Potential Market for CycleBeads®:
A Basic Model for Estimating Demand

The Institute for Reproductive Health, part of Georgetown University in Washington, D.C., is a leading technical resource and learning center committed to developing and increasing the availability of effective, easy-to-use, natural methods for family planning.

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This tool was adapted from Appendix A of the CycleBeads® Production and Procurement Guide (© 2006 by PATH and Georgetown Univeristy).

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Potential Market for CycleBeads®: A Basic Model for Estimating Demand

The purpose of this tool kit is to provide programs with guidelines for establishing an initial supply of CycleBeads® in their country or region. CycleBeads are a string of teardrop-shaped, colored beads that represent each day of a woman's menstrual cycle. They help a woman know if she is on a day when pregnancy is likely or on a day when pregnancy is very unlikely. CycleBeads are based on the Standard Days Method® (SDM) of family planning. Studies have shown that this method is more than 95 percent effective when used correctly.[1] CycleBeads and the SDM offer reproductive health programs a low-cost option that may address some of their current clients' needs and/or attract new clients who may not have used their services before. CycleBeads is a patented technology developed by Georgetown University, based on research conducted by the Georgetown University Institute for Reproductive Health (IRH). CycleBeads are manufactured and distributed under license by Cycle Technologies, Inc.

This model is a tool to help program managers use generally available statistics and data to define the potential market for CycleBeads in their area. It is intended to help guide estimations for overall CycleBeads demand in a country for which there is little or no historical data on CycleBeads use. For purposes of this tool kit, we have assumed that only women using traditional methods or women not using any family planning method (but who prefer to avoid pregnancy) will adopt CycleBeads. From this population, the total number of eligible women who could use CycleBeads is calculated. Then, this number is reduced by taking into account issues of anticipated awareness of CycleBeads (for example as a result of potential outreach and education activities), accessibility, and women's ability to pay.

When CycleBeads are initially introduced, demand may be low. But over time—by increasing client awareness, training providers, and widening distribution—the total estimated demand will grow because of increased knowledge and access.

Model Description, Data, and Assumptions

The following procedures can be used with the Microsoft® Excel spreadsheet for calculation of demand estimates. The spreadsheet is incorporated into the electronic version of this document. It also is available electronically from USAID | DELIVER PROJECT (email: askdeliver@jsi.com) or contact irhinfo@georgetown.edu. A sample worksheet is attached to this document. The numbers in the sample worksheet are not necessarily appropriate for every country, but they are based in some part on research conducted by existing partners of IRH and Cycle Technologies. Each country scenario will be different. It is important that data specific to a local situation is used.

1 Arévalo M, Jennings V, Sinai I. Efficacy of a new method of family planning: the Standard Days Method. *Contraception*. 2002;65(5):333–338.

Total Number of Eligible Women

The first section of the model estimates the total number of eligible women per year over five years who could use CycleBeads, since the product has a projected five-year useful life.[2] First, the number of women in union[3] using traditional methods of contraception (i.e., withdrawal or rhythm), whose cycle lengths would make them eligible to use CycleBeads, is calculated. (A 26- to 32-day cycle range is required for the effective use of CycleBeads.) Second, the number of women in union who are not using any contraception but who would prefer to avoid pregnancy, and whose cycle lengths would make them eligible to use CycleBeads, is calculated. Then, these two numbers are added together to give a total number of eligible women per year. (In the sample worksheet, the proportion of women not using contraception who would prefer to avoid pregnancy is based on data indicating that about 17 percent of women in union in the developing world would prefer to avoid a pregnancy but are not using any form of contraception.[4] Alternatively, program managers may wish to access the Demographic and Health Survey (DHS) or similar survey for their country. A country's final report should have a chapter on fertility preferences, which includes the total unmet need for family planning. For more information, see http://www.measuredhs.com and click on "browse countries," and then select the appropriate country for a listing of recent surveys.)

