate wasting	55.3	58.5
	Severely wasted	10.5	6.6
<b>4. Stunting <sup>1</sup> (chronic malnutrition)</b>	Not stunted	28.0	26.6
	Mild + moderate stunting	58.2	61.0
	Severely stunted	13.8	12.4

(\*) Baseline prevalence significantly different from final prevalence:  $p < .03$

(\*\*) Baseline prevalence significantly different from final prevalence:  $p < .001$

### 5.2.2 Young child feeding

Two aspects of young child feeding are considered here: breastfeeding rates at different ages and compliance with complementary feeding guidelines, specifically with the introduction of solid foods at the recommended age of six months.<sup>35</sup> Some limitations of the data presented in this section are discussed in Section 2.3.

<sup>34</sup> Not wasted or stunted:  $\geq$  reference median for age and sex

Mild + moderate wasting or stunting: below reference median, but above  $-2SD$

Severe wasting or stunting: more than  $-2SD$  below reference median

<sup>35</sup> For the analysis, some leeway in this recommended age was permitted: 5 – 7 months was considered acceptable for the age of introduction of solid foods.

WHO has established guidelines for young child feeding, and these recommendations have been accepted by Guyana's Ministry of Health. These include:

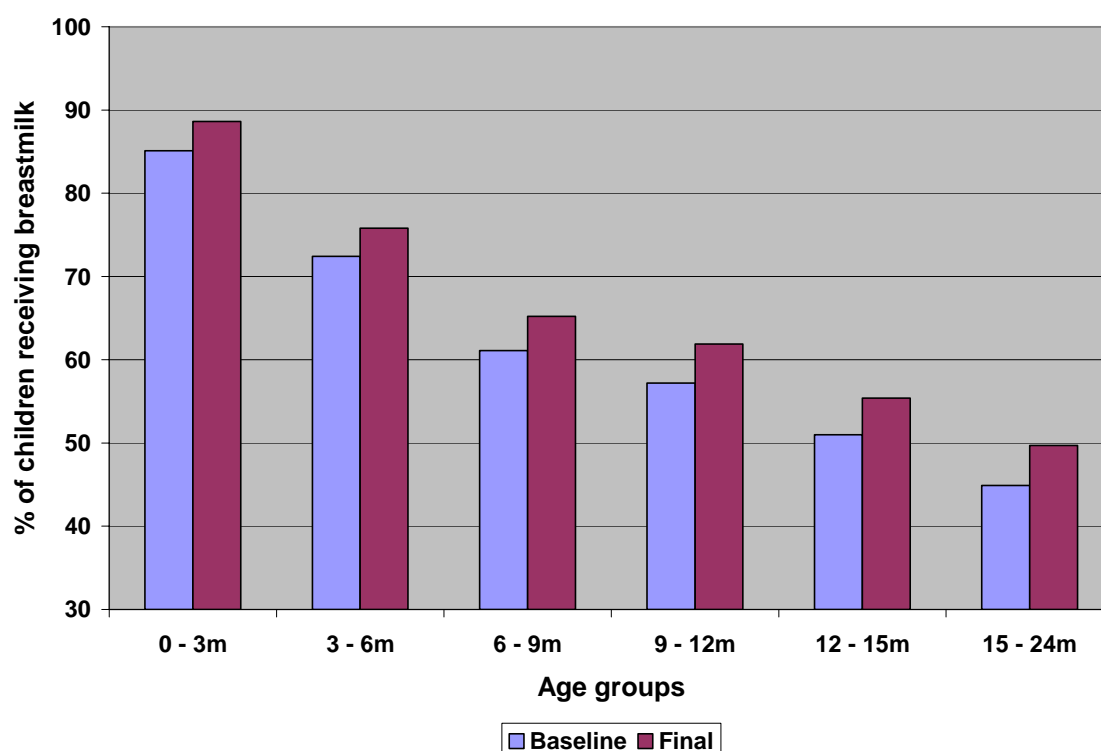
- Promotion of breast feeding: initiation and prolonged.
- Promotion of exclusive breast feeding for the first six months of the infant's life.<sup>36</sup>
- Breast feeding on demand.
- The introduction of solid foods when the infant reaches six months.

The quantitative evaluation study did not attempt to gather information on exclusive breast feeding or on breast feeding on demand. In the case of exclusive breast feeding in particular, the information obtained from a questionnaire would be unreliable. These issues are explored in depth in the qualitative study of breast feeding (Section 5.1).

### *Breastfeeding*

Ninety-one percent of mothers at baseline and 93.8% at final data collection claimed to have initiated breast feeding. By three months, 85.1% of children at baseline, and 88.6% at final, were still receiving breastmilk. Breastfeeding rates fell steadily until at over 15 months, less than 50% of children were breastfed. All rates show significant improvements between baseline and final values (Figure 6).

**Figure 6 Breastfeeding rates: Coastal communities**



<sup>36</sup> Exclusive breast feeding requires that absolutely nothing other than breast milk is given to the child (except medications when needed). Health centres do not routinely collect information on exclusive breast feeding, but rather on predominant breast feeding.

Maternal employment influenced the duration of breast feeding. While no significant differences in breastfeeding rates were seen for the first three months, rates fell significantly among mothers who were employed outside the home, when compared to mothers employed at home (housewives).<sup>37</sup>

#### *Complementary feeding*

Table 10 shows that compliance with complementary feeding guidelines improved a little, probably as a result of better advice offered by health centre staff and of the exposure to IEC materials, but non-compliance with continues to be a concern in these coastal communities, with late introduction of solid foods being the primary problem.

**Table 10      Age of introduction of complementary foods:  
Coastal Communities**

Age of introduction of solid (complementary) foods	Percent of samples	
	Baseline	Final
Too late (> 7 months)	41.0	35.4
Too early (< 5 months)	12.2	12.0
At recommended age (5 – 7 months)	46.8	52.6

It is important to recall the methodological constraint mentioned in Section 2.3, namely that the data are historical and that many child feeding decisions would have been made prior to the re-training of the health centre staff and the start of the IEC campaign. In line with this constraint, we find better compliance among mothers of younger children than among mothers of older children: among children under 18 months, compliance with the recommended age for the introduction of solid foods rose significantly from 48% to 56%.

### **5.2.3 Mothers' knowledge of anaemia and exposure to IEC materials: Coastal communities**

#### *Knowledge of anaemia*

Table 11 shows that no improvement in knowledge of anaemia (total anaemia score), neither its consequences nor its means of prevention (sources of iron-rich foods) were seen between baseline and final data collections. These findings contrast sharply with those from Amerindian communities (Section 5.3.3), but are similar to findings from non-BNP communities (Section 6.3).

#### *Exposure to IEC materials*

Significant increases were seen in exposure to individual IEC items and hence also in the total IEC exposure score (Table 12). The Exit Poll Study (Section 6.2) shows, however, that poor use is made of IEC material by health centre staff when conducting group lectures or individual advice sessions.

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<sup>37</sup> Women are entitled to three months maternity leave in Guyana.

**Table 11 Anaemia scores (excluding those who had never heard of anaemia): Coastal communities**

	Percent of samples (*)	
	Baseline	Final
<b>Total anaemia score (out of 7)</b>		
Zero score	53.1	54.1
Below average score (1 – 2)	26.0	28.5
Above average score ( $\geq 3$ )	20.9	17.4
<b>Knowledge of consequences (out of 4)</b>		
Zero score	59.7	63.6
Below average score (1)	28.4	25.1
Above average score ( $>1$ )	11.9	11.3
<b>Knowledge of prevention (out of 3)</b>		
Zero score	66.3	66.0
Below average score (1)	14.5	17.9
Above average score ( $>1$ )	19.2	16.0

(\*) There were no significant differences between baseline and final data collection in any of the anaemia scores.

**Table 12 Exposure to IEC materials: Coastal communities**

IEC item	Percent of samples <sup>38</sup>	
	Baseline	Final
Has seen posters	22.8	61.5
Has seen brochures	17.1	44.3
<i>If seen, was given brochures to take home</i> <sup>39</sup>	34.0	46.0
Has seen radio/TV ad on sprinkles	26.2	62.7
Has seen radio/TV ad on anaemia	27.8	37.8
Has seen radio/TV ad on breast feeding	86.7	92.0
<b>IEC scores (out of 6):</b>		
Zero exposure (0)	9.6	2.2
Below average exposure (1 – 2)	62.3	32.5
Average exposure (3)	18.4	24.5
Above average exposure ( $\geq 4$ )	9.8	40.8

Not surprisingly, we have found with the analysis of all our data sets that a mother's knowledge of nutrition in general and anaemia in particular is strongly linked to her educational attainment. An analysis presented in an earlier BNP evaluation report shows

<sup>38</sup> All final percentages are significantly higher than baseline percentages.

<sup>39</sup> These figures are percentages of mothers who have seen the brochures.

clearly that good use of IEC materials can go a long way to overcoming the disadvantages imposed by a poor educational background.<sup>40</sup> This highlights the importance of good use of IEC materials. While the BNP's IEC material could benefit from revisions and improvements, it is clear that they are valuable tools for improving knowledge and understanding.

### 5.3 Study of Amerindian communities (Batch 4)

Amerindian communities included in Batch 4 represent a sample from those covered by the BNP. Some were those included in the original BNP communities, while others came on board with the new BNP communities as part of its extension, but all benefited from all of the BNP's interventions. Three Amerindian communities were studied in the impact evaluation, but not included in Batch 4 centres:

- St Cuthbert's: this community was part of the original Batch 1 and the longitudinal study. As such, it did not benefit from the re-training of health staff and the IEC campaign during the period of data collection, and was thus excluded from Batch 4.
- Akawini and Siriki: these communities were also studied, but as part of Batch 6. As non-BNP centres the beneficiaries did not receive any food coupons, and hence were excluded from Batch 4.

Not all children in Amerindian communities are of pure Amerindian extraction (see Table 2, Section 3.0). In the Batch 4 communities, 52.3% stated they were Amerindian, 43.1 that they were of mixed ethnicity, 3.5% of African origin and 1.1% of East Indian origin. But there is considerable variation in the ethnic mix of the different communities (Table 13).

**Table 13 Distribution of ethnicities: Amerindian communities' samples**

Community	Percent of community samples		
	Amerindian	Mixed	Other(*)
Port Kaituma	34.2	59.2	6.6
Wakepau	87.3	12.7	0
Orealla	75.9	24.2	0
Kamarang	69.0	21.4	9.5
Mahdia	30.8	53.8	15.4
Lethem	32.8	65.6	1.6

(\*) Includes children of African, East Indian, European and Chinese origins.

The ethnic mix of a community influences the extent to which a culture prevails vis-à-vis child feeding practices. For the Amerindian culture, this is:

- Excellent breast feeding practices: high initiation rates, prolonged and on demand feeding (but not necessarily exclusive breast feeding);

<sup>40</sup> S. Ismail and T. Roopnaraine (2007) *Interim report of the evaluation of the GoG/IDB Basic Nutrition Program's interventions at Batch 1 and Batch 2 health centres.*

- Late introduction of solid foods;
- Limited range of complementary foods offered leading to poor diet diversity (see Annex 4). In addition to culture, this practice may be related to poverty and the availability of a wide selection of foods (especially vegetables and legumes) in Amerindian communities.

### 5.3.1 Nutritional status of the children from Amerindian communities

Table 14 shows the nutritional status of the sample children from the Amerindian communities. Overall, the prevalence of anaemia in Amerindian communities fell significantly during the intervention period by 24.5%. The decrease was higher in older children ( $\geq 18$  months) than in younger children ( $<18$  months): 35.2% as compared to 15.6%.

The prevalence of anaemia in Amerindian communities is high, much higher than in non-Amerindian communities, both at baseline and after intervention (final). Analysis of the data from Amerindian communities by ethnicity revealed no significant difference between Amerindian children and children of mixed or other ethnicities. It is thus likely that the high prevalence of anaemia in Amerindian communities is related to high levels of disease, especially malaria and parasitism.

**Table 14 Nutritional status of children: Amerindian communities**

Nutritional status indicator	Categories	Percent of samples	
		Baseline	Final
<b>1. Birth weight</b>	Low ( $< 2.5$ kg)	9.2	5.7
	Normal ( $\geq 2.5$ kg)	90.8	94.3
<b>2. Anaemia (*)</b>	Non-anaemic ( $\geq 11$ g/dl)	25.4	43.7
	Anaemic ( $<11$ g/dl)	74.6	56.3
<b>3. Wasting <sup>41</sup> (acute malnutrition)</b>	Not wasted	50.0	53.7
	Mild + moderate wasting	46.6	43.1
	Severely wasted	3.4	3.2
<b>4. Stunting <sup>1</sup> (chronic malnutrition)</b>	Not stunted	17.6	14.2
	Mild + moderate stunting	63.1	61.1
	Severely stunted	19.3	24.7

(\*) Significant difference between baseline and final samples ( $p < .000$ )

There were no significant impacts of the BNP on levels of wasting and stunting in Amerindian communities. As found in previous studies, levels of severe wasting are very low in the Amerindian communities while the prevalence of stunting is very high. Conversely, in non-Amerindian communities levels of wasting are higher and of stunting much lower.

