Summary of April 2017 CSP Contraceptive Implant Demand Forecast

Reproductive Health SUPPLIES COALITION

Introduction

Contraceptive implants are a long-acting reversible contraceptive (LARC) that can protect a woman from pregnancy for multiple years.[1] Global demand for contraceptive implants grew steadily between 2005 and 2011 and price reductions in 2011 and 2013 have accelerated demand further. Increasing demand coupled with production capacity constraints have prompted the family planning community to further assess supply and demand in the contraceptive implant market.

The Coordinated Supply Planning (CSP) group of the Reproductive Health Supplies Coalition (RHSC) was formed to improve supply chain coordination for family planning commodities among the two key procurers, the United States Agency for International Development (USAID) and the United Nations Population Fund (UNFPA).[2] As part of these efforts, the CSP group developed and updates annual forecasts for contraceptive implants to support contract negotiations, advocacy for commodity funding, and market shaping discussions, as well as production planning by suppliers. The purpose is to estimate the quantities of implants that will be procured by countries within the Implant Access Program (IAP)[3] market, primarily for the public and NGO/SMO sectors. In April 2017, the updated CSP implant forecast was shared at the Implant Access Program meetings, providing stakeholders with visibility into future contraceptive implant demand and an opportunity to discuss changes in the forecast over time and impacts of funding limitations on procurement and implications for production planning.

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1   The duration of contraceptive protection varies by brand—Jadelle®: five years; Implanon®/Implanon NXT™: three years; Levoplant ®: three years.
2   The CSP group includes representatives from UNFPA, USAID, Clinton Health Access Initiative (CHAI), Global Health Supply Chain – Procurement and Supply Management (GHSC-PSM) Project, John Snow, Inc. (JSI), and the RHSC.
3   The list of countries is included in the Annex. The IAP was established in response to the 2013 price reductions of Jadelle® and Implanon® to monitor overall consumption and ensure implants were utilized in a manner that facilitates broader access to family planning in low- and middle-income countries. This list of countries is based on historical implant order data that JSI receives monthly from suppliers through the IAP.

Overview and Data Sources

The CSP group has estimated contraceptive implant demand across 97 countries that comprise the Implant Access Program (IAP). The methodology is to aggregate country-specific forecasts among a subset of countries with available data and extrapolate those results to the broader market. More specifically, the CSP group produces three forecast scenarios. Two scenarios, historical shipment and consumption-based forecast scenarios are used as inputs into a third 'blended' scenario, along with inputs from country quantification reports, produced by countries to estimate short to medium term procurement needs. This report describes the forecast methodologies and the approach adopted to construct the blended forecast scenario.

The demand forecasts for contraceptive implants cover the period 2017 to 2023 and use historical supplier-reported shipment data provided confidentially under the IAP. The historical supplier-reported shipment data includes both institutional (USAID, UNFPA, social market organizations) and ministry of health (MOH)/government-affiliated procurement. These recent data-sharing agreements with suppliers, specifically with Merck/Merck Sharpe & Dohme (MSD) and Bayer for implants, have enabled the CSP group to develop improved, rigorous demand forecasts with greater accuracy in the quantity and timing of country shipments. The methodology has not changed dramatically since the April 2016 publication, but discussion of changes in the outputs and potential reasons is included in this version.

CSP Forecast Scenarios

The CSP group estimates contraceptive implant demand among the 97 IAP countries by aggregating country-specific forecasts among a subset of countries with available data and extrapolating the results to the broader market (see Annex). The CSP group produces three forecast scenarios. Two scenarios, historical shipment and consumption-based forecast scenarios, are used as inputs into a third 'blended' scenario, along with intelligence from country quantification reports.

To develop the historical shipment and consumption-based forecasts, a subset of 26 focal countries was first selected (see Exhibit 1). The focal countries included countries that accounted for approximately 80 percent of historical demand for contraceptive implants between 2015 and 2016. For each of these two forecast scenarios, the projected demand from the 26 focal countries is aggregated and these results are then extrapolated to the broader market of 97 countries. For the blended forecast, the CSP group selected the best of the historical shipment, consumption- based, or country quantification report scenarios, based on the quality and availability of data for each country.

The following sections outline the methodologies for each of the three scenarios used by the CSP group:

› Scenario 1 – Historical shipment forecast

› Scenario 2 – Consumption-based forecast

› Scenario 3 – Blended forecast

Historical Shipment Forecast

The forecast based on historical shipments served as a baseline scenario and, as such, did not incorporate additional assumptions. For each focal country, a linear trend was applied to historical contraceptive implant shipments from 2011 through 2016 to forecast shipments from 2017 through 2023.