The possibility that some women who currently are using another modern method of family planning might want to use CycleBeads (although experience is that these represent a small minority of users) is not included in this calculation. Furthermore, the number of eligible women per year may actually decrease slightly. This is because as some will switch to using CycleBeads, they will no longer be in the pool of women who are using a traditional method of family planning or no method. Country program managers may wish to take this into consideration. However, for the purpose of simplicity, we have left the contraceptive prevalence and noncontraceptive use rates constant, as well as the percentage of women whose cycles are within the 26- to 32-day range.

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2 CycleBeads are made of a highly durable material that lasts indefinitely. The O-ring which is moved each day to track the women's cycle has a useful life of approximately 5 years.

3 Because the Standard Days Method requires communication between a woman and her partner, it is most likely to attract women in stable relationships. The term "women in union" is used throughout this exercise to indicate the target audience for the method. Some surveys and reports (such as DHS) use the term "married women" to include women in formal and traditional unions. For purposes of this exercise, the terms are equivalent.

4 Ross JA, Winfrey WL. Unmet need for contraception in the developing world and the former Soviet Union: an updated estimate. International Family Planning Perspectives. 2002;28(3):138–143.

Estimated Demand per Year

The second section of the model estimates demand for CycleBeads by calculating a subset of the total number of eligible women. This is accomplished by determining the number of those women who will have knowledge of CycleBeads, live in an area where CycleBeads are accessible, and have the ability to pay for them. (In this model, we assume 100 percent given that most programs are not charging clients for CycleBeads.[5]) These percentages are estimated based on planned promotional and educational activities and will vary by country and/or region.

This model also includes calculation of a buffer stock, which equals 10 percent of the total estimated demand. While this tool focuses on the potential CycleBeads demand, users of this tool kit may also want to consider certain key concepts for logistics management systems. These concepts include determining how many levels are in the country's logistics system (central, regional, service delivery point), what the maximum and minimum stock levels for CycleBeads should be at each level, what an adequate safety stock will be for each level, lead time for orders to be placed and shipments to arrive, and how to calculate losses and adjustments. For simplicity's sake, this guide treats all of these concepts through the calculation of a 10 percent buffer stock. Programs wishing to treat these issues in more detail may reference The Logistics Handbook: A Practical Guide for Supply Chain Managers in Family Planning and Health Programs.[6] For ongoing programs ordering replenishment stock, program managers will want to be aware of additional logistics data, such as stock-on-hand. Two tools available to users for procurement planning are the CPT Guidance and PipeLine software. Both are available free-of-charge from the USAID | DELIVER PROJECT.

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5 Willingness-to-pay studies in several countries indicate that a significant percentage of potential users will pay for CycleBeads. This is further substantiated by experience with CycleBeads in social marketing. (Experiences of Cemoplaf in Ecuador and PSI in Benin and DRC in Social Marketing Final Report: Three Country Overview. March 2008. Washington, D.C.: Institute for Reproductive Health, Georgetown University for the U.S. Agency for International Development (USAID); Experience of Abt Associates Inc. in India in Introducing the Standard Days Method and CycleBeads in the Indian Private Sector: Assessment Report. September 2008: Bethesda, MD: Abt Associates, Inc. for the Institute for Reproductive Health, Georgetown University.)

6 John Snow Inc./DELIVER, 2004. The Logistics Handbook: A Practical Guide for Supply Chain Managers in Family Planning and Health Programs. Arlington, Va.: John Snow Inc./DELIVER, for the U.S. Agency for International Development (USAID)

Instructions for Using the Basic Demand Model to Estimate the Potential Market for CycleBeads

Total Number of Eligible Women

Women in Union Using Traditional Methods of Contraception

Line 1 – For Year 1, population growth is not applicable. Enter the yearly population growth rate for Year 2 based on the most recent data that you have available. This number will automatically be repeated for Years 3-5. Individual country data is available from the World Population Prospects: The 2006 Revision Population Database at http://esa.un.org/unpp/ (accessed October 20, 2008); Population Reference Bureau Datafinder (percentage of natural increase in population) at http://www.prb.org//datafind/datafinder6.htm (accessed October 20, 2008); and United Nations Population Fund (UNFPA) Country Profiles http://www.unfpa.org/ (accessed October 20, 2008).