<sup>41</sup> Not wasted or stunted:  $\geq$  reference median for age and sex

Mild + moderate wasting or stunting: below reference median, but above  $-2SD$

Severe wasting or stunting: more than  $-2SD$  below reference median



Table 15 demonstrates that the prevalence of severe stunting among Amerindian children is much higher (30.9%) than among children of mixed ethnicity (12.1%) living in the Amerindian communities. The prevalence among children of mixed ethnicity is very similar to that found in children living in non-Amerindian communities (13.4%). The issue of stunting and its causes is discussed in Annex 5. Briefly, however, we can say that Amerindian children are born with a good birth weight but become increasingly stunted during the early growth years.

**Table 15 Severe stunting and ethnicity in Amerindian communities**

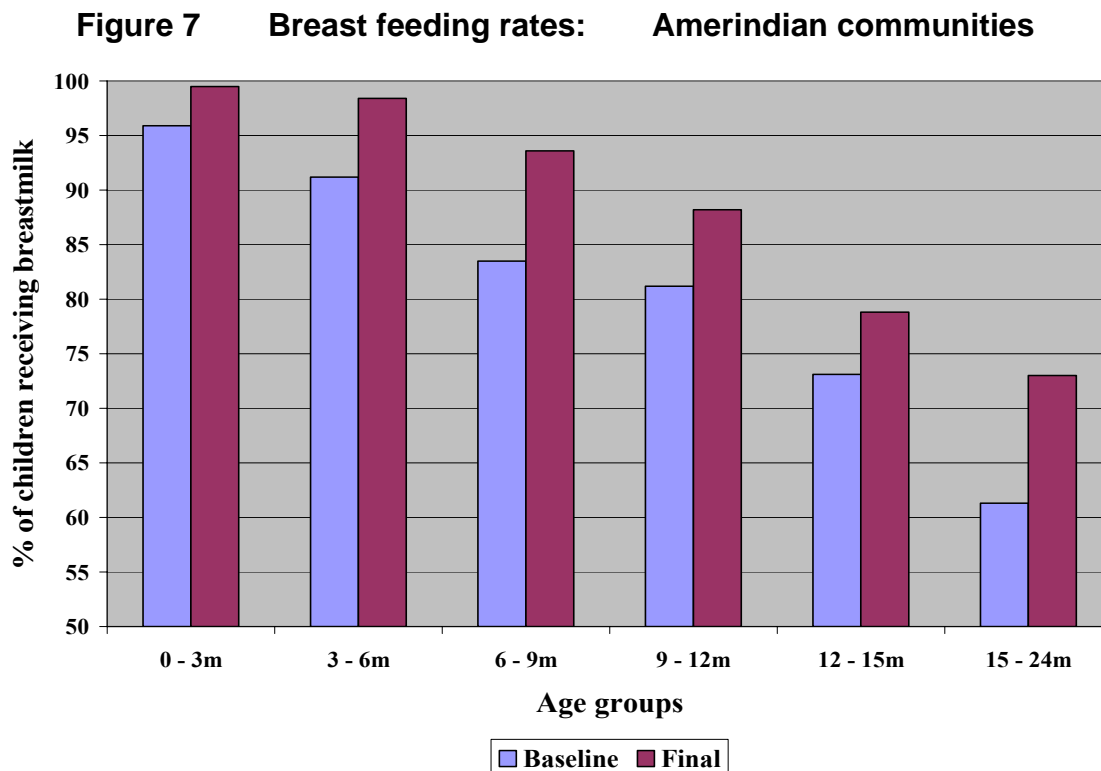
	Percent of samples severely stunted	
	Amerindian children	Other children (*)
Baseline sample	29.6	9.6
Final sample	31.8	15.2
Total	30.9	12.1

(\*) Includes mostly children of mixed ethnicity, all living in Amerindian communities.

### 5.3.2 Young child feeding practices in Amerindian communities

#### *Breastfeeding*

Figure 7 illustrates clearly the excellent breast feeding practices found in the Amerindian communities. While there appears to be some increase in breastfeeding rates between baseline and final data collection, these increases are not statistically significant.



### *Complementary feeding*

The recommended age for the introduction of complementary foods is six months. Table 16 shows the differences in the age of the introduction of solid (complementary) foods in the Amerindian communities, at baseline and at final data collection.

**Table 16      Age of introduction of complementary foods:  
Amerindian communities**

Age of introduction of solid (complementary) foods	Percent of samples	
	Baseline	Final
Too late (> 7 months)	53.2	47.4
Too early (< 5 months)	1.2	1.1
At recommended age (5 – 7 months)	45.7	51.6

While late introduction of solid foods<sup>42</sup> is clearly a problem in all communities, it is a more serious problem in Amerindian communities. There is some improvement between baseline and final data collection periods in the timely introduction of solid foods, but the improvement is not statistically significant.

### **5.3.3 Mothers' knowledge of anaemia and exposure to IEC materials: Amerindian communities**

#### *Knowledge of anaemia*

The staff at the Amerindian health centres had been re-trained and the IEC material distributed some months prior to the baseline data collection. Thus the Amerindian communities had already benefited from these interventions prior to the baseline data collection. Despite this, we see a marked improvement in mothers' knowledge of anaemia between baseline and final: at baseline, 45.5% had heard of anaemia, while at final data collection, 71% had heard of anaemia ( $p<.001$ ).

Table 17 presents the findings of the test of knowledge of anaemia. Substantial improvements are seen in the knowledge of the consequences of anaemia but not in the dietary sources of iron (prevention). Nurses seem to be emphasizing the negative impact of the condition rather than how to prevent it.

#### *Exposure to information, education and communication (IEC) materials*

Significant increases in exposure to IEC materials were seen in almost all components of the IEC score and in the IEC score itself (Table 18).

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<sup>42</sup> This excludes porridge fed from a bottle which has to be sufficiently dilute to allow it to pass through the nipple of the bottle. We asked specifically about the age when children were fed with a spoon and bowl or cup.

**Table 17 Anaemia scores: Amerindian communities**

	Percent of samples	
	Baseline	Final
<b>Total anaemia score (out of 7)</b>		
Zero score	2.5	1.1
Below average score (1 – 2)	55.0	30.7
Above average score ( $\geq 3$ )	42.5	68.2
<b>Knowledge of consequences (out of 4)</b>		
Zero score	27.5	6.8
Below average score (1)	52.5	48.9
Above average score ( $>1$ )	20.0	44.3
<b>Knowledge of prevention (out of 3)</b>		
Zero score	10.0	9.1
Below average score (1)	42.5	31.8
Above average score ( $>1$ )	47.5	59.1

(\*) Significant differences between baseline and final samples from Amerindian communities:  
Total anaemia score ( $p=.02$ ); Knowledge of consequences ( $p=.001$ )

**Table 18 Exposure to IEC materials: Amerindian communities**

IEC item	Percent of samples	
	Baseline	Final
Has seen posters (*)	34.9	62.6
Has seen brochures (*)	33.7	67.2
<i>If seen, was given brochures to take home</i> <sup>43</sup>	69.3	54.3
Has heard/seen radio/TV ad on sprinkles (*)	16.3	55.3
Has heard/seen radio/TV ad on anaemia	22.1	23.7
Has heard/seen radio/TV ad on breast feeding (*)	55.8	78.0
<b>(*) IEC scores (out of 6):</b>		
Zero exposure (0)	19.8	3.5
Below average exposure (1 – 2)	51.1	27.2
Average exposure (3)	15.1	28.9
Above average exposure ( $\geq 4$ )	14.0	40.3

(\*) Significant difference between baseline and final samples ( $p<.001$ )

Our findings are very much in line with findings of earlier studies on child feeding practices in Amerindian communities: excellent breast feeding practices but poorer compliance with complementary feeding guidelines due largely to the late introduction of complementary foods and a monotonous diet lacking in vegetables and fruit. While the BNP appears to have had some impact, there are no significant differences between

<sup>43</sup> These figures are percentages of mothers who have seen the brochures.

baseline and final data for young child feeding practices. As far as complementary feeding practices are concerned, one constraint to improvement may be the households' access to an affordable supply of vegetables, fruits and peas and beans.

It is clear that mothers' knowledge of nutrition has improved substantially, and staff at the Amerindian health centres are to be commended for their efforts in improving mothers' knowledge and in their use of the BNP's IEC materials. However, behaviour change and the translation of knowledge into good practice is challenging, especially when both culture and economic or physical access to the full range of nutritious foods are constraining factors, as they are in Amerindian communities.

## **6.0 Other studies**

We summarize here the main conclusions from three other studies undertaken as part of the evaluation of the BNP.

### **6.1 Pilot study of sprinkles for pregnant women**

One of the objectives of the GoG / IDB Basic Nutrition Program (BNP) was to reduce the prevalence of anaemia among pregnant women. The impact evaluation of the BNP included a trial of sprinkles, primarily to see if compliance with sprinkles usage is better than with the conventional iron tablet. The pilot study had two components: a quantitative component to compare the impact of sprinkles with that of iron tablets on two outcomes (haemoglobin levels and compliance), and a qualitative study to study the use and acceptability of sprinkles by means of in-depth interviews with a subsample of women. The composition of the sprinkles for pregnant women matched exactly that of the iron tablet.<sup>44</sup>

The quantitative results of the pilot study of sprinkles for pregnant women found that:

- Sprinkles seemingly offered no advantage over iron tablets with regards to their impact on haemoglobin levels.<sup>45</sup>
- However, compliance was significantly better with sprinkles than with iron tablets. This finding was supported by the findings of the qualitative study.
- The most likely reason for the sprinkles' lack of impact on haemoglobin levels, despite better compliance, is duration of supplementation: supplementation (of any kind) improved anaemia status, but only if taken for a sufficiently long period (five months or more). Few women in this study achieved this duration because of late registration at antenatal clinic.
- Multiple regression analysis showed that initial haemoglobin level and duration of supplementation were two significant contributors to the variation in final haemoglobin level. This indicates that a woman's nutritional status on entry into

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<sup>44</sup> Both contained iron, folic acid and Vitamin C.

<sup>45</sup> Ibid

pregnancy, early registration for antenatal clinic and compliance with iron therapy are important factors determining her anaemia status at the end of pregnancy.

The report of the qualitative study on the use of sprinkles found that:

- The majority (70%) of women interviewed preferred sprinkles to the iron tablets they had taken in previous pregnancies.
- Sprinkles were used almost exclusively by the target women, and not shared with other members of the family. Sprinkles were used in food, drink, or both.
- While some women reported negative side-effects, in general these were fewer than those experienced with iron tablets. Moreover, despite reported changes in taste and texture of food and drink associated with the addition of sprinkles, most women found the sprinkles to be acceptable, easy to use, and of perceived beneficial effects.
- A significant proportion of informants did not have a clear understanding of what sprinkles contain and what purpose they serve. Furthermore, a substantial majority of informants replied that the only information they had received about the sprinkles concerned how they should be used (dosage and mixing instructions). Almost none referred to any other kind of information being provided at the clinics.

## **6.2 Nutrition advice given and recalled: Exit Poll Study**

While the BNP's impact evaluation has demonstrated the positive impact of the interventions on the nutritional status of the BNP's target children, evaluation reports, especially from the qualitative studies, have repeatedly highlighted the limited impact of the interventions on mothers' knowledge of nutrition and on the use of IEC materials by health centre staff.

We conducted an "exit poll" study, interviewing 584 mothers with children aged 6 to 24 months, as they left an infant and young child clinic session, at fifteen health centres in Regions 3, 4 and 5. The objective was to explore what information about nutrition imparted by health centre staff they recalled. The study also assessed the extent to which IEC materials were used by the health centre staff during their individual and group sessions with mothers. All nurses and medexes from the selected health centres were also interviewed. The study was conducted in October / November 2008, at which time all staff at participating health centres had received training in basic nutrition and communication skills, and the IEC materials had been distributed.

The main findings from the study and recommendations were:

- As previous BNP evaluations have shown, the training and IEC campaign are, overall, not having the desired impact. Performance was best at centres in Region 5.
- Group talks seem an effective means of communicating important messages (e.g. breast-feeding). Nurses must be encouraged to conduct more and regular group talks.

