

New Developments in the Calculation and Use of Couple-Years of Protection (CYP) and Their Implications for the Evaluation of Family Planning Programs

Meeting Highlights



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I. Background

Couple-years of protection (CYP) is a familiar measure that is commonly used to monitor the progress of family planning programs implemented by international organizations and host-country governments, to measure program performance and to make assumptions about family planning coverage. The conversion factors that are used to calculate CYP were last updated in 2000 by the U.S. Agency for International Development (USAID)–funded EVALUATION Project. Since then, new contraceptive methods have been introduced, and contraceptive technology has improved, necessitating a research review and revision to reflect current realities for all family planning methods.

The Futures Institute, a RESPOND Project partner, recently completed a rigorous review of the CYP measure, in consultation with experts from USAID and Tulane University, as well as with input from several cooperating agencies. On September 8, 2011, under the auspices of the [Long-Acting and Permanent Methods Community of Practice](#) (LA/PM CoP), the RESPOND Project and USAID hosted a half-day meeting entitled: “New Developments in the Calculation and Use of CYP and Their Implications for Evaluation of Family Planning Programs.”

II. Meeting Objectives



The meeting objectives were to:

- Understand the process of transforming data into CYP factors, including how data are identified, selected, and analyzed
- Discuss uses of CYP, including standard and innovative possibilities
- Generate awareness of the role of CYP in USAID evaluation reporting

Approximately 38 [participants](#) from 15 organizations in the nonprofit and governmental sectors attended this meeting. This report highlights the key messages delivered by the presenters and provides a synthesis of plenary discussions. The [agenda](#) and links to opening remarks, PowerPoint presentations, and handouts are embedded for those who want to learn more.



III. Welcome and Agenda Review

[Carolyn Curtis](#), the Agreement Officer's Technical Representative (AOTR) for the RESPOND Project from USAID's Global Health Bureau, Office of Population and Reproductive Health Service Delivery Improvement Division, opened the meeting. She mentioned that the LA/PM CoP, which RESPOND serves as secretariat, is an equal-opportunity CoP that promotes all family planning methods and informed and expanded choice, in recognition of the individual's reproductive intentions. Further, she remarked that the "gathering today marks the culmination of a scientific review and analytic process to underpinning potentially revised CYP conversation factors."

Curtis thanked Ellen Starbird for getting behind the initiative and for reaching out to the USAID Missions to get their input, stating that "perspectives from the field add an important dimension to what we'll hear about today." Curtis reviewed the objectives of the meeting, introduced Dr. Jim Shelton (meeting chairperson), and encouraged participants to share their professional views on the revised factors and how to operationalize them.

In her opening remarks, [Pamela Barnes](#), President and Chief Executive Officer of EngenderHealth, recognized the contributions of the many experts who contributed to the CYP update. In particular, she acknowledged John Stover, President of the Futures Institute, and Emily Sonneveldt, Senior Associate with the Futures Institute, who served as valuable partners to EngenderHealth on RESPOND's global leadership work. She also cited Jane Bertrand from Tulane University, who, along with Shelton, rounded out the core expert committee that examined the evidence for updating the CYP conversion factors. Barnes noted that the scientific evidence underpinning CYP conversion factors provides a solid foundation for CYP as a standardized indicator that can allow family planning programs to measure "apples to apples," no matter who is funding the program. Barnes punctuated her remarks by noting that "in the current funding and policy environment, it is as important as it has ever been to be able to substantiate the usefulness of family planning programs and the contribution they make to social and economic development. CYP as an indicator can provide a standardized measure of that progress. This is global leadership at work."