Consumption-Based Forecast

The country-specific consumption-based forecast relied primarily on data from 1) the Procurement Planning and Monitoring Report (PPMR), a database containing monthly data from countries on their consumption and desired stock levels, and 2) Historical shipment data used to develop growth rates.[4]

Average monthly consumption (AMC) of contraceptive implants in the 26 focal countries was forecasted using aggregate growth rates based on historical supplier-reported shipments or other market intelligence.[5] Annual contraceptive implant shipments were then estimated by multiplying forecasted AMC with a country's maximum desired months of stock based on PPMR data.[6]

This methodology assumes that countries estimate annual demand at the beginning of the year based on projected annual consumption levels, have no stock on hand (inventory) at the end of the year, and order up to their desired months of stock to account for buffer stock.

4   Procurement Planning and Monitoring Report [Internet]. [cited 2017 March 6]. Available from: http://ppmr.rhsupplies.org/
5   Categories of growth will be described in the "Growth Rates" section.
6   The average desired months of stock is approximately 14.5 months (range of 9-24 months of stock) across the top 26 countries that report data on implants to the PPMR.

Exhibit 1: Focal Countries (N=26)

Benin	Ethiopia	Mali	Pakistan	Zambia
Burkina Faso	Ghana	Mozambique	Papua New Guinea	Zimbabwe
Burundi	Guinea	Myanmar	Rwanda	
Cameroon	Kenya	Nepal	Senegal	
Congo Dem Rep	Madagascar	Niger	Tanzania	
Cote d'Ivoire	Malawi	Nigeria	Uganda	

Growth Rates

Consumption was forecasted for each of the 26 focal countries by assigning them to one of three aggregate growth categories (low, medium, and high)[7] based on the historical growth of implant shipments.[8] If additional market intelligence suggested higher or lower growth trends in the future, growth rates for individual countries could be adjusted manually.

The three aggregate growth rate categories were developed based on historical contraceptive implant shipments to the 97 Implant Access Program countries.[9] For each growth category, the CSP group modeled year-over-year growth rates based on the implied year-over-year growth rates associated with a fitted logarithmic trend[10] of aggregated supplier-reported implant shipments from 2011 to 2016.[11]

7   Aggregate growth rates were developed because individual country demand exhibited significant fluctuations year-over-year. Country-specific growth rates were calculated and selected. Based on selected country-specific growth rates, countries were assigned a category of low, medium, or high based on their position in the distribution of growth rates across all countries. For countries in which a growth rate was not assigned due to data availability or outlier growth rate (country growth rates less than -50 percent or greater than 150 percent), an overall growth rate based on aggregate historical implant shipments across all IAP countries was applied.

8   Country-specific growth rates were assigned based on the number of years of data available. A three-, two-, and one-year compounded annual growth rate (CAGR) and average annual growth rate (AAGR) were estimated by country depending on the data available. Selected country growth rates prioritized a longer period of time and the CAGR over the AAGR. Outlier growth rates that were less than 50 percent or greater than 150 percent were excluded. Next, each country was ranked as low, medium, or high based on the distribution of selected country growth rates. Countries with selected growth rates that were in the bottom third of the growth rate distribution were identified as "low" growth, the middle third were "medium" growth, and the top third were "high" growth. Countries without country-specific growth rates due to data availability or outlier growth rates were assigned to "overall" growth.

9   This approach to estimating year-over-year growth rates differs from the previous August 2015 CSP implant demand forecast. With five years of shipment data, the CSP group adopted this simplified approach in 2016.

10   Because implant demand cannot be expected to grow at the same baseline rate year-over- year, a logarithmic trend was used.

11   Implant shipments were aggregated by growth category. For example, implant shipments associated with countries assigned as "low" growth category were aggregated together. Implant shipments across the IAP countries were aggregated for an "overall" growth category applied to countries in which the growth was unknown because country-specific growth rates were not assigned or available.

Blended Forecast

The blended forecast selects the best available forecast scenario for each country. The scenarios were prioritized based on the following ranking:

1. Consumption-based forecast – see methodology above.

2. Historical shipment forecast – see methodology above.

3. Country quantification report – Where available, CSP consulted reports from MOH-led quantification exercises held in country. When these included relevant information on forecasted consumption or MOH-endorsed supply plans, forecasted annual demand for contraceptive implants was recorded for the years available.

CSP members reviewed the available forecast scenarios and selected the best ones (based on market intelligence of in-country procurement needs) for each of the 97 countries, when available. Because not all countries had an available implant forecast due to data limitations, the CSP group estimated implant demand among the 97 countries by aggregating available country-specific forecasts and extrapolating the results to the broader market.