Also, standard practices for individual talks, ensuring that topics are discussed thoroughly, need to be reinforced.

- Mothers who had been more exposed to IEC messages were able to recall more important messages. This points to the fact that good and repeated IEC messages can overcome barriers such as low literacy levels.<sup>46</sup> It also shows that many mothers probably receive too much information at once which they are not able to absorb and/or find confusing.
- The display and use of IEC material and topics covered in both individual and group talks must focus on one important and detailed message: e.g. nurses could try a “Message of the Month” approach with support from the Food Policy Division. Otherwise, mothers will continue to receive too much, confusing and incomplete advice for them to absorb.
- Posters should be rotated to avoid an over-load of information on the clinics’ walls and arranged by topic e.g. “Nutrition Wall or Corner”.
- The IEC material was not ready when the re-training of most health centre staff was conducted. In addition, nurses face significant constraints, namely a heavy workload and a shortage of staff. This largely explains why group sessions are rarely conducted by nurses and the poor use that they make of this material. Better use of IEC materials should be taught during refresher training exercises and in nursing training institutes.
- Health centre staff are important change agents. Region 5’s performance indicates that health centres can do better, even with the constraints they face. The reasons behind this better performance should be analyzed in order to try and expand best-practices to other clinics. In addition, ways of encouraging better use of IEC materials among health staff need to be identified and promoted.
- Given the overall shortage of health staff, it may be worth exploring the use of community nutrition counselors to support IEC efforts and act as linkages between the communities and the health centres. A pilot study demonstrated the usefulness of such an approach.<sup>47</sup>
- Negative health staff attitudes towards patients and clients are common in many under-staffed and resource poor settings. It may be worth exploring whether this, in addition to lack of motivation, plays a significant role in the relationship between health staff and clients in Guyana since this may be further hindering current IEC efforts.

### **6.3 Institutionalizing the BNP: evaluating impact at non-BNP centres**

We examine here the results of a study conducted in what are called non-BNP centres (Batch 6). These centres are part of the handover of the BNP to the Ministry of Health.

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<sup>46</sup> S. Ismail and T. Roopnaraine (2007) *Interim report of the evaluation of the GoG/IDB Basic Nutrition Program’s interventions at Batch 1 and Batch 2 health centres.*

<sup>47</sup> T. Roopnaraine, Y. de Freitas, N. Blair, S. Ismail (2008) *Community Nutrition Counselors: a pilot community-based project in five communities in Guyana: Evaluation report.*

The non-BNP centres received sprinkles directly from the Ministry but did not receive food coupons from either the Ministry or the BNP. In addition, by January 2007 all their health staff had been retrained in basic nutrition and communication skills from the BNP and the nation-wide IEC campaign had been underway for several months.

This is a simple before/after study design (cross-sectional). Data was collected during the period February – March 2008 (baseline) and Sep – Oct 2008 (final). Both baseline and final samples are of children aged 12-24 months. In short, mothers at baseline should have been exposed for a year to better trained health staff and for 6 months to the IEC campaign. At final data collection, their children will have received sprinkles for 6 months. The primary objectives of the study are to examine:

- if there is a dilution of impact when a programme such as the BNP, which had limited coverage and was managed by a special unit, is scaled up to the national level;
- whether removing one of the BNP's interventions, namely the food coupon distribution, has an impact on outcomes.

**Table 19 Nutritional status of children: Non-BNP communities**

Nutritional status indicator	Categories	Percent of samples	
		Baseline	Final
<b>1. Birth weight</b>	Low (< 2.5 kg)	11.0	11.7
	Normal ( $\geq$ 2.5 kg)	89.0	88.3
<b>2. Anaemia (*)</b>	Non-anaemic ( $\geq$ 11 g/dl)	36.4	57.6
	Anaemic (<11 g/dl)	63.6	42.4
<b>3. Wasting <sup>48</sup> (acute malnutrition)</b>	Not wasted	31.0	34.1
	Mild + moderate wasting	61.6	59.7
	Severely wasted	7.4	6.3
<b>4. Stunting <sup>1</sup> (chronic malnutrition)</b>	Not stunted	26.4	16.8
	Mild + moderate stunting	60.7	66.2
	Severely stunted	12.9	17.0

(\*) Significant difference between baseline and final data collections (P=.001)

The main findings and recommendations of the study are:

- The prevalence of anaemia for both age groups in non-BNP centres fell significantly by 33.3%, exceeding the BNP target of 30% (Table 19). This can be primarily attributed to the impact of sprinkles and therefore, it appears that the handover to the Ministry of Health has not diminished the effectiveness of the intervention during this first six month period. Some reduction in the prevalence of anaemia may also be attributed to better compliance with child feeding guidelines.
- The study found no significant change in the prevalence of wasting (Table 19). Given that the distribution of food coupons in BNP centres has been shown to be

<sup>48</sup> Not wasted or stunted:  $\geq$  reference median for age and sex

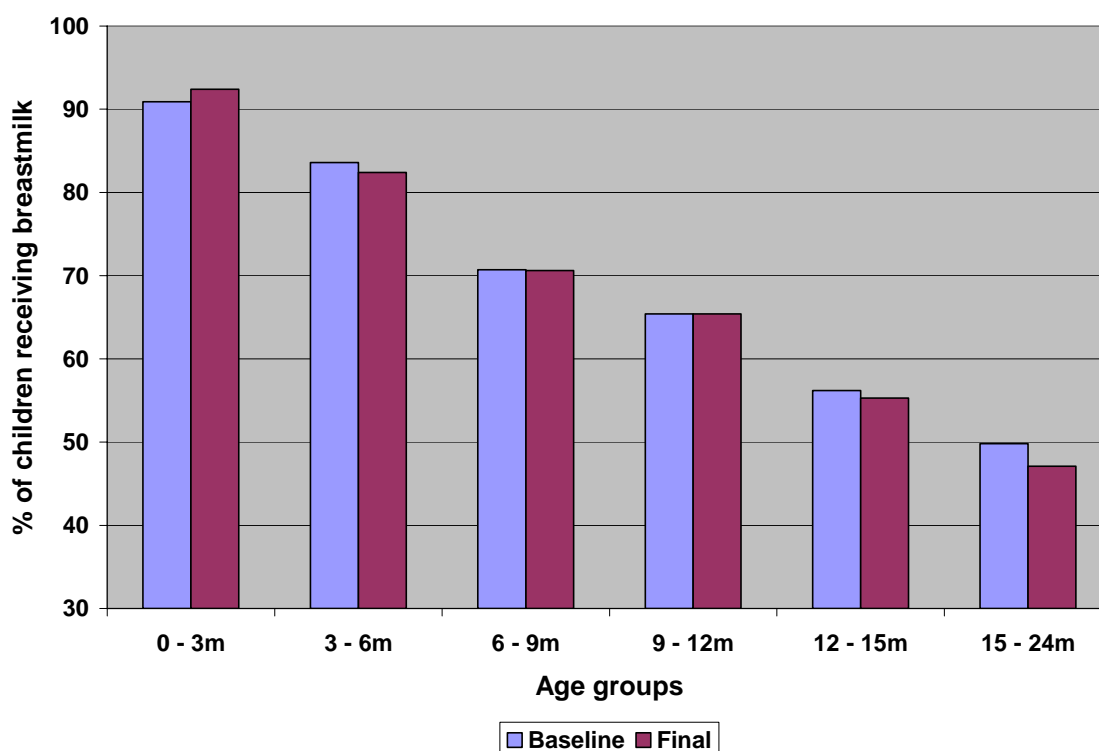
Mild + moderate wasting or stunting: below reference median, but above – 2SD

Severe wasting or stunting: more than -2SD below reference median

associated with a significant fall in the prevalence of severe wasting, the distribution of food coupons by the non-BNP centres should be considered. If distribution to all children is not economically feasible, some form of targeting should be considered, using perhaps the risk factors of malnutrition identified in BNP evaluation reports.

- More than half (54%) of all children in the samples were being breastfed for at least 12 months (Figure 8). Longer breast feeding duration may be partly attributed to the retraining of health staff and the IEC campaigns, which focus heavily on the benefits of early initiation and sustaining of breast-feeding.

**Figure 8 Breast feeding rates in non-BNP communities**



- Compliance with recommended guidelines for the age of introduction of solid foods improved significantly by final data collection (Table 20). However, the percentages of mothers offering their infants solids too late, even at final data collection, remains unacceptably high, and is a major cause for concern. Additional measures to enable mothers' access to appropriate child foods such as cash transfers may help put new knowledge into practice.
- The low awareness of anaemia continues to be a cause for concern, as at BNP centres (Table 21).



**Table 20 Age of introduction of complementary foods: Non-BNP communities**

Age of introduction of solid (complementary) foods	Percent of samples	
	Baseline	Final
Too late (> 7 months)	42.4	31.6
Too early (< 5 months)	8.7	7.0
At recommended age (5 – 7 months)	48.9	61.4

**Table 21 Anaemia scores: Non-BNP communities**

	Percent of samples	
	Baseline	Final
<b>Total anaemia score (out of 7)</b>		
Zero score	52.4	47.3
Below average score (1 – 2)	33.1	33.3
Above average score ( $\geq 3$ )	14.5	19.3
<b>Knowledge of consequences (out of 4)</b>		
Zero score	65.9	60.6
Below average score (1)	25.9	31.4
Above average score ( $>1$ )	8.3	8.0
<b>Knowledge of prevention (out of 3)</b>		
Zero score	66.2	59.5
Below average score (1)	16.6	18.9
Above average score ( $>1$ )	17.2	21.6

- Exposure to IEC materials improved substantially during the study (Table 22).

**Table 22 Exposure to IEC materials: Non-BNP communities**

IEC item	Percent of samples <sup>49</sup>	
	Baseline	Final
Has seen posters	38.8	58.6
Has seen brochures	29.8	48.8
<i>If seen, was given brochures to take home<sup>50</sup></i>	<i>54.0</i>	<i>59.4</i>
Has seen radio/TV ad on sprinkles	47.5	71.6
Has seen radio/TV ad on anaemia	43.5	57.2
Has seen radio/TV ad on breast feeding	89.5	94.1
<b>IEC scores (out of 6):</b>		
Zero exposure (0)	5.6	1.7
Below average exposure (1 – 2)	41.8	23.4
Average exposure (3)	25.4	23.1

<sup>49</sup> All final percentages are significantly higher than baseline percentages, except the taking home of brochures.

<sup>50</sup> These figures are percentages of mothers who have seen the brochures.

Above average exposure ( $\geq 4$ )	27.2	51.7
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## 7.0 The BNP experience

Guyana's Basic Nutrition Program has focused its attention largely on the nutrition of young children. This is justified for the following reasons:

- Children aged 6 – 24 months age are most vulnerable to malnutrition, largely because this is the period of transition, from sole dependence on breast milk to a mixed adult diet, and a period when growth is rapid and nutrient requirements are at their highest. It is also the period when children begin to socialize and to explore their environment, and exposure to disease agents increases.
- Malnutrition in early childhood has long-term implications: both stunting and moderate and severe anaemia are associated with poor mental development and high morbidity.
- Poor nutrition during early childhood is also associated with a higher likelihood of adult diet-related chronic disease, in particular coronary heart disease, hypertension and diabetes.
- Good nutrition practice during early childhood sets the pattern for healthier diets during adulthood.

The BNP has also focused attention on nutrition in pregnancy. Findings from the impact evaluation and from studies worldwide have demonstrated that low birth weight is the single most important determinant of poor nutrition in childhood, if the child continues to live in a poor environment.<sup>51</sup> Other studies have also shown the importance of good nutrition both during pregnancy and before conception for good growth of the foetus during gestation. This emphasises the need for a life cycle approach to improving the nutritional status of a population.

Sustained improvement in nutritional status is not achieved solely through the provision of supplements such as sprinkles or food coupons. We need to make serious efforts to achieve behaviour change in dietary practices, while at the same time addressing other contributors to poor nutrition, such as high morbidity, cultural influences, poor education, and household-level food and nutrition insecurity. These are issues associated with chronic poverty. To tackle high morbidity in Guyana, we need to improve access to safe water and good sanitation, reduce parasitism, strengthen the fight against malaria, HIV and other diseases, and improve food handling practices and personal hygiene. To overcome cultural issues and poor maternal education, we need to reach all members of the household, and not just the mothers of the young children; our results demonstrate the need to bring senior relatives and authority figures within the household on board.