Line 2 – Enter the total number of women in union of reproductive age for Year 1. Years 2 through 5 are calculated automatically taking into account growth rates from line 1 by multiplying line 1 by line 2. Individual country data is available from World Contraceptive Use (2007) at http://www.un.org/esa/population/publications/contraceptive2007/contraceptive_2007_table.pdf (accessed October 20, 2008) or 2005 Women of Our World Datasheet (PRB) at http://www.prb.org/pdf05/WomenOfOurWorld2005.pdf (accessed October 20, 2008).

Line 3 – Enter the contraceptive prevalence rate for traditional methods (i.e., withdrawal and rhythm) for women in union as a percentage (%) for year 1 based on the most recent available data, which can include interim DHS or other household surveys as well as the references cited below. This number will automatically repeat for Years 2-5. However, it is possible that this rate may change over the five year period, in which case a new projection scenario can be conducted. Country specific data is available from World Contraceptive Use (2007) at http://www.un.org/esa/population/publications/contraceptive2007/ (accessed October 20, 2008), or UNFPA Country Profiles at http://www.unfpa.org/ (accessed October 20, 2008); PRB World Population Datasheet at http://www.prb.org/wpd (accessed October 20, 2008); US Census Bureau International Database at http://www.census.gov/ipc/www/idb/ (accessed October 20, 2008); and Measure DHS+ at http://www.measuredhs.com/statcompiler/start.cfm (accessed October 20, 2008).

Line 4 – The total number of women in union of reproductive age using traditional methods for Years 1 through 5 is calculated automatically by multiplying line 2 by line 3.

Line 5 – **There is no need to enter anything here.** The Standard Days Method, on which CycleBeads is based, is most effective for women with most menstrual cycles within the 26- to 32-day range. (A woman with more than one cycle out of range during a 12 month period is

advised to consider another method, since she will not have 95 percent protection.) The percentage of women whose menstrual cycles are within this 26- to 32-day range is a fixed rate for years 1 through 5 at 75 percent.

Line 6 – The total number of women in union of reproductive age using traditional methods of contraception whose cycles are within the 26- to 32-day range and can therefore use CycleBeads effectively for Years 1 through 5 is calculated automatically by multiplying line 4 by line 5. The accompanying example spreadsheet illustrates the following for Year 1:

Total Number of Eligible Women per Year

Reference Line	***Women in Union Using Traditional Methods of Contraception***	***Year 1***
1)	Yearly population growth rate %	N/A
2)	Total number of women in union of reproductive age (1*2)	3,000,000
3)	Contraceptive prevalence rate—traditional methods (withdrawal and rhythm only)	8%
4)	Total number of women in union using traditional methods (2*3)	240,000
5)	% of women whose menstrual cycles are within the 26- to 32-day range	75%
6)	**Total number of women in union of reproductive age using traditional methods whose cycles are within the 26- to 32-day range** (4*5)	**180,000**

Women in Union Not Using Any Contraception

Line 7 – For Year 1, population growth is not applicable. Enter the yearly population growth rate for Year 2 based on the most recent data that you have available. This number will automatically be repeated for Years 3-5. Individual country data is available from the World Population Prospects: The 2004 Revision Population Database at http://esa.un.org/unpp/ (accessed October 20, 2008); Population Reference Bureau Datafinder (percentage of natural increase in population): http://www.prb.org/datafinder.aspx (accessed October 20, 2008); and UNFPA Country Profiles: http://www.unfpa.org/worldwide/ (accessed October 20, 2008).