CSP Forecast Results

The CSP forecast expects the demand for contraceptive implants to increase to 17-21 million units by 2023 (Exhibit 2).

**Exhibit 2: CSP Contraceptive Implant Demand Forecast (Millions of Implant Sets)
All Procurers, IAP Countries, 2017–2023**
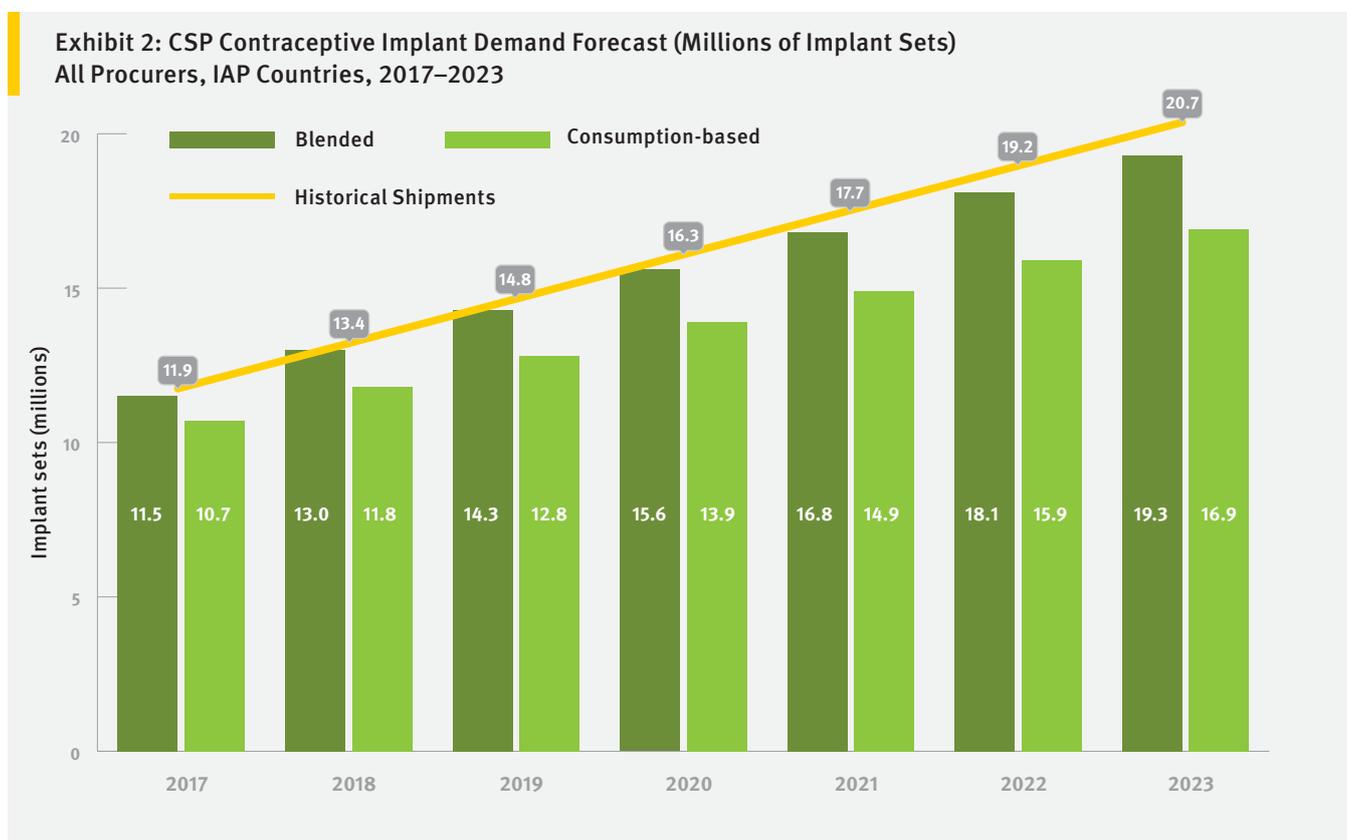
Scenario	2017	2018	2019	2020	2021	2022	2023
Blended	11.5	13.0	14.3	15.6	16.8	18.1	19.3
Consumption-based	10.7	11.8	12.8	13.9	14.9	15.9	16.9
Historical Shipments	11.9	13.4	14.8	16.3	17.7	19.2	20.7

Discussion

The outputs of the 2017 update of the CSP contraceptive implant demand forecast are approximately 20% lower for all years than the outputs of the 2016 forecast. This is driven by the negative trajectory in historical shipment volumes between 2015 and 2016, which affects the linear trend used for the historical shipment forecast and also the growth rates applied to the consumption-based forecast. CSP attributes the lower historical shipment volumes in 2016 compared to 2015 to three primary reasons: donor funding constraints, with some countries facing funding gaps and unable to order sufficient quantities to maintain adequate stock levels in 2016, the Philippines' policy ban on implants; and the transition from Implanon Classic to NXT which resulted in higher order quantities in 2015 as countries purchased both old and new products to ensure sufficient stocks of both products to carry them through product transition.