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<sup>51</sup> Ismail, S (2005) *Report of Baseline Data from GoG / IDB the Basic Nutrition Program's Impact Evaluation*

## 7.1 Achievements of the BNP

The BNP has achieved a great deal. In the communities where the program has been in operation, it has achieved its targets of 30% reductions in the prevalence of anaemia and of wasting. It has also improved child feeding practices, although the improvements could be greater than those actually achieved. These are the outcomes that have been measured by the impact evaluation. There are other achievements that are at least as important as these measurable outcomes:

- The BNP has substantially raised the profile of nutrition in the Ministry of Health and in Guyana. The fact that the Ministry has committed itself to continuing all BNP interventions (except coupon distribution) is a tribute to both the Ministry and the BNP.<sup>52</sup>
- A comprehensive Food and Nutrition Strategy for Guyana is under preparation.
- Through its surveillance-related activities, the BNP has supported:
  - Growth monitoring activities, including the shift to the new growth charts. This has entailed substantial capacity-building, the procurement of new anthropometric equipment, and the expansion of growth monitoring to include the measurement of both wasting and stunting.
  - The development of a framework for a comprehensive national food and nutrition surveillance system. This has included risk-mapping, the routine collection of food price and nutrient cost data, and a nursery school surveillance system. Some of these activities are in progress.
  - Capacity-building within the Food Policy Division in data management and analysis.
- The IDB views the BNP as a highly successful program. As a result, discussions are underway for a follow up to the BNP, which will support the implementation of Guyana's Food and Nutrition Strategy.

## 7.2 Outstanding challenges

The major challenge now is to sustain and improve the BNP's achievements, and to ensure that scaling up the program to a national level does not result in a dilution of its impact. Specific issues that need continued attention are:

- Improving the knowledge and understanding of good nutrition among Guyanese households, as a first step towards achieving sustained behaviour change in relation to young child feeding practices. Specific aspects that need particular attention include the promotion of exclusive breastfeeding and the introduction of solid foods at the recommended age. This requires attention both in health centres, where staff need to have a more consistent and accurate understanding of what constitutes exclusive breastfeeding, and in the home, where the support and cooperation of influential family members must be sought and encouraged.
- Improving diet diversity and complementary feeding practices and reducing levels of stunting, especially in Amerindian communities.

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<sup>52</sup> A more limited and targeted distribution of food coupons, possibly through the Ministry of Labour, Human Services and Social Security, is under consideration.

- Sustaining compliance with the use of sprinkles. This demands a much better understanding on the part of mothers of the consequences of anaemia and why sprinkles are an important means of anaemia prevention.
- Finding innovative ways to improve the nutrition advice provided at health centres and overcoming the constraints imposed by staff shortages. Possible ways include:
  - The better use of IEC materials in advice sessions. This needs to be started during the basic training of health centre staff;
  - Improving displays of IEC materials at health centres;
  - Testing the approach of “one message a month” to avoid confusion and information overload;
  - Providing guidance to health centre staff on how best to conduct group sessions for imparting nutrition counseling;
  - Reducing negative attitudes on the part of health centre staff towards the mothers. This needs to be addressed more intensely during the initial training of health staff;
  - Disseminating the findings of the impact evaluation to health centre staff, so they have a better understanding of their achievements and outstanding challenges.
- Finding innovative ways to overcome the challenge of staff shortages. This could include the use of community nutrition counselors,<sup>53</sup> better group sessions for the provision of nutrition advice, and the increased employment and use of nutrition assistants.<sup>54</sup> The achievements of the centres in Region 5 and in Amerindian communities has demonstrated that much more can be achieved, even in the face of staff shortages.<sup>55,56</sup> These centres should be studied to understand why they have produced better outcomes.

### 7.3 Some lessons learned

These are derived largely from the experience of conducting the impact evaluation and of relating to the BNP’s management and other contractors:

- Good communication is needed between a program’s management staff and its contractors. More specifically, a multi-faceted program such as the BNP requires a technical steering committee, comprising representatives of all groups concerned with its implementation, that meets regularly to discuss progress.
- All interventions need to start in a timely fashion.
- Issues of sustainability and handover to the Government and its line ministries need to be given more serious attention at the start of the program. Where capacity-building and institutional strengthening are required, this should begin as early as possible.

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<sup>53</sup> Two pilot studies have tested the use of community nutrition counselors in five communities in Guyana, and have found them to be effective. Counselors have also been used in many other countries

<sup>54</sup> A few are already employed, and one is based at a health centre.

<sup>55</sup> S.Ismail and T.Roopnaraine (2007) *Interim report of the evaluation of the GoG / IDB Basic Nutrition Program’s interventions at Batch 1 & Batch 2 health centres.*

<sup>56</sup> S.Ismail (2008) *Extended impact evaluation of the GoG / IDB’s Basic Nutrition Program Phase 2: Impact of the BNP on Amerindian communities.*

- The importance of an adequately funded and rigorous impact evaluation needs to be recognized during program preparation, as it was with the BNP.
- Program management needs to respond to the challenges and shortcomings identified by the program's evaluation, and not only to its positive findings.
- There must be a broad-based recognition that behaviour change takes time, and may not occur fully within the life of any one program. It must also be recognised that a holistic approach is needed for a program to achieve its full positive impact on the nutritional status of a population.

## 7.4 Research and action

The BNP has been an excellent example of interweaving research and action. It has measured the real effectiveness of an ongoing national program, taking into account the day-to-day challenges which confront any intervention of this kind. In a tightly-controlled research study, for example, it would be possible to ensure that an iron or food supplement is actually taken by the target beneficiary, and not discarded or shared with other children. This is not possible in a national program, although efforts can and should be made to encourage full compliance. The BNP's evaluation assessed achievements in the face of realities and constraints that confront all national programs.

Inevitably, the evaluation design will need to change to accommodate events imposed by program implementation. This happened in the case of the BNP. Not all interventions started on time, and budgetary factors imposed changes on the original planned timetable for program implementation. The challenge is to ensure that the evaluation's scientific and statistical rigour is maintained when changes are made.

An on-going evaluation, such as the BNP's, identifies program weaknesses and constraints and the need for program modification. It also identifies areas for further research and the need for small pilot studies. The two pilot studies on the use of community nutrition counselors were in fact studies identified by the BNP evaluation. The first study specifically addressed the fact that for a period of 6 – 8 weeks immediately following the birth of her child, a mother is without the support of health staff.<sup>57</sup> In the absence of such support, poor breast feeding practices may ensue or efforts to breast feed may be abandoned. It addressed also the need for better compliance with the recommendations for exclusive breast feeding and better complementary feeding practices. The second study tested the use of risk factors to identify mothers who are most in need of support and counseling.<sup>58</sup> Another study is now underway to examine the long-term impact of the BNP interventions.

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<sup>57</sup> T. Roopnaraine, Y. de Freitas, N. Blair, S. Ismail (2008) *Community Nutrition Counselors: a pilot community-based project in five communities in Guyana – Phase I Evaluation Report*

<sup>58</sup> N. Blair, Y. de Freitas, M. Blake-Collins, S. Ismail (2009) *Community Nutrition Counselors: A community-based project – Phase II Final Report*

## 7.5 The BNP's strengths, weaknesses, opportunities and constraints

In order to summarize the evaluation of the BNP, we undertook a brief SWOC analysis of the impact evaluation and of the relationship of the evaluation to the BNP's management structure:

### *Strengths*

- The BNP has achieved its outcome targets with regard to the reduction in the prevalence of anaemia and wasting. It has achieved this by tackling all aspects of young child nutrition.
- The BNP has benefited from an adequately-funded and rigorous impact evaluation that combined quantitative and qualitative components. This research has been fed back into the program in a timely manner.
- Most BNP interventions are low-cost and sustainable. A targeted approach may be used for the one intervention that is too costly to be continued at the national level.
- The BNP tackles the most vulnerable age group.
- The BNP has enjoyed the commitment of the Ministry of Health, as demonstrated by the Ministry's willingness to take over and sustain the BNP interventions
- The BNP has enjoyed substantial support from the IDB, leading to its expansion, extension and willingness to invest further in nutrition.

### *Weaknesses*

- Not all interventions started at the same time. The initial focus of the BNP management was on the provision of sprinkles and food coupons. In the absence of the other interventions (retraining of health centre staff and the development of IEC materials), inadequate promotion and information accompanied the distribution of the sprinkles and coupons. A particular weakness was also the non-availability of the IEC materials at the time of the training of the health centre staff, thus limiting their usage.
- The effective absence of a technical steering committee lead to failures in communication between the BNP contractors, misunderstandings and insufficient overview of contractors' activities and of the program management's performance.
- Limited feedback to health centres with regard to evaluation findings, both positive and negative. This was accompanied also by a limited response of the program management to problems and weaknesses identified by the evaluation.<sup>59</sup>
- The BNP had limited coverage of Amerindian communities, especially the more remote ones.
- Food prices rose substantially during the life of the BNP. This reduced the quantities of foods that could be obtained with the monthly coupon. No allowance was made for this in the BNP's budget.

### *Opportunities*

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<sup>59</sup> These were identified in a number of evaluation reports and through verbal reports. In particular, the issue of non-receipt of sprinkles and coupons by a substantial proportion of eligible beneficiaries was frequently brought to the attention of the BNP's technical director.

- The BNP has formed the basis for a national nutrition program, and has set the stage for a comprehensive national nutrition strategy that addresses all food and nutrition problems.
- The BNP's activities in relation to surveillance and growth monitoring have provided the basis for better identification and monitoring of nutrition problems and of locations most at risk of malnutrition.
- The BNP has provided physical resources (anthropometric equipment, audiovisual equipment) and improved human resources that will serve well for future nutrition activities.
- The BNP has built capacity in nutrition programming at all levels, particularly among health centre personnel. This is an invaluable resource for future interventions.

#### *Constraints*

- Delays in contract approval and procurement delays led to unacceptable delays in BNP activities and interventions.
- A high staff turnover in the BNP's management led to communication and management problems.
- Staff shortages at health centres limited achievements in some of the BNP interventions.
- Climate, especially the major flooding of 2005, affected the implementation of BNP interventions, as well as the activities of the impact evaluation.

Guyana's poverty is both chronic and multi-dimensional, with numerous causes and contributing factors both historical and modern. With the exception of flooding as a result of heavy rainfall, Guyana has suffered a minimal number of natural disasters: few droughts, and no hurricanes or earthquakes. Guyana's poverty is very largely the product of human action or inaction. Restoring the economy, the education system and the public health infrastructure will require many years of sustained commitment on the part of Government, civil society and the donor community. In nutritional terms, this is too long to wait: because early childhood nutrition is so important, a failure to intervene now will have long-term impacts on future health and development outcomes throughout the population. As we have shown in this report, the BNP has been a highly successful and very timely intervention in many ways. The challenge which confronts us now is simple: we must ensure that the investment which stakeholders have made in the BNP is not wasted. With lessons from the BNP experience in hand, we have a responsibility to take nutrition programming in Guyana much further. We must implement innovative, evidence-based, scaled-up programming which draws on the kind of action-research carried out in the context of the BNP. Above all, such programming must seek to ensure meaningful and sustained behaviour change which will help to secure better nutritional outcomes for future generations.