Line 8 – Enter the total number of women in union of reproductive age for Year 1. Years 2 through 5 are calculated automatically taking into account growth rates from line 1 by multiplying line 7 by line 8. Individual country data is available from World Contraceptive Use (2007) at http://www.un.org/esa/population/publications/contraceptive2007/contraceptive_2007_table.pdf (accessed October 20, 2008); or 2005 Women of Our World Datasheet (PRB) http://www.prb.org/pdf05/ WomenOfOurWorld2005.pdf (accessed October 20, 2005).

Line 9 – Enter the rate of noncontraceptive use as a percentage (%) for Year 1. Find this rate by subtracting the total percent of contraceptive use from 100 to get the noncontraceptive use rate. This number will automatically repeat for Years 2-5. However, it is possible that this rate may change over the five year period, in which case a new projection scenario can be conducted. The total contraceptive use rate can be found at the references cited in line 3 above as well as in interim DHS or other household surveys.

Line 10 – The total number of women in union not using contraception for Years 1 through 5 is calculated automatically by multiplying line 8 by line 9.

Line 11 – Enter the proportion of women not using any contraception who would prefer to avoid pregnancy (unmet need) as a percentage (%). Program managers may wish to access the DHS for their country, interim DHS or other household surveys. The country's final report should have a chapter on fertility preferences, which includes the total unmet need for family planning. The number entered will automatically repeat for Years 2-5. However, it is possible that this rate may change over the five year period, in which case a new projection scenario can be conducted. (For more information, see http://www.measuredhs.com and click on browse countries, and then select the appropriate country for a listing of recent surveys.) Alternatively, if this information is not available, program managers can use the estimate that 17 percent of women in union in developing countries would prefer to avoid a pregnancy, but are not using any form of contraception.

Line 12 – The total number of women in union of reproductive age not using contraception who would prefer to avoid pregnancy for Years 1 through 5 is calculated automatically by multiplying line 10 by line 11.

Line 13 – There is no need to enter anything here. The Standard Days Method, on which CycleBeads is based, is most effective for women with most menstrual cycles within the 26- to 32-day range (a woman with more than one cycle out of range is advised to consider another method since she will not have 95 percent protection). The percentage of women whose menstrual cycles are within this 26- to 32-day range is a fixed rate for Years 1 through 5 at 75 percent.

Line 14 – Total number of women in union of reproductive age not using any contraception who prefer to avoid pregnancy whose cycles are within the 26- to 32-day range and could therefore use CycleBeads effectively for Years 1 through 5 is calculated automatically by multiplying line 12 by line 13.

Line 15 – The subtotal number of eligible women who could use CycleBeads is calculated by adding lines 6 and 14. The accompanying example spreadsheet illustrates the following for Year 1:

Total Number of Eligible Women per Year

Reference Line	*Married Women Not Using Any Contraception*	*Year 1*
7)	Yearly population growth rate %	
8)	Total number of women in union of reproductive age (7*8)	3,000,000
9)	Rate of noncontraceptive use (%)	40%
10)	Total number of women in union not using contraception (8*9)	1,200,000
11)	Proportion of women not using any contraception who prefer to avoid pregnancy (%)	17%
12)	Total number of women in union of reproductive age not using any contraception who prefer to avoid pregnancy (10*11)	204,000
13)	% of women whose menstrual cycles are within the 26- to 32-day range	75%
14)	Total number of women in union of reproductive age not using any contraception who prefer to avoid pregnancy whose cycles are within the 26- to 32-day range (12*13)	153,000
15)	Subtotal eligible women (6+14)	333,000

Estimated Demand per Year

Line 16 – The number of eligible women is calculated automatically from line 15.

Line 17 – The number of women who are already using CycleBeads is calculated automatically from line 23. (Because the product life of CycleBeads is five years, the cumulative number of women who are “converted” and using CycleBeads each year [line 23, estimated demand] will need to be subtracted from the next year’s number of eligible women.) For Year 1, the sample excel spreadsheet assumes no women are using CycleBeads. However, if a country in which CycleBeads have already been introduced is going through this exercise, program managers should estimate the current number of women using CycleBeads and input it for Year 1.