IV. Technical Presentations



[Jim Shelton](#), Science Advisor, USAID Bureau for Global Health, discussed the “**Importance of CYP to USAID and Its Use in Field Programs.**” In his presentation, Shelton articulated some key principles that underlie the development of CYP conversion factors—that they:

- Be simple for calculations
- Be generally applicable across programs/countries (where feasible)
- Are based on the most realistic programmatic use
- Are meaningfully related to unintended pregnancies averted, but not seen as an actual measurement of unintended pregnancies averted
- Are recognized as being only approximations (i.e., avoiding false precision)
- Provide even “credit” (supporting the principle of choice of method)
- Recognize that some “intangibles” exist

[Emily Sonneveldt](#), Senior Associate with Futures Institute/The RESPOND Project, presented “**CYP Update: Newly Calculated Factors (Thinking, Calculation, Justification, and Implications).**” This presentation included the approach used in the update, discussed new changes to the overall methodology used in the 2011 update, and then moved systematically through method-specific estimates. The approach for the update included a comprehensive literature review of both peer-reviewed and gray literature, secondary analysis of Demographic and Health Survey (DHS) data, analysis of data to identify methods in need of updating, selection of specific articles to be used in the updates, and then the method-specific calculations. Priority was given to data that showed real-world usage and effectiveness and that reported results for an extended period of time. Through this process, expert meetings and consultations were held to discuss findings and review preliminary calculations.

The first stage of the literature review for the 2011 CYP update focused on peer-reviewed journals. An electronic literature search was performed using the databases MEDLINE/PUBMED and POPLINE to identify peer-reviewed literature relevant to the CYP update. These databases were searched using various combinations of keywords, including “contraception” and “contraceptives” (in general and for specific methods) and the factors used to calculate CYP: duration of use, effectiveness, coital frequency, wastage, consistency of use, and overlapping coverage (including noncontraceptive use of condoms). Because the 2000 CYP update was based on articles published before 1997, a search limit for publication dates between 1997 and 2010 was set. (There was no search limit on publication data for methods such as Jadelle, Sino-implant (II), and Implanon, as they were not included in the 2000 update.)

Two additional supplemental searches were performed to augment the general search. The first was based on 32 relevant meta-analysis articles identified through the primary search. The references from these meta-analyses were cross-referenced with the initial search set to determine gaps that might exist in citations retrieved. The keywords in the citations identified through this gap analysis were then used to perform a supplemental search of the databases. The second supplemental effort consisted of publisher-specific site searches to include the most recent issues of key journals known to carry relevant articles. This was necessary because there is a gap between publication of an article and issuance of keywords in the databases, meaning that the primary search would not be effective. This step included: Science Direct (Elsevier), Wolters Kluwer/Lippincott Williams and Wilkins, Oxford University Press, Taylor & Francis Informaworld, and Wiley InterScience.

A total of 6,364 articles were identified through the three processes. This resulted in the review of 485 articles and the abstraction of 276 articles into an Excel database.

The review of gray literature used two approaches. First, an online service, Rollyo, was used to search partner and other relevant web sites, using the same key words that were included in the review of the peer-reviewed literature. Second, individuals and organizations were contacted and asked to either send missing relevant articles or provide guidance as to where relevant articles could be found. A total of 15 articles from the gray literature were reviewed and abstracted into an Excel database. ([Summary of Literature Review for 2011 CYP Update](#)).

The 2011 estimates use various combinations of five components to estimate the different CYP factors, compared with six in the 2000 round. The factor eliminated in the 2011 update was overlapping coverage of postpartum amenorrheic women using a modern method of family planning. The inclusion of the factor in the 2000 round made little difference to the actual estimates, and an analysis of recent DHS datasets showed that the percentage of women falling into this overlapping category had become less, resulting in there being no mathematical value to including the factor.

The methods for which CYP factors changed included the intrauterine device (IUD), the hormonal implant, sterilization, and the standard days method (SDM). The justification for changes to the CYP factor for the IUD and implant was a change in the average duration of use. For 10-year IUDs, the average duration of use for 2011 was 4.6 years, compared with 3.9 in 2000. For the five-year implant, the average duration of use in 2011 was 3.8 years, compared with 3.6 years in 2000. New factors were calculated for the five-year IUD (3.3 years), the three-year implant (2.5 years), and the four-year implant (3.2 years).