## ANNEX 1

### Basic Nutrition Program Impact Evaluation SDI Study Team

#### Senior staff

Suraiya Ismail, public health nutritionist, team leader  
Terry Roopnaraine, consultant anthropologist  
Hereward Hill, consultant nutrition trainer

#### Quantitative component staff

##### *Field researchers and data entry clerks*

Samantha Downer  
Gillian Trim  
Alicia Roopnaraine  
Nini Osaze  
Ina Daniels  
Stacey Dubra  
Sharon James  
Sybil Singh  
Neville La Rose  
Lucinda Miller  
Nesa Thomas  
Ikey Henry  
Angelene Poole  
Natakii David

##### *Data analysis*

Suraiya Ismail

#### Report preparation

Suraiya Ismail  
Terry Roopnaraine  
Silke Seco

#### Qualitative component staff

##### *Interviewers*

Dinte Conway  
Rosanne Horatio  
Marcia Blake

##### *Transcribers*

Alicia Roopnaraine  
Nini Osaze  
Rehanna Hohenkirk  
Melissa Bynoe-Persaud  
Xaviera Kippins

##### *Data analysis*

Terry Roopnaraine  
Ridhi Kashyap



## ANNEX 2

### Health centres included in the impact evaluation of the Basic Nutrition Program

Batch 1		Batch2		Batch 3		Batch 4 Amerindian centres		Batch 5 New BNP centres		Batch 6 Non-BNP centres	
R		R		R		R		R		R	
3	Goed Intent	3	Leguan	2	Supenaam	1	<i>Port Kaituma</i>	3	Den Amstel	2	Suddie
3	Vergenoegen	3	Parika	2	Huis T'Diren	6	<i>Orealla</i>	3	Leonora	2	Aurora
3	Wakenaam	4	Albouystown	2	Abram's Zuil	7	<i>Kamarang</i>	3	Metenmeerzorg	2	Columbia
4	Ann's Grove	4	Sophia	2	Anna Regina	8	<i>Mahdia</i>	4	Betervertwagting	2	<i>Siriki</i>
4	Enmore	4	Mahaica	2	Windsor Castle	9	<i>Lethem</i>	4	Industry	2	<i>Akawini</i>
4	Herstelling	4	Unity	2	Dartmouth	2	<i>Wakepau</i>	4	Kitty	6	New Amsterdam
4	<i>St Cuthbert's</i>	5	Long Creek	2	Charity			4	Kuru Kuru	6	Edinburgh
5	High Dam	5	Rosignol	6	Skeldon			4	Melanie	6	Crabwood Creek
5	Dundee	5	Ithaca	6	Cumberland			4	Plaisance	6	# 53
5	Belladrum	10	Christianberg	6	Bohemia			4	Soesdyke	6	Sandvoort
5	Litchfield			6	Port Maurant			4	Supply	6	Providence
5	Bushlot							4	Cambelville	6	Lan Liv man
5	Woodley Park							4	David Rose		
								4	Grove		

R = Region; Health centres in italics are in predominantly Amerindian communities

## ANNEX 3

### Impact Evaluation of the Basic Nutrition Program Reports submitted by Social Development Inc.

Date	Title	Author(s)	Contents
September 2004	GoG / IDB BNP Impact Evaluation Project: Report of the first Stakeholder Workshop	Suraiya Ismail	Report of stakeholder workshop to present and discuss evaluation study design
June 2005	Report of baseline data from the GoG/IDB BNP's impact evaluation	Suraiya Ismail	Baseline data from longitudinal study (Batch 1)
December 2005	Report of a pilot study of sprinkles for pregnant women GoG/IDB BNP's impact evaluation	Suraiya Ismail Terry Roopnaraine	Quantitative and qualitative studies of sprinkles for pregnant women
January 2006	Midterm report from the GoG/IDB BNP's impact evaluation	Suraiya Ismail Terry Roopnaraine	<ul style="list-style-type: none"> <li>Longitudinal study: impact of sprinkles (Batch 1);</li> <li>Qualitative study of sprinkles for children</li> </ul>
June 2006	Report of the final evaluation of the GoG/IDB BNP's interventions at Batch 1 health centres	Suraiya Ismail	Longitudinal study: impact of sprinkles+coupons (Batch 1)
February 2007	Report of a study to assess the impact of re-training of health centre staff and the IEC campaign on the nutrition knowledge of mothers	Suraiya Ismail	Rapid, interim study of mothers' nutrition knowledge
March 2007	The use of food coupons in Guyanese households: preliminary findings	Terry Roopnaraine	Qualitative study of food coupons
November 2007	Interim report of the evaluation of the GOG/IDB BNP's interventions at Batch 1 & Batch 2 health centres	Suraiya Ismail Terry Roopnaraine	<ul style="list-style-type: none"> <li>Interim results of cross-sectional study at (revised) Batch 1 and 2 health centres;</li> <li>Qualitative study of breast feeding practices;</li> <li>Qualitative study of child feeding (KAP study)</li> </ul>
March 2008	Extended impact evaluation of the GOG/IDB BNP. Phase 1: Baseline data.	Suraiya Ismail	Report of baseline data from (revised) Batches 4, 5, and 6
September 2008	Extended impact evaluation of the GOG/IDB BNP. Phase 2: Impact of the BNP on Amerindian communities	Suraiya Ismail	Report of the impact of the BNP on Amerindian communities
December 2008	Extended impact evaluation of the GOG/IDB BNP. Phase 3: Evaluation of non-BNP communities	Suraiya Ismail	Impact of sprinkles, IEC and re-training of health professionals on non-BNP communities
December 2008	GoG/IDB BNP: Interim report of mothers' recall of nutrition advice offered by health centre staff	Silke Seco Suraiya Ismail	"Exit Poll" study: nutrition advice given to, and recalled by, mothers at clinic visits

## NUTRITION NOTES

### Nutritional status indicators

Nutritional status is assessed by measuring the weight and length<sup>60</sup> of the individual, then comparing these to international reference standards, obtained from healthy well-nourished populations. Using weight and height, two indicators are calculated for this sample of primary school children:

- Length for age – a measure of stunting or chronic malnutrition. This is calculated by comparing the length of the individual to the reference height of an individual of the same age and sex.
- Weight for length – a measure of wasting (acute malnutrition) or obesity, calculated by comparing the weight of the individual to the reference weight of an individual of the same length and sex.
- 

Nutritional status of the individual is then defined by means of cut-off points below the individual's reference median:

Cut-offs below the reference median	Nutritional status Stunting (height for age) and wasting (weight for length)
< -2 standard deviations (SD)	Severely stunted or severely wasted
≥ -2 SD and < -1 SD	Moderately stunted or moderately wasted
≥ -1 SD and < median	Mildly stunted or mildly wasted
≥ median	Not stunted or not wasted

#### a) Stunting

Stunting or chronic malnutrition is generally considered to be the consequence of a diet lacking diversity and / or a high level of disease. A monotonous diet is likely to be deficient in a number of nutrients. A stunted child may be receiving adequate quantities of energy (calories), protein and fat, but yet be lacking in essential vitamins and minerals. Consequences of stunting include poor mental development and poor school achievement. Other consequences may be linked to deficiencies of specific vitamins and minerals.

Stunting has been the subject of the classic “nature vs nurture” debate i.e. whether it is the result of a person's genetic make-up or because of environmental insults suffered during a child's growth periods, insults such as high morbidity or poor nutrition. In

<sup>60</sup> Length is measured for children aged 0 – 24 months, and height for children and adults above 24 months.

favour of the nurture position is the fact that ethnic groups, such as Indian, Chinese and Japanese, traditionally considered to be of short stature, are now achieving heights comparable to those found in European and North American populations. This is especially so when economic status improves or when these groups migrate to the States or Europe. A PhD study conducted in Guyana<sup>61</sup> compared the heights of two groups of Amerindians: the group with the better economic status and a more diverse diet was taller than the other. The diet of Amerindian communities, especially the more remote ones often lack diversity. Specifically, consumption of vegetables is low. Consumption of dairy products and legumes may also be low.

It is important to appreciate that what is important with stunting is not the fact of being short, but rather the failure to achieve one's full growth potential, and why this failure has occurred.

**b) Wasting**

Wasting, or acute malnutrition is the result of an inadequate intake of energy (calories) and / or a recent illness. The diet is primarily deficient in energy, but going along with what is essentially an insufficient food intake are deficiencies in many other nutrients. Extreme thinness, or severe wasting, of the form seen in famine conditions, is associated with a high risk of disease and, ultimately, death.

**c) Short-term hunger**

During the course of the day, a child may receive an adequate quantity of nutrients, and thus his/her nutritional status may be satisfactory. If, however, a child arrives at school with no breakfast or an inadequate breakfast, the child will experience short-term hunger until it is offered a snack or a meal. Studies have shown that short-term hunger is associated with a short attention span and with poor school achievement, even if the child's nutritional status is good.

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<sup>61</sup> Alan Dangour (1998) *Growth of body proportions in two Amerindian tribes in Guyana*. PhD thesis, University College, London.

## DATA COLLECTION AND INTERVENTION TIMES – SUMMARY BY HEALTH CENTRE BATCH

Year:	2004	2005			2006			2007			2008		
Trimester:	3	1	2	3	1	2	3	1	2	3	1	2	3
Batch 1	B B	B	M M M		F F F				F F F F				
Sprinkles		S											
Coupons			C										
Training							T						
IEC							I						
Batch 2					B B	B B			F F F F				
Sprinkles						S							
Coupons						C							
Training							T						
IEC							I						
Batch 3		B B B	M	M M	F F	F					F F F F		
Sprinkles							S						
Coupons							C						
Training							T						
IEC							I						
Batch 4										B B B		F F	
Sprinkles										S			
Coupons										C			
Training								T					
IEC										I			
Batch 5										B B B		F F F	
Sprinkles										S			
Coupons										C			
Training								T					
IEC										I			
Batch 6											B B B		F F F
Sprinkles											S		
Training								T					
IEC											I		

Data collection: B=Baseline; M=Midterm; F=Final;

Interventions: S=Sprinkles; C=Coupons; T=Training of HC staff in basic nutrition; I=IEC campaign



## MEMORANDUM

**\*\*Copy\*\*** File Classification: PO-GY-L1028-  
Plan

**\*\*Copy\*\*** IDBDocs #2082494

SCL/353/2009

**Date:** July 30, 2009

**To:** Kei Kawabata  
Sector Manager, SCL/SCL  
Dora Currea  
General Manager, CCB/CCB

**From:** Michael D. Jacobs (*Original signed*)  
Chief, SCL/SPH  
Marco Carlo Nicola (*Original signed*)  
Representative, CCB/CGY

**Subject:** **GUYANA. Expansion of Basic Nutrition Program (GY-L1028). Project Profile. Approval.**

The Project Profile (PP) was considered during the Eligibility Review Meeting (ERM) on June 19, 2009. The decisions and recommendations are documented in the attached ERM minutes as are the subsequent actions to be taken. The recommendations have been incorporated in the updated version of the PP attached.

We have examined the attached documents and consider that they appropriately reflect the most substantial comments, and establish a feasible plan for action and future results.

We thus approve the Project Profile and Annexes and attach them for your information.

Attachments:

- Project Profile (PP)
- Annex I – Summary Development Effectiveness Matrix (DEM)
- Annex II – Safeguard Policy Filter Report (SPF)
- Annex III – Environmental and Social Strategy
- Annex IV– Index of completed and proposed sector work
- Annex V – Resources and timetable for project preparation
- ERM Minutes

## Project Profile

### I. Basic data

<b>Project name:</b>	Expansion and Integration of Basic Nutrition Program	
<b>Project number:</b>	GY-L1028	
<b>Project team:</b>	Meri Helleranta, Project Team Leader (SCL/SPH); Luis Tejerina (SCL/SPH); Dorota Raciborska (SCL/SPH); Ian Ho-A-Shu (SPH/CTT); Juan Carlos Lazo (CCB/CGY); Jose Manuel Ruiz (CCB/CGY); Roy Parahoo (CCB/CGY); Chena Barakat (CCB/CGY); Diego Buchara (LEG/SGO); and Martha Guerra (SCL/SPH).	
<b>Borrower:</b>	Cooperative Republic of Guyana	
<b>Executing agency:</b>	Ministry of Health	
<b>Financing plan:</b>	IDB:	US\$5,000,000 <sup>1</sup>
	Local:	US\$ TBD <sup>2</sup>
	Total:	US\$
<b>Safeguards:</b>	Policies triggered:	N/A
	Classification:	C

### II. General Justification and Objectives

#### A. Background and justification

- 2.1 During the last two decades there have been important improvements in child health in Guyana. While the percentage of the population living in moderate poverty decreased from 43% to 35% during 1992-2008, child mortality fell by 77%. Childhood malnutrition is an important contributor to child mortality and morbidity, and has been shown to impair intellectual and productive potential, with lifelong consequences. Malnutrition in Guyana was addressed directly in 2004 when the Government initiated a large scale pilot via the Basic Nutrition Program (BNP), with the support of IDB loan LO-1120/SF-GY. Using the SIMAP<sup>3</sup> poverty map, the BNP targeted children aged 6-24 months and pregnant women in 49 health centers across Guyana with interventions addressing micronutrient deficiencies and young children's feeding practices. Impact assessment showed that the chosen interventions were highly effective in reducing anemia and wasting in children<sup>4</sup>. Consequently, the

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<sup>1</sup> US\$2,500,000 (ORC) + US\$2,500,000 (FSO)

<sup>2</sup> The amount of local counterpart is under discussion with the GoG. IDB is expecting to finance 100% of the project in the first year, after which counterpart financing should gradually increase, so that by the end of the project 100% of the project expenses would be financed with counterpart resources.

<sup>3</sup> Social Impact Amelioration Programme was established by the Government of Guyana in 1992.

<sup>4</sup> Among children who received the micronutrient powder (Sprinkles<sup>®</sup>) and food coupons, the prevalence of anemia decreased from 72% to 32% in the intervention group, and from 72% to 53% in the control group. Following 12-18 months of intervention, prevalence of wasting decreased in the intervention group and increased in the control group, resulting in 27% lower prevalence of wasting among the intervention group.

Government of Guyana (GoG) expanded the program to an additional 30 health centers, and has committed to bringing the benefits of the program to all children less than five years of age and pregnant mothers in Guyana. While building on the successes of the BNP, the current project will support a broader public health nutrition agenda, as outlined in the National Nutrition Strategy 2009-2015, and the integration of key BNP interventions to the Ministry of Health's (MoH) Family Health Program.