Line 18 – The total number of eligible women is calculated automatically by subtracting line 17 from line 16.

Line 19 – Estimate the percentage (%) of women who will have knowledge of CycleBeads for Years 1 through 5, based on planned promotion and education activities. This percentage is likely to increase over time.

Line 20 – Estimate the percentage (%) of women who will live in areas where CycleBeads will be accessible for Years 1 through 5, based on local knowledge and planned promotion and education activities. This percentage is likely to increase over time.

Line 21 – Estimate the percentage (%) of women who will have the ability to pay for CycleBeads for years 1 through 5. If CycleBeads are free of charge, this percentage would be 100%. If the program is selling CycleBeads, the price is likely to be based on research the

program has done to examine at what price point the largest possible number of women could be reached.

Line 22 – The total percentage (%) of women who are the most likely CycleBeads end users for Years 1 through 5 is calculated automatically by multiplying line 19 by line 20 by line 21.

Line 23 – The estimated demand per year of CycleBeads for women in union is calculated automatically by multiplying line 18 by line 22.

Line 24 – Enter the number of health care providers to be trained. (Extra sets of CycleBeads will be needed for information, education, and communication [IEC] activities.)

Line 25 – The number of sets of CycleBeads needed per trainer is calculated automatically in the example worksheet at 2 sets. However, program managers may change this figure depending on program strategy and how many sets of CycleBeads trained providers will be given after training. Some programs choose to give providers an initial stock of 5 or 10 CycleBeads immediately after receiving training.

Line 26 – The total number of CycleBeads needed for IEC activities is calculated automatically by multiplying line 24 by line 25.

Line 27 – The subtotal estimated demand per year is calculated automatically by adding lines 23 and 26.

Line 28 – An additional 10 percent of the subtotal estimated demand is calculated to account for the necessary buffer stock a country should have on hand to prevent stock-outs at all levels of the distribution system in the case of delays in placing orders or in arrival of shipments.

Line 29 – The total estimated demand per year (including buffer stock) is calculated automatically by adding lines 27 and 28.

Line 30 – The total estimated demand per year over 5 years is calculated automatically by adding the individual years together from line 29. The accompanying example spreadsheet illustrates the following for Year 1:

Estimated Demand per Year

Reference Line		***Year 1***
16)	Subtotal eligible women (15)	333,000
17)	Number of women who are already using CycleBeads (cumulative demand from line 23)	
18)	Total number of eligbile women (16-17)	333,000
19)	% of women with knowledge of CycleBeads	5%
20)	% of women who live in areas where CycleBeads are accessible	10%
21)	% of women who have ability to pay for CycleBeads	100%
22)	Total % of women who will most likely seek out CycleBeads (19*20*21)	0.5%
23)	Estimated demand (18*22)	1,665
	CycleBeads needed for information, education, and communication (IEC) activities	
24)	Number of healthcare providers to be trained	100
25)	Number of sets of CycleBeads needed per trainer	2
26)	Total CycleBeads needed for IEC (24*25)	200
27)	Sub-total Estimated Demand Per Year (23+26)	1,865
28)	Buffer Stock at 10%	187
29)	TOTAL ESTIMATED DEMAND PER YEAR (27+28)	2,052

ESTIMATED DEMAND PER YEAR OF CYCLEBEADS OVER A FIVE YEAR PERIOD

(CycleBeads product life: 5 years)

The following worksheet helps you estimate demand for CycleBeads in your country. It assumes that all women who will use CycleBeads will previously have been using either traditional methods or no methods of contraception. The demand can be affected by local conditions. Therefore, you should input information specific for your area/program in the yellow boxes. The pink boxes are calculated automatically.