The change in the CYP factor for sterilization was justified by a change in the average age at time of sterilization. A preliminary global sterilization CYP factor of 10 was presented at the meeting; however, continuing analysis might result in modifications to this number. Changes to the CYP factor for SDM were based on newly available data and changes in the methodology used to calculate this method's CYP factor. A study released in 2011 included three-year follow-up data, the longest period available for this method, allowing for a better understanding of the average duration of use. For consistency across methods, the methodology used to calculate the CYP factor for SDM (1.5 per trained adopter) was

modified to be consistent with the methodology used for the IUD and implant, the two other methods based on average duration of use.

CYP factors were also calculated for two new methods: the vaginal ring and the hormonal patch. Both factors were based on the factor for oral contraceptives and led to a CYP of 15. There were no recommended changes from the current CYP factors for the remaining family planning methods (condom, pill, injectable, emergency contraception, and spermicide). ([Continuation Methodology Summary](#))

[Jacqueline Darroch](#), Senior Fellow, Guttmacher Institute, presented “**A Next Step: Estimating Impact from CYP**,” in which she discussed the use of findings from the Guttmacher Institute’s [Adding It Up](#) analysis to estimate the impact of CYP on unintended pregnancies. It was estimated that 215 million women are in need of contraception (are married or are unmarried and sexually active, are fecund, and do not want a child in the next two years) but are using no family planning method or a traditional method. These women accounted for 62 million unintended pregnancies in developing countries in 2008, representing a pregnancy rate of 288 per 1,000 women. In summary, if these women were to use modern methods similar to users in their country, according to their union status and desire to space or limit births, their pregnancy rate would have been 39 per 1,000. These 215 million women would have had 53 million fewer unintended pregnancies if they had all used modern methods, a rate of 249 (288 per 1,000 minus 39 per 1,000) unintended pregnancies averted per 1,000 women.

Thus, since the USAID CYP calculations take method effectiveness into account, the appropriate estimate of impact is that one CYP equals 0.288 unintended pregnancies averted. (This assumes that without the pregnancy prevention effect of CYP, women’s unintended pregnancy rate would be that of women with in need who are using no method or a traditional method. For CYP calculated from conversion factors that do not adjust for method use-effectiveness, the appropriate impact ratio is one CYP equals 0.249 unintended pregnancies averted, which takes use-effectiveness into account.

Since CYP conversion factors are the same across developing countries, the same impact estimation ratios should be used across all regions and countries. However, outcomes of unintended pregnancies, including morbidity and mortality, vary widely. Darroch presented the most recent subregional estimates of the distribution of unintended pregnancies by outcome (births, abortions, unsafe abortions, and miscarriages) and maternal death ratios. ([TABLE 1. Percentage distribution of unintended pregnancies by type of outcome and maternal deaths averted per 100,000 unintended pregnancies averted, 2008--all by region](#))

Darroch stressed that the pregnancies averted (and other events) calculated in this way are estimates, not actual measures of service program impact or outcomes. She also noted key assumptions: The *Adding It Up* pregnancy rates, based on survey point-in-time date on need and method use, apply to CYP; the relative relationships between pregnancy and use-failure rates are reflected by available data; and CYP, and estimated impacts, are measured the same across organizations and programs. ([Guttmacher Memorandum: Estimating Unintended Pregnancies Averted from CYP](#))



V. Main Points of Plenary Discussion

One of the main points of discussion was the different methodologies used by USAID and Marie Stopes International (MSI) to estimate CYP for sterilization. MSI questions the necessity of the current adjustments included in the estimates (adjustments for decreased fertility with age and for higher parity of women who get sterilized) and advocates for the inclusion of age-specific mortality rates to account for deaths before reaching the end of reproductive age. It was mentioned by a participant that a lot of available data support the two current adjustments, and that they should not be excluded. The applicability or possibility of expanding the adjustments to long-acting methods was discussed. However, no resolution was reached during discussion. It was agreed that a small group would continue this discussion, to come to an agreement.