- 2.2 **Nutritional challenges in Guyana.** Although the BNP demonstrated a successful strategy to address some nutrition-related child health challenges among its beneficiaries, nutritional deficiencies and anemia persist as the second most important causes of death in young children 1-4 years old.<sup>5</sup> At the national level, stunting and wasting are estimated at 14% and 8% in children, respectively.<sup>6</sup> BNP-supported studies have reported prevalence of anemia as high as 66% in 12-18 month old children, and at 50% among expecting mothers.<sup>7</sup> At the population level, eliminating anemia can result in productivity increases of up to 17% and is known to reduce maternal mortality by up to 20%. In addition to under-nutrition and anemia, the Guyanese population presents high prevalence of over-nutrition-related chronic diseases (e.g. obesity, hypertension and diabetes).<sup>8</sup> Considering that nutritional deficiencies in early childhood increase the risk of these diseases,<sup>9</sup> preventive interventions should start as early as possible.
- 2.3 **Children of the hinterland.** Guyana's interior (Regions 1, 7, 8 and 9) presents distinct characteristics due to its geographic isolation and high proportion of ethnic Amerindians. This 10% of the population exhibit the highest mortality rates for children under 5 and the highest percentage of low birth weight babies. Low access to sanitation facilities and to safe drinking water contributes to the highest rates of diarrhea in children in the country, with a peak in prevalence at age 6-11 months, at weaning.<sup>10</sup> While mothers in these regions practice exclusive breastfeeding during the first 6 months as recommended by WHO, complementary feeding practices are inadequate and children in these areas present stunting rates that are twice of those found in other regions. As a result, further improvements in child nutrition are likely to require strategies that take into account lack of basic services and the distinct cultural characteristics in these regions.
- 2.4 **Integration of BNP interventions within the FHP.** The Ministry of Health (MoH) is in the process of reorganizing the Maternal and Child and Food Policy Units into a new unit, the Family Health Program (FHP),<sup>11</sup> which will encompass safe

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<sup>5</sup> Statistical Bulletin 2006, Statistical Unit of Ministry of Health 2008.

<sup>6</sup> MICS 2006.

<sup>7</sup> Report of a pilot study of Sprinkles for pregnant women as part of BNP impact evaluation. SDI 2005

<sup>8</sup> Statistical Bulletin 2006.

<sup>9</sup> Law CM et al. Body size at birth and blood pressure among children in developing countries. *Int.J.Epi.* 2002;29:52-9.

<sup>10</sup> MICS 2006

<sup>11</sup> The mandate of Family Health Program is described in the National Health System Strategy 2008-2012, as follows: "Maternal and child health (MCH) will be transformed into an integrated family health programme of immunization, integrated management of common childhood illnesses



motherhood initiatives, integrated management of childhood, adolescent, and adult illnesses, adolescent health, and healthy lifestyles initiatives. The MoH envisages integrating the BNP within the FHP, and regards it as a critical step in order to strengthen government ownership of the BNP and ensure sustainability by gradually incorporating program expenses under a priority program of the MoH.

- 2.5 **Building on National Health Policy.** The National Health Sector Strategy (NHSS) 2008-12 identifies seven priority areas for health services and defines the mandate for the newly-established priority program, the FHP. The Programme is also a priority area for the implementation of the second edition of the Package of Publicly Guaranteed Health Services. Guaranteeing health of the family is consistent with the GoG's commitment to Millennium Development Goals, its National Development Strategy, and the Poverty Reduction Strategy.
- 2.6 Furthermore, the MoH, through its National Nutrition Committee, has finalized the core components of the National Nutrition Strategy 2009-2015 (NNS), which proposes new national guidelines on public health nutrition. The NNS speaks to the strengthening of GoG's capacity to address all forms of malnutrition. It is also in line with the IDB Country Strategy with Guyana 2008-2012 (GN-2503-1), which includes *targeted social development* among its primary objectives and identifies specific targets for reducing child malnutrition.

## **B. Objectives and program structure**

- 2.7 **Project objectives.** The overall objective of this program is to assist the GoG in ensuring that "all Guyanese, regardless of age, race, religion, geographical area of residency, attain an adequate nutritional status, which is an essential requirement for a healthy and productive life".<sup>12</sup> The specific objectives are to: (i) Strengthen the capacity of the FHP to implement, deliver and expand nutrition interventions supporting child development and maternal health, and to tailor them appropriately for hinterland populations; to (ii) Consolidate and expand MoH's growth promotion activities are (through component 1); and to (iii) Ensure financial sustainability of the program assisting the most vulnerable families to provide a nutritionally adequate diet to children 6-24 months (though component 2).
- 2.8 The operation will consist of two components. The **first component** will: (i) build capacity within the FHP primarily to integrate among its functions the management of child and maternal anemia and growth promotion activities (such as promotion of breast feeding) and related surveillance, expanding these services to all 342 health centers and health posts in the country; (ii) promote critical health behaviors related to child nutrition, survival, and development in the hinterland communities through community-based approaches considering for the distinct characteristics of these populations;<sup>13</sup> and (iii) implement a results-oriented evaluation and monitoring system,

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(IMCI) and integrated management of adolescent and adult illnesses (IMAI), and adolescent health, including school health and family planning."

<sup>12</sup> Cited from the National Nutrition Strategy of the Ministry of Health (draft), April 2009.

<sup>13</sup> Close collaborations with existing programs, such as Guyana Red Cross Society's *Guyana Hinterland Community Based Water and Sanitation Project*) will be sought to address the impact of low quality drinking water and sanitation services on child nutrition in those communities.

which will be developed and implemented with additional financing from a Technical Cooperation project (GY-T1066).

- 2.9 The **second component** will design a targeted monetary incentive to enforce regular visits to the health centers and thus prevent child malnutrition among the most vulnerable families. Applying geometric targeting, through which health centers that serve enumeration districts ranking the highest according to the Marginality Index (e.g. values ranging between 2.42-0.58) developed based on the 2002 Population and Housing Census, has been presented to the GoG. The design and implementation of a targeting system is currently being discussed at the parliament, and would be eligible for support from the Social Fund. Therefore, this component will initially support the provision of food coupons to the 79 health centers targeted under the BNP, and will gradually phase out from some centers, based on the results of an improved targeting. The MoH has engaged in discussions with the Ministry of Labour, Human Services and Social Security (MoLHSSS) to establish a collaborative mechanism, through which food coupons could be delivered through the extensive social services network of the MoLHSSS operating similar coupon schemes throughout the country.<sup>14</sup> This arrangement would not only yield important administrative savings, but it would also represent a step towards building a more coherent national social protection program.

### C. Key results indicators

- 2.10 The results indicators selected for the program are drawn from: (i) the Guyana Demographic & Health Survey (GDHS) to be conducted in 2009 (baseline) and in 2014 by the MoH, in collaboration with the Bureau of Statistic. Sub-regional prevalence estimates of the below indicators will be obtained by using the Lot Quality Assurance Sampling methodology (supported by the GY-T1066), and from the MoH's Annual Statistical Bulletin. The results indicators selected below are in line with the outcome indicators chosen in the NNS to mark progress towards its implementation.
- a) Prevalence of anemia reduced a) in the program catchment area and b) in the hinterland communities, in pregnant women - by 20%, in lactating women – by 30%, and in children under 24 months old - by 30%.
  - b) Exclusive breastfeeding rate of children under 6 months increased by 50%.
  - c) Prevalence of chronic malnutrition (stunting) among children 6-60 months reduced a) in coastal areas by 10% and b) in hinterland communities by 15%.
  - d) Counterpart financing for the program increased in the second year from 0 to 18%, in the third year – to 35%, in the fourth year – to 60%, and in the fifth year – to 100%.

## III. Technical Issues and Sector Knowledge

- 3.1 **Project execution scheme.** The BNP was implemented by a project execution unit in the Health Sector Development Unit (HSDU) of the MoH, which manages externally-financed projects. As part of the process of integrating nutrition

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<sup>14</sup> Under such an arrangement health center staff would regularly inform the MoLHSSS regarding identity of households eligible for the coupon, based on their compliance with regular health center visits.

intervention with existing MoH programs, this project will support a gradual transfer of oversight and management responsibilities from the HSDU to the new FHP. A technical cooperation (GY-T1066) described below supports the development of an implementation plan for this transition. This plan is expected to present well-defined transition benchmarks, and outline FHP staffing requirements, including an incentive system that recognizes the need to attract and retain qualified personnel in the FHP.

- 3.2 **Technical Cooperation Supporting the Program Development and Implementation.** The design and institutionalization of the new phase of the BNP will be supported by the recently signed technical cooperation project (GY-T1066) *Supporting the Implementation of an Integrated National Nutrition Program*. Specifically, the TC resources will finance: (i) national consultations around the National Nutrition Strategy; (ii) the development of a national staple food fortification strategy; (iii) the design of the BNP M&E mechanism; (iv) the transition of BNP management from HSDU to the FHP, where the national nutrition program will be located; and (v) the development of an implementation plan for the NNS.

#### **IV. Safeguards and Fiduciary Screening**

- 4.1 In accordance with the Environmental Safeguard policy (OP-703), it is proposed that the project be classified as C. It is anticipated that the project will impact and benefit Indigenous communities in rural areas in Regions 2, 3, 4, and 9 fully complying with the Indigenous Peoples Policy (OP-765).
- 4.2 It is foreseen that fiduciary responsibility will remain with the HSDU throughout the project, given its positive track record with the BNP. However, in line with the Bank's country strategy regarding sustainability of the nutrition program, the CCB/CGY staff will conduct annual assessments of the MoH's fiduciary system to assess its readiness to absorb related fiduciary functions, and to identify actions required to strengthen it. Based on the results, some fiduciary responsibilities may gradually move to MoH during program execution.

#### **V. Other Issues**

- 5.1 It is expected that the IDB project (1604/SF-GY) currently financing the core BNP services, will be fully disbursed by June 30, 2009, which might potentially affect the continuity of the BNP services. In this regard, as per OP-504, the Bank may reimburse expenditures incurred by the MoH related to the program. To that end, during the design of the program the Project Team will review with the MoH those expenditures to determine whether or not they are eligible for Bank financing as well as the date from which those expenditures may be eligible for Financing.

#### **VI. Resources and Timetable**

- 6.1 The Annex V details the chronogram for project preparation and the costs necessary to obtain an approval of the Proposal for Operational Development by September 28th, 2009.

Matriz de Efectividad en el Desarrollo  
Resumen

Criterio	Puntaje
<b>Sección 1. Objetivos Estratégicos del BID en materia de Desarrollo – Areas de Valoración</b>	<b>6.775</b>
Diversificación de Países	2.2
Iniciativas Corporativas	0
Armonización y Alineación	1.575
Focalización de la Población Beneficiaria	3
<b>Sección 2. Objetivos de Desarrollo de la Estrategia de País – Areas de Valoración</b>	<b>9.6</b>
Diagnóstico del Sector en la Estrategia de País	6
Objetivo e Indicador del Sector en la Estrategia de País	3.6
<b>Sección 3. Lógica del Programa – Areas de Valoración</b>	<b>4.9998</b>
Diagnóstico del Programa	3
Soluciones Propuestas (En el Perfil del Proyecto)	1.9998
Soluciones Propuestas (En la Propuesta de Desarrollo de la Operación)	0
Calidad de la Matriz de Resultados	0
<b>Sección 4. Evaluación y Monitoreo – Areas de Valoración</b>	<b>0</b>
I. Evaluación	0
II. Monitoreo	0
<b>Sección 5. Desempeño Económico –Areas de Valoración</b>	<b>0</b>
Tasa de Rendimiento Económico	0
Costo - Efectividad	0
<b>Sección 6. Gestión de Riesgos – Areas de Valoración</b>	<b>0</b>
Clasificación del Riesgo Ambiental y Social	0
Cumplimiento de las Políticas de Riesgo Ambiental y Social	
Puntaje de la Matriz de Riesgo	0
Puntaje de la Matriz de Mitigación	0
<b>Sección 7. Adicionalidad- Areas de Valoración</b>	<b>0</b>

## SAFEGUARD POLICY FILTER REPORT

This Report provides guidance for project teams on safeguard policy triggers and should be attached as an annex to the Project Concept Document (or equivalent) together with the Safeguard Screening Form, and sent to ESR.

1. Save as a Word document. 2. Enter additional information in the spaces provided, where applicable. 3. Save new changes.