KEY:

Number must be entered manually

Numbers are calculated automatically

Total Number of Eligible Women

Reference Line	*Women in Union Using Traditional Methods of Contraception*	*Year 1*	*Year 2*	*Year 3*	*Year 4*	*Year 5*
1)	Yearly population growth rate %	N/A	0.7%	0.7%	0.7%	0.7%
2)	Total number of women in union of reproductive age *(1*2)*	3,000,000	3,021,000	3,042,147	3,063,442	3,084,886
3)	Contraceptive prevalence rate—traditional methods (withdrawal and rhythm only)	8%	8%	8%	8%	8%
4)	Total number of women in union using traditional methods *(2*3)*	240,000	241,680	243,372	245,075	246,791
5)	% of women whose menstrual cycles are within the 26- to 32-day range	75%	75%	75%	75%	75%
6)	**Total number of women in union of reproductive age using traditional methods whose cycles are within the 26- to 32-day range** *(4*5)*	**180,000**	**181,260**	**182,529**	**183,807**	**185,093**
	Women in Union Not Using Any Contraception					
7)	Yearly population growth rate %	N/A	0.7%	0.7%	0.7%	0.7%
8)	Total number of women in union of reproductive age *(7*8)*	3,000,000	3,021,000	3,042,147	3,063,442	3,084,886
9)	Rate of noncontraceptive use (%)	40%	40%	40%	40%	40%
10)	Total number of women in union not using contraception *(8*9)*	1,200,000	1,208,400	1,216,859	1,225,377	1,233,954
11)	Proportion of women not using any contraception who prefer to avoid pregnancy (%)	17%	17%	17%	17%	17%
12)	**Total number of women in union of reproductive age not using any contraception who prefer to avoid pregnancy** *(10*11)*	204,000	205,428	206,866	208,314	209,772
13)	% of women whose menstrual cycles are within the 26- to 32-day range	75%	75%	75%	75%	75%
14)	**Total number of women in union of reproductive age not using any contraception who prefer to avoid pregnancy whose cycles are within the 26- to 32-day range** *(12*13)*	**153,000**	**154,071**	**155,149**	**156,236**	**157,329**
15)	**Subtotal eligible women** *(6+14)*	**333,000**	**335,331**	**337,678**	**340,042**	**342,422**

ESTIMATED DEMAND PER YEAR

(Subset of total eligible women above who will have knowledge of CycleBeads, live in an area where CycleBeads are accessible, and have ability to pay.)

Reference Line		*Year 1*	*Year 2*	*Year 3*	*Year 4*	*Year 5*
16)	**Subtotal eligible women** *(15)*	333,000	335,331	337,678	340,042	342,422
17)	Number of women who are already using CycleBeads *(cumulative demand from line 23)*		1,665	5,168	11,154	20,198
18)	**Total number of eligbile women** (16-17)	333,000	333,666	332,510	328,888	322,224
19)	*% of women with knowledge of CycleBeads*	5%	7%	9%	11%	13%
20)	*% of women who live in areas where CycleBeads are accessible*	10%	15%	20%	25%	30%
21)	*% of women who have ability to pay for CycleBeads*	100%	100%	100%	100%	100%
22)	**Total % of women who will most likely seek out CycleBeads** *(19*20*21)*	**0.50%**	**1.05%**	**1.80%**	**2.75%**	**3.90%**
23)	**Estimated demand** *(18*22)*	**1,665**	**3,503**	**5,985**	**9,044**	**12,567**
	CycleBeads needed for information, education, and communication (IEC) activities					
24)	Number of healthcare providers to be trained	100	50	50	50	50
25)	Number of sets of CycleBeads needed per trainer	2	2	2	2	2
26)	**Total CycleBeads needed for IEC** *(24*25)*	**200**	**100**	**100**	**100**	**100**
27)	**Sub-total Estimated Demand Per Year** *(23+26)*	**1,865**	**3,603**	**6,085**	**9,144**	**12,667**
28)	**Buffer Stock at 10%**	**187**	**360**	**609**	**914**	**1,267**
29)	**TOTAL ESTIMATED DEMAND PER YEAR** *(27+28)*	**2,052**	**3,964**	**6,694**	**10,059**	**13,933**
30)	**TOTAL ESTIMATED DEMAND OVER 5 YEARS**					***33,365***