Some participants advocated a less precise estimation process, while others encouraged experimentation with different estimation techniques. Those advocating less precision were specifically interested in condoms and felt that the number should be higher than the current 120 per CYP. Those advocating more precision encouraged experimentation with different curve estimates for discontinuation rates used in the estimates for long-acting methods and SDM. Discussion ended with an agreement that precision should be maintained, with the already understood limitations of precision in CYP estimates, and that current curve estimation techniques (exponential decay curves) should be used, as this contributes to consistency with previous estimation exercises.

Participants also had a lot to say about the use of CYP in the estimates presented by Darroch. There was disagreement, and strong opinions were expressed both in support of and against the expanded use of CYP. Participants agreed that there are important limitations to expanded use and stressed the importance of explicitly stating the assumptions and limitations with these estimates. Many participants were interested in discussing the assumptions used in the analysis and the estimated findings.

VI. Moving Forward



Ellen Starbird, Office of Population and Reproductive Health, USAID Bureau for Global Health, closed the meeting by discussing **“Moving Forward: Disseminating the New Factors and Identifying Opportunities for Cross-National Standardization.”** Starbird’s closing commentary was organized around the three objectives of the meeting and whether they were met. Starbird remarked that the presentation and discussion on the calculation, justification, and implications of the new CYP factors was informative and relevant to family planning programming, assessment, and reporting. She also emphasized the need to continue to discuss refinements to the calculations for particular methods where those refinements have significant regional or global justification and implications, while keeping in mind the key principles underlying the development of CYP and recognizing the value of a standardized approach to CYP calculation.

Starbird noted that “CYP is often used to judge the performance of USAID- and other donor-funded service delivery projects at the country level, underscoring that CYP is not the sole indicator. And service delivery providers are sometimes compared to one another on the basis of the CYP they can achieve, of a particular method or overall; having standard conversion factors aids in this exercise.”

Regarding estimating impact from CYP, Starbird highlighted the usefulness to USAID of the work embodied in the *Adding It Up* paper as a methodology for developing numerical goals for FP. She also echoed Darroch’s plea to specify the CYP factors used and the adjustments they contain. “The presentation on estimating the relationship between CYP and unintended pregnancies prevented reflects the increased pressure on donors to be able to demonstrate and report impact,” she noted, with “the highest-order evaluation result in the hierarchy of input, output, process, outcome, and impact.” Starbird further stated that “many attributes make CYP an attractive indicator—it can be calculated in a standard way (the purpose that brings us here today); it is relatively straightforward to collect; and it can be collected and reported much more frequently than other standard indicators, like CPR and TFR.”

It was reported that USAID recently undertook an indicator-streamlining exercise, together with the Office of Foreign Assistance at the State Department and involving colleagues at the Centers for Disease Control and Prevention and the Office of the U.S. Global AIDS Coordinator. In the process, the family planning subgroup recommended that all countries with USAID-supported family planning programs report CYP annually.

Starbird noted the following next steps:

- USAID/Washington will replace the year-2000 conversion factors with the updated factors on the USAID web site by mid-November, in time for USAID Mission reporting for fiscal year 2011.

- USAID will need to make a decision soon about endorsing the updated factors, even in the absence of a full consensus: “We need to know the universe of service delivery programs for which CYP is being reported—to help country programs capture as complete a picture of the CYP provided as possible.”
- Plans are underway to publish a journal article that updates the 2000 *Evaluation Review* article on CYP conversion factors.
- Continued discussion and refinement of CYP for sterilization seem needed.

Starbird closed the event by saying, “This has been an important meeting, with objectives that have been largely met. The updated conversion factors meet an expressed need from the field for CYP calculations for new methods, as well as improving or validating the calculations for some long-standing ones. This comes at a good time—when USAID can disseminate the revisions in time for fiscal year 2011 performance reporting and when donors are increasingly looking for common indicators.”

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