<b>PROJECT DETAILS</b>	IDB Sector	Health
	Project Type	Investment Loan
	Additional Operation Details	
	Country	Guyana
	Project Status	New Operation
	Investment Checklist	Generic Checklist
	Team Leader	Meri Helleranta
	Project Title	Expansion and Integration of Basic Nutrition Program
	Project Number	GY-T1028
	Safeguard Specialist(s)	<i>To be completed by assessor</i>
	Assessment Date	2009-05-19
	Assessment Number	2009-05190454-2
Additional Comments		

<b>SAFEGUARD POLICY FILTER RESULTS</b>	Project Type	Investment Loan	
	Safeguard Policy Items Identified (Yes)	Potential to affect Indigenous People (also see <a href="#">Indigenous Peoples Policy</a> ).	<a href="#">Resettlement and Indigenous People (B.01)</a>
	Potential Safeguard Policy Items (?)	No potential issues identified	
	Recommended Action	Operation has triggered 1 or more Policy Directives; please refer to appropriate Directive(s). Complete Project Classification Tool. Submit Safeguard Policy Filter Report, PCD (or equivalent) and Safeguard Screening Form to ESR.  <i>Policy Directives can be accessed from the Resources tab on the Toolkit home page.</i>	
	Additional Comments		

<b>ASSESSOR DETAILS</b>	Name of person who completed screening:	
	Title	
	Date	2009-05-19

## SAFEGUARD SCREENING FORM

This Report provides a summary of the project classification process and is consistent with Safeguard Screening Form requirements. The printed Report should be attached as an annex to the Project Concept Document (or equivalent) (together with the Safeguard Policy Filter Report) and sent to ESR.

1. Save as a Word document. 2. Enter additional information in the spaces provided, where applicable. 3. Save new changes.

<b>PROJECT DETAILS</b>	<b>IDB Sector</b>	Health
	<b>Project Type</b>	Investment Loan
	<b>Additional Operation Details</b>	
	<b>Country</b>	Guyana
	<b>Project Status</b>	New Operation
	<b>Investment Checklist</b>	Generic Checklist
	<b>Team Leader</b>	Meri Helleranta
	<b>Project Title</b>	Expansion and Integration of Basic Nutrition Program
	<b>Project Number</b>	GY-T1028
	<b>Safeguard Specialist(s)</b>	<i>To be completed by assessor</i>
	<b>Assessment Date</b>	2009-05-19
	<b>Assessment Number</b>	2009-05191550-2
	<b>Additional Comments</b>	

<b>PROJECT CLASSIFICATION SUMMARY</b>	<b>Project Category:</b> C	<b>Override Rating:</b>	<b>Override Justification:</b>
			<b>Comments:</b>
	<b>Conditions/Recommendations</b>	<ul style="list-style-type: none"> <li>• Normally no environmental impact assessment studies or consultations are required for Category "C" operations.</li> <li>• Some Category "C" operations may require specific safeguard/monitoring requirements (Policy Directive B.3). These operations will establish safeguard/monitoring requirements for environmental and other risks (social, disaster, cultural, H&amp;S etc.)</li> <li>• The Project Team must send to ESR the PP or PCD (or similar) containing the E&amp;S Strategy (the requirements for an ESS are described in the Environment Policy Guideline: Directive B.3) plus the Safeguard Policy Filter and Screening Form Reports.</li> </ul> <p><i>Policy Directives can be accessed from the Resources tab on the Toolkit home page.</i></p>	

<b>SUMMARY OF IMPACTS/RISKS AND POTENTIAL SOLUTIONS</b>	<b>Identified Impacts/Risks</b>	<b>Potential Solutions</b>
	No issues identified	

<b>ASSESSOR DETAILS</b>	<b>Name of person who completed screening:</b>	<b>Date:</b>
	<b>Comments:</b>	

## **EXPANSION OF BASIC NUTRITION PROGRAM GY-L1028**

### **Environmental and Social Strategy**

#### **A. Environment**

The Program will not finance physical investments; therefore no direct impact on the environment is anticipated. In accordance with the Environmental Safeguards Policy (OP-703), it is proposed that this operation be classified as “C”.

#### **B. Social impacts**

Although poverty has declined in Guyana in the past decade, its levels are still high. Guyana must reduce extreme poverty by 4% to achieve its 2015 Millennium Development Goal (MDG). Therefore, Guyana faces the challenge of improving the productive capacity of its people (as a means of lifting them out of poverty), while maintaining an adequate level of spending to provide for their basic needs.<sup>1</sup> This operation presents an opportunity to protect and encourage the accumulation of human capital among the poor in Guyana. Improving the targeting and evaluation of existing health and social programs, via the operation’s M&E system, together with the institutionalization in the long term of the delivery of nutritional supplements and fortified foods to the most vulnerable families, will benefit the entire Guyanese population, via positive externalities in productivity and economic growth. Specific interventions will be developed for Indigenous communities, with the aim to address their unique needs and circumstances, in a manner that is consistent with their culture and traditions.

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<sup>1</sup> IDB Country Strategy with Guyana 2008-2012.

**EXPANSION OF BASIC NUTRITION PROGRAM  
GY-L1028**

<b>Index of completed and proposed sector work</b>			
<b>Issues</b>	<b>Description</b>	<b>Expected dates</b>	<b>References &amp; hyper links to technical files</b>
Technical options and design	IDB Country Strategy with Guyana (2008-2012)	completed	<a href="#">Social Protection Responses to the Increase in Food Prices in Guyana</a>
	Interim report of the evaluation of the Basic Nutrition Program's interventions at Batch 1 & 2 health centers	completed	<a href="#">Interim Report of the Evaluation of the GoG/IDB Basic Nutrition Program's</a>
	Report of baseline data from the BNP's impact evaluation (2005)	completed	<a href="#">Baseline Data Collection Report</a>
	FAO Nutrition Country Profiles – Guyana (2003)	completed	<a href="#">FAO - Nutrition Country Profiles</a>
	Guyana National Health Strategy 2008-2012	completed	<a href="#">National Health Sector Strategy</a>
	National Nutrition Strategy 2009-2015 (draft)	completed	n/a
	Evaluation of Sprinkles' uptake by pregnant women	completed	<a href="http://idbdocs.iadb.org/WSDocs/getdocument.aspx?DOCNUM=1991848">http://idbdocs.iadb.org/WSDocs/getdocument.aspx?DOCNUM=1991848</a>
	Social sector responses to food price inflation in Guyana	completed	<a href="#">Guyana Country Strategy</a>
	Access to social services in Guyana – results from recent surveys, 2005-2007	completed	<a href="#">Access to Social Services in Guyana</a>
	Access to social services in Guyana (2006)	completed	<a href="#">Access to Social Services in Guyana</a>
	World Bank Latin America and the Caribbean Food Industry Assessment	completed	<a href="#">Latin America and the Caribbean Food Industry Assessment</a>
Transition of fiduciary responsibilities to the Ministry of Health.	Fiduciary capacity assessment of the designated unit within MOH by COF fiduciary staff throughout the first year into execution.	August 2010	n/a



Institutional analysis/personnel, procedures other aspects of implementation capacity	Implementation plan describing the gradual transfer of oversight and management responsibilities from Health Sector Development Unit to the Family Health Program establishing specific benchmarks of accomplishment.	Condition prior	
Social and environmental safeguards	Guyana: Policy note on Indigenous Peoples - 2006	completed	<a href="http://idbdocs.iadb.org/WSDocs/getdocument.aspx?DOCNUM=1025753">http://idbdocs.iadb.org/WSDocs/getdocument.aspx?DOCNUM=1025753</a>
	Impact of the BNP on Amerindian Communities	completed	<a href="http://idbdocs.iadb.org/WSDocs/getdocument.aspx?DOCNUM=1991840">http://idbdocs.iadb.org/WSDocs/getdocument.aspx?DOCNUM=1991840</a>
	Survey and analysis of the circumstances and needs of the Amerindian Communities in Guyana	completed	<a href="http://idbdocs.iadb.org/WSDocs/getdocument.aspx?DOCNUM=466056">http://idbdocs.iadb.org/WSDocs/getdocument.aspx?DOCNUM=466056</a>

## Annex V: Resources and timetable for project preparation

### GUYANA

#### Expansion and Integration of Basic Nutrition Program (GY-L1028)

##### Critical Route: Chronogram for Preparation and Resources

Item	May	June	July	August	Sept.	Oct.	Nov.
Preparation of Project Profile (PP)							
Revision by the Project Team and LEG – May 29							
Revision by the Chief – June 1							
Distribution to ERM / ESR – June 5							
ERM Meeting – June 12							
Approval of Project Profile – June 17							
POD							
Orientation Mission							
Revision by Project Team/LEG/Chief							
POD Due Date							
Distribution to QRR							
Distribution of Post-QRR Minutes							
Approval of POD by VPS & VPC							
Distribution to OPC and translation							
Approval by OPC							
Negotiation							
Negotiation mission							
Changes submitted to Secretariat (Nov. 3)							
Board of Directors – November 19							

### Estimated Cost of Program Preparation

Consultancies financed with Administrative Resources		
Activities	Cost (US\$)	Due Date
Preparation of the Manual of Operations	US\$20,000	September 30, 2009
<b>TOTAL</b>	<b>US\$20,000</b>	

Consultancies financed with TC Resources		
Activities	Cost (US\$)	Due Date
Technical assistance through our project preparation and approval	20,000	October 30, 2009
Design and implementation of M&E system	200,000	December 2012
Development of the targeting mechanism (food coupons)	15,000	December 30, 2009
<b>TOTAL</b>	<b>US\$235,000</b>	

Time of the Project Team (Staff time)	
Staff	# days
Project team lead (SCL/SPH) Meri Helleranta	70
Sector specialist (SCL/SPH) Luis Tejerina	50
Sector specialist (SPH/CTT) Ian Ho-A-Shu	10
Analyst (SPH/CGY) Chena Barakat	10
Finance & accounting specialist (CCB/CGY) Juan Carlos Lazo	3
Chief of operations (CCB/CGY) Juan Manuel Ruiz	1
Procurement specialist (CCB/CGY) Roy Parahoo	1
International consultant (SCL/SPH, TC resources) Dorota Raciborska	60
Lawyer (LEG/SGO) Diego Buchara	20
Project Assistant (SCL/SPH) Martha Guerra	15
<b>TOTAL</b>	<b>165</b>

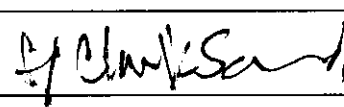
Missions of the Project Team			
Mission	Per diem	Ticket	Cost (US\$)
Identification: 3 persons x 5 days	20 x 276	1 x 500 + 3 x 1,200	9,620
Identification: 3 persons x 5 days	15 x 276	1 x 500 + 3 x 1,200	8,240
Orientation : 3 persons x 5 days	15 x 276	1 x 500 + 3 x 1,200	8,240
Analysis: 4 persons x 5 days	20 x 276	1 x 500 + 3 x 1,200	9,620
Negotiations: 4 person x 3 days	12 x 276	1 x 500 + 2 x 1,200	6,212
<b>TOTAL</b>			<b>US\$41,932</b>

## **ELIGIBILITY REVIEW MEETING**

### **MINUTES**

June 19, 2009

#### **I. Basic information:**

<b>PROJECT NUMBER</b>	GY-L1028
<b>PROJECT NAME</b>	Expansion of Basic Nutrition Program
<b>PIPELINE YEAR</b>	2009
<b>TEAM LEADER</b>	Meri Helleranta, SCL/SPH
<b>CHAIRPERSON (VPC MANAGER)</b>	Dora Currea, CCB/CCB 

#### **II. ERM decisions:**

ELIGIBILITY	YES		
IDB FINANCING AMOUNT AND SOURCE	IDB: US\$5,000,000 [BLD FSO/OC]		
ENVIRONMENTAL AND SOCIAL CLASSIFICATION	"C" in accordance with OP-703. It is anticipated that the program will impact indigenous people in rural areas positively, fully complying with OP-765.		
	NEXT ACTIONS	No further action required.	
POD DUE DATE	September 9, 2009		
TOTAL RESOURCE REQUIREMENTS (US\$)	ADMINISTRATIVE BUDGET	NPC <sup>1</sup> (US\$)	US\$72,510
		PC <sup>2</sup>	165 days
	TC FUNDING	US\$725,000 <sup>3</sup>	
	TOTAL	\$797,510	
DIVISION CONTRIBUTION	DIVISION 1	DIVISION 2	
	SPH 100%	%	
TECHNICAL COOPERATION (TC) CLEARED FOR APPROVAL	N/A – GY-T1066 approved 2008		

<sup>1</sup> NPC: Non personnel costs (travel, consultants, etc)

<sup>2</sup> PC: Personnel costs (FTEs)

<sup>3</sup> TC GY-T1066 which includes components executed both by the GoG and the Bank some of which are not only targeting the preparation period but also execution stage.