To better understand the future trajectory and if the 2017 reflects leveling off of demand, CSP conducted additional analysis of country supply plans and their estimates for public sector procurement from 20 major markets, and concluded that the underlying demand continues to grow strongly and is unlikely to be the cause of a reduction in shipments. However, funding for procurement of implants is uncertain as countries struggle to procure the quantities they estimate they need. Because this forecast relies on historical trajectory of funded demand, and therefore any funding or production constraints would negatively impact its trajectory, it is likely that it underestimates demand.

It is important to note that the figures presented in these scenarios reflect estimated procurement quantities. This differs from other recent estimates of consumption, as procurement reflects the quantities of implants a country will need to procure to maintain adequate stock levels to support use, not just what is required for individual users in a given year. Procurement needs are not dependent solely on consumption patterns, but are also informed by supply chain considerations that vary by country. These include supply chain design (how many levels in the system hold inventory and what the inventory policy is) and current inventory levels. For all products, adequate buffer stock is needed to respond to demand volatility at each point in the supply chain in order to have sufficient quantities of products in place to serve clients. For products with growing demand, which implants are in many of the IAP market countries, inventory levels at each level must increase each review period until growth completely levels off. For all of these reasons the CSP implant forecast is well placed to answer questions around the funding and procurement necessary to ensure commodity security for implants and to inform production planning. It is not a suitable estimate of the number of individual implant users in the IAP market.

Conclusion

The CSP contraceptive implant demand forecast provides long-term visibility into the contraceptive implant market. The CSP group continues to use the forecast outputs to assess commodity security, advocate for commodity funding, and hold other market-shaping discussions. Furthermore, suppliers have used the results to inform long-term production planning. The CSP group will continue to review and update the implant forecast annually, assessing its accuracy and revising the methodology as long as access to historical supplier shipment data continues to be available.

Annex: Implant Access Program Countries

Afghanistan	Cote d'Ivoire	India	Myanmar	Sudan
Angola	Cuba	Indonesia	Namibia	Swaziland
Bahamas	Djibouti	Iran Islamic Rep	Nepal	Tajikistan
Bangladesh	Dominican Republic	Iraq	Nicaragua	Tanzania
Belize	Ecuador	Jamaica	Niger	Thailand
Benin	Egypt Arab Rep	Kenya	Nigeria	Timor-Leste
Bolivia	El Salvador	Kiribati	Pakistan	Togo
Botswana	Eritrea	Korea Dem Rep	Panama	Uganda
Burkina Faso	Ethiopia	Kyrgyz Republic	Papua New Guinea	Uruguay
Burundi	Fiji	Lao PDR	Peru	Uzbekistan
Cabo Verde	Gabon	Lesotho	Philippines	Venezuela RB
Cambodia	Gambia	Liberia	Rwanda	Vietnam
Cameroon	Georgia	Madagascar	Sao Tome and Principe	West Bank and Gaza
Central African Republic	Ghana	Malawi	Senegal	Western Sahara
Chad	Guatemala	Malaysia	Sierra Leone	Yemen Rep
Chile	Guinea	Mali	Solomon Islands	Zambia
Comoros	Guinea-Bissau	Mauritania	Somalia	Zimbabwe
Congo Dem Rep	Guyana	Mauritius	South Africa	
Congo Rep	Haiti	Mongolia	South Sudan	
Costa Rica	Honduras	Mozambique	Sri Lanka	

The Coordinated Supply Planning Group

The Coordinated Supply Planning (CSP) Group is a cross-organizational team that strives to prevent family planning commodity stock imbalances by using shared supply chain data and information to better coordinate shipments and the allocation of resources within and among countries. Today, the CSP group members include representatives of UNFPA's Procurement Services and Commodity Security Branches, USAID, the Clinton Health Access Initiative (CHAI), John Snow, Inc. (JSI), the Global Health Supply Chain - Procurement and Supply Management project (GHSC-PSM), and the RHSC.

The Reproductive Health Supplies Coalition

The Coalition is a global partnership of public, private, and non-governmental organizations dedicated to ensuring that everyone in low- and middle-income countries can access and use affordable, high-quality supplies for their better reproductive health. It brings together agencies and groups with critical roles in providing contraceptives and other reproductive health supplies. These include multilateral and bilateral organizations, private foundations, governments, civil society, and private sector representatives.