### III. Recommendations:

SUBJECT	RECOMMENDATIONS
1. Overall risk assessment and mitigation strategy	The overall risk rating was determined to be low. No further measures recommended.
2. Environmental and Social Strategy	No major issues were raised.
3. Institutional and policy issues	<p><u>Local Counterpart</u></p> <ol style="list-style-type: none"> <li>1. The Country Financing Parameters allow for full IDB financing; however, the Team will discuss with GoG the issue of local counterpart to ensure the financial sustainability of the program.</li> <li>2. Over the program's execution period there should be a progressive increase in the percentage of costs borne by the Government, resulting in its full financing for activities by the close of the operation. This concept should be reflected in the PP.</li> </ol> <p><u>Incentives for GoG Personnel Assigned to Program Execution</u></p> <ol style="list-style-type: none"> <li>1. The modalities for implementation of the incentives regime are still being developed with GoG. The details of this arrangement, if retained, will be included in the POD and should be linked to the implementation of an effective targeting system.</li> </ol> <p><u>Program Objectives</u></p> <ol style="list-style-type: none"> <li>1. GoG and Bank are continuing discussions on the most cost-effective interventions to provide potential economic benefits to the poorest Guyanese. The PP should highlight that any decision to continue with the <i>Food Coupons</i>, or to introduce another type of benefit scheme, should be informed by data/information on the impact of coupons under the previous BNP or results from the pilot program, rather than promote any one strategy such as CCTs. Strategies to be implemented will be fully elaborated in the POD.</li> <li>2. The PP should reflect the importance of creating an effective targeting mechanism that would identify most vulnerable families in terms of child malnutrition. This should be discussed in detail during the upcoming mission to Guyana.</li> <li>3. The objectives in the PP should be reframed to focus on human development outcomes.</li> </ol>

SUBJECT	RECOMMENDATIONS
	<p><u>Key Result Indicators</u></p> <ol style="list-style-type: none"> <li>1. Capacity strengthening of the FHP should be included as a <i>key result area</i>.</li> <li>2. The Team will continue to explore the indicators for evaluating the success of the Program and seek consistency with the Country Strategy in collaboration with the Chief of Operations and the Country Economist.</li> </ol> <p><u>Program Execution</u></p> <ol style="list-style-type: none"> <li>1. Include information on the legal and operational structure of the FHP in the PP.</li> <li>2. Elaboration on the execution strategy in the PP.</li> </ol> <p><u>TC Program</u></p> <ol style="list-style-type: none"> <li>1. Not to delay Program start-up, the conditions prior to first disbursement should be developed and linked to the Program's Work Plan under the TC GY-T1066 -<i>Supporting the Implementation of an Integrated National Nutrition Program</i>. The PP should include only a general comment on this issue, without a specific reference to the <i>Transition Plan</i> (outlining the transfer of responsibilities from the HSDU to the FHP) being a condition prior to first disbursement.</li> <li>2. Include in the PP that the M&amp;E framework will be designed and implemented with the TC resources.</li> </ol>
4. Other Issues	The Identification Mission should discuss with GoG the possible use of the Social Fund to finance a pilot project under the BNP. Reference to the Social Fund should be added to the PP.

#### IV. Next steps

TOPIC	NEXT STEPS
Project Preparation	The Team will modify the timetable to include a negotiation mission and continue preparation of the project documents, working towards the presentation of the POD on September 9, 2009.

## ANNEX TO ERM MINUTES

### List of invitees/participants

INVITEES	DEPARTMENT/DIVISION	PARTICIPANTS
Corresponding VPC Manager	Dora Currea, CCB/CCB	√
Corresponding VPS Manager		
Corresponding Country Representative	Marco Nicola, CCB/CGY	√
Originating VPS Division Chief	Marcia Arieira, SCL/SPH (representing the Division Chief)	√
Other relevant VPS Division Chief (s)		
Corresponding Regional Economic Advisor		
Corresponding Country Economist	Musheer Kamau, CCB/CGY	√
Corresponding Principal Country Coordinator	Clark Sand, CCB/CCB	√
Corresponding Country Coordinator	Leslie-Ann Edwards, CCB/CCB	√
Corresponding LEG Coordinator	Diego Buchara, LEG/SGO	√
SPD Manager		
FIN/FSV Chief		
VPC/PDP Chief		
ESG Chief		
Project Team Leader	Meri Helleranta, SCL/SPH	√
Project team members	Dorota Raciborska, SCL/SPH	√
	Chena Barakat, CCB/CGY	√

√ denotes ERM participation

**GY0068 Basic Nutrition Program  
PROJECT COMPLETION REPORT**

**Quality and Risk Review (QRR) – Results and Proceedings Report**

**A. QRR PROCESS**

The GY0068 Project Completion Report was distributed to QRR with a request for comments, on Tuesday, November 17, 2009. The document was sent to LEG/SGO, CCB/CGY, CCB/CCB, VPC/PDP, PDP/FSV, SPD/SDV, SPD/SMO, and OVE/OVE. Additionally, a copy was sent for distribution to: SCL/SCL, INE/TSP, ICF/ICF, INT/INT, RES/RES, KNL/KNL, CAN/CAN, CSC/CSC, CID/CID, CCB/CCB, SCL/SPH, SPH/CTT, CID/CNI, CCB/CGY, CCB/CSU, and LEG/SGO. The comments received, as well as follow-up actions, have been documented in this Results and Proceedings Report. The QRR meeting took place on Tuesday, November 24, 2009 by videoconference. The following persons participated: Marco Nicola and Leticia Ramjag (CCB/CGY) from Guyana, Ian Ho-A-Shu (SPH/CTT) from Trinidad and Tobago, and Meri Hellaeranta (SCL/SPH), Laura Profeta (LEG/SGO), Dorota Raciborska (SCL/SPH), Hector Salazar (SCL/SCL), and Sigrid Vivo (SCL/SPH) from Washington, DC.

**B. Unresolved issues**

None

**C. COMMENTS**

Name/Dept.	Topic	Comments	Response
Laura Profeta (LEG/SGO)	PCR contents	For purposes of the Quality and Risk Review (QRR) for the above-referenced Project Completion Report (PCR), we have the following comments:  1. This is a useful document and would have been particularly relevant as an input to the already concluded QRR for the new proposed nutrition program in Guyana.  2. There are two important sections of the document that seem to be missing, regarding the performance of the Borrower and the Bank (sections IV.B. and C.).  3. As a minor comment in the Basic Data summary the correct name of the Borrower should be the Co-operative Republic of Guyana.  I hope these comments are useful and look forward to participating in the meeting on Tuesday.	1. Indeed, the PCR provided important inputs into the preparation of the new nutrition loan in Guyana, throughout the process informing the design of the new operations with lessons learned. For example, the voucher scheme was not renewed under the new loan, given the high costs associated with distribution and administration of vouchers.  2. The sections IV.B and IV.C (on p. 11) have been completed, by selecting the ranking and including a summary of the evaluation (which was conducted at the Exit Workshop, as agreed with the Minister of Health and the Chief Medical Officer during the workshop).  3. Appropriate change was made in the Basic Data summary.



Name/Dept.	Topic	Comments	Response
Marco Nicola and Leticia Ramjag (CCB/CGY)		<p>1. Section II. a. Nutrition challenge in Guyana (pg 2) - The first line in this paragraph was taken from page 4 of the report 'Guyana Public and Social Expenditure Review 2006'. However, nowhere in the PCR is the report acknowledged.</p> <p>2. Section II. a. Nutrition challenge in Guyana (pg 2). - Line 4 states 'Their monotonous diet was thought to be the cause for deficiencies in key micronutrients such as calcium and zinc.' Reference should only be made to the low nutritional level of the foods consumed. A monotonous diet that is high in nutrition would not result in any deficiencies.</p> <p>3. Section II. a. Project Context. Table 1. (pg 2) - Data from a 2006 survey should not be used in the project context. In fact this section should focus on the situation at the moment in which the project was designed.</p> <p>4. Section II. The socio economic context (pg 4) - Poverty data needs to be updated, in some instance validated and appropriately referenced.</p> <p>5. Section III. Results Outcomes achieved 1.3 (pg 7) - Clarity on why 1.3 was not achieved. Also, some clarification on the sentences 'The component aiming to reduce anemia among pregnant women was not implemented, because the resources were shifted to support other components as well as project management. The reports received indicate that the Program, with its focus on the reduction of child and maternal mortality, is highly likely to achieve its results.'</p> <p>6. Section d. Project costs (pg 9) - Table needs to be updated with the \$US830, 000.00 that was redirected from 1604/SF-GY.</p> <p>7. Targeting of Sprinkles (pg 11) - We are under the impression that a more updated Poverty Map was used for targeting purposes (the one used by the SIMAP III not the SIMAP II as stated).</p> <p>8. Amerindian Communities (pg 11) - According to the 2002, Population and Housing Census, Amerindians account for 9.2% (and not 7%) of the total population of Guyana.</p>	<p>1. The report in question has been added to the bibliography on page 2 of the PCR.</p> <p>2. Accordingly, the text was changed to: "The low nutritional value of the food consumed was thought to cause deficiencies in key micronutrients such as calcium and zinc."</p> <p>3. Reference to the 2006 survey was removed from Table 1. Furthermore, a footnote was added explaining that the data presented in Table 1 should be viewed in light of the differences among the methodologies used in the surveys and what these differences are.</p> <p>4. Poverty data was updated, properly referenced, and poverty indicators were changed to those typically used by the Government of Guyana (e.g. extreme poverty, moderate poverty).</p> <p>5. Mr. Burrowes and Mr. Clark need to be asked to describe what decisions were made and when with regard to the activities aiming to reduce anemia among pregnant women.</p> <p>6. Cost table in Section d was updated with the redirected resources in the sum of \$830,000.00.</p> <p>7. This also is a question for Mr. Burrowes and Mr. Clark.</p> <p>8. Correction to this effect was made in the text.</p>

Name/Dept.	Topic	Comments	Response
		<p>9. Performance (pg11) - Both the Borrower and the Bank's performances have to be rated.</p> <p>10. The amount per component on page 6 is inconsistent with the amount per component on page 8.</p> <p>11. Clarification is needed on the number of BNP centers. Throughout the document, 79 is stated, however on page 7, 126 is stated as the number of BNP centers.</p> <p>12. On page 16, describe the decision taken for the design of the new nutrition loan in regard to food vouchers.</p> <p>13. Include Leticia Ramjag as team member.</p>	<p>9. Performance of the Borrower and the Bank in sections IV.B and IV.C was rated as satisfactory (in both cases).</p> <p>10. I used PPMRs to obtain the information on page 8. I was aware of the inconsistency, but was unable to reconcile the amounts. One explanation may be that the data from the final PPMR were not the end-of-project data.</p> <p>11. 79 were the centers served under the BNP. More recently the Ministry of Health has decided to deliver Sprinkles to an additional 126 centers. The language was adjusted on pp. 7 and 8 to clarify this fact.</p> <p>12. A paragraph was inserted on p. 16 describing the incentive scheme under the new loan.</p> <p>13. Leticia's name was included in the list of team members for the PCR.</p>
Hector Salazar (SCL/SCL)		<p>- In the section on Lessons Learned, emphasize the importance of conducting a cost-effectiveness analysis ex-ante. This type of analysis is needed to inform sustainability analysis at entry and at the end of a program.</p>	
		<p>- On p. 10, under the section Phased Implementation, emphasize the importance of taking this type of implementation into account when designing the evaluation methodology.</p>	



Name/Dept.	Topic	Comments	Response
Sigrid Vivo, SCL/SPH		<ul style="list-style-type: none"> <li>- On p. 7 under a. Outcomes, Summary Development Objective Classification, change the classification from Probable to Highly Probable.</li> <li>- In the text in the above section, explain in detail why activities to reduce anemia among pregnant women were not pursued, and instead a pilot was conducted.</li> <li>- Under the section on Monitoring and Evaluation on p. 14, emphasize how changes from longitudinal (or panel) to cross-sectional study design, while they may be caused by exogenous factors, as in this case by changes in project implementation, will result in a less rigorous evaluation that desired.</li> <li>- On p. 8, under section c. Outputs, Component 1 classification should be revised to Satisfactory, and Component 2 classification -- to Highly Satisfactory.</li> </ul>	<ul style="list-style-type: none"> <li>- Question for Mr. Burrowes, Mr. Clark, and Suraiya Ismail.</li> </ul>
		<p>Under Component 1 output 1.3, instead of "number of food coupons" state the exact number of coupons (168,000).</p> <p>On p. 8 under Component 2 output indicator 2.1B replace the question mark with the appropriate number.</p>	