Expected Removals of Long-Term Reversible Methods of Contraception in Routine Service Statistics

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Insertions data for long-term, reversible methods of contraception (LARCs) are often used for monitoring family planning programs. These data are also included in the calculation for the service statistics-based indicator Estimated Modern Use (EMU), which contributes to the annual estimates for FP2030 countries. Less attention has been paid to LARCs removal data, which is collected by a growing number of countries in Health Metric Information Systems (HMIS). Measuring the quality of removal data is difficult- are removals being under recorded in HMIS or are women having difficulty in accessing removal services? Track20 has developed a calculation of "Expected Removals" which combines HMIS data on insertions with survey data on discontinuation to calculate the number of removals expected to take place annually in a country. This memo walks through these calculations.

Track20 has found that HMIS trend data is more reliable than level data and that the use of benchmarking can help to correct raw data when calculating EMU. For most countries with data, implant removal numbers are increasing, and we expect data quality to improve over time, just as it has for insertion data. As more people use and review the data, quality will improve, and as longer trends exist, earlier, less reliable data will have a smaller impact.

To calculate expected removals, two pieces of information are needed- number of insertions per year and a discontinuation curve. The discontinuation curve can be country-specific, calculated from a recent Demographic and Health Survey (DHS), or a global discontinuation curve can be used. From the discontinuation curve, we want the percentage of users who discontinue within 6 months of beginning the method, within 18 months, within 30 months, etc. We chose these inter-year periods because women will have LARCs inserted and removed throughout the year, so the 6-month mark is an average. Information on using the DHS calendar can be found at https://www.dhsprogram.com/data/calendar-tutorial/. Track20 is also available to help with the calculation of discontinuation rates. If a country does not have a recent DHS with calendar data, a global discontinuation curve can be used (Table 1).

Table 1: Global Discontinuation Rates

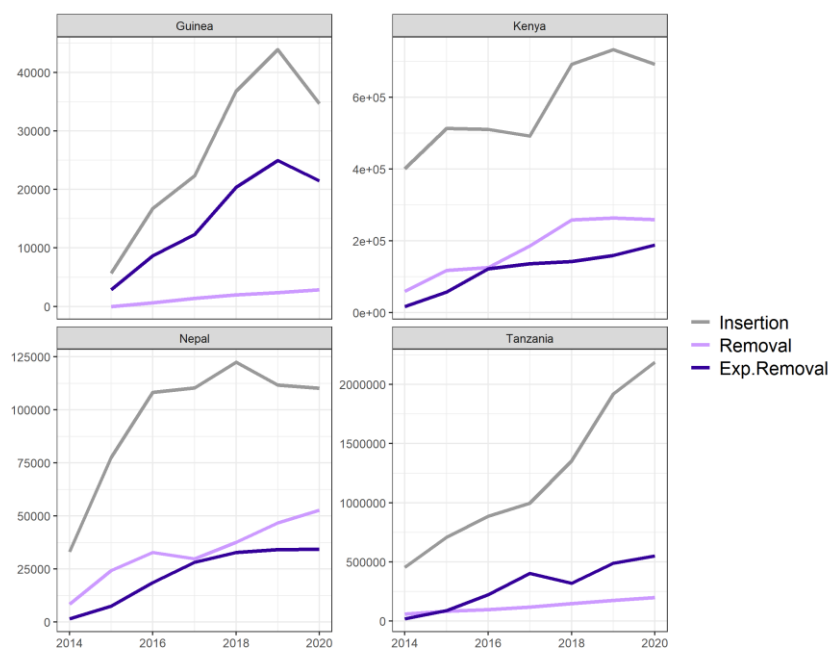|	6	18	30	42
3 Year Implant	0.056106	0.159052	0.25077	1

In this example, we calculate the number of expected removals for a 3-year implant. First, between 0 and 6 months we expect 5.6% of insertions to be removed, for months 6-18 (15.9-5.6) 10.3% of insertions, for months 18-30 (25.1-15.9) 9.2% of insertions, and for months 30-42 the remaining 74.9% of insertions (100-25.1). These removals then need to be assigned to the expected year of removal. The 5.6% of removals are in the same year as insertion, 10.3% the year after, and 9.2% two years after, and the remaining 74.9% the last year of effectiveness. We can apply this to a theoretical population:

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Table 2: Insertions and Expected Removals

	2016	2017	2018	2019	2020	Total
Insertions	100	150	250	300	400	
Removals 2016	5.6106					5.6106
Removals 2017	10.2946	8.4159				18.7105
Removals 2018	9.1718	15.4419	14.0265			38.6402
Removals 2019	74.923	13.7577	25.7365	16.8318		131.249
Removals 2020		112.3845	22.9295	30.8838	22.4424	188.6402

In the above population, 3-year implants were introduced in 2016 and scaled up over time. The columns show the year of insertion, and when those insertions are expected to be removed, while the rows show the expected number of removals per year by year of insertion. The right-hand column is the total number of expect removals per year.

Programs can use this number to compare with recorded removals to access the quality of the removal program or the removal data. If a country's recorded number of removals is lower than expected (Guinea and Tanzania in the graph to the left), this could point to either an issue with women's access to removal services or that removals are not being accurately recorded in registers. If women seek implant removals in sectors which are less likely to report into the HMIS, such as a private facility, than the recorded removals will be lower than the expected removals. If countries have higher removals than expected (Nepal and Kenya), they could have higher removal rates than the discontinuation curve suggests. Also, if a program was established before data collection, there are more implant users in need of removals and having implants removed than our expected data predicts.

When correcting for quality (or interpreting with caution), HMIS data can give overall information on whether we have "too many" removals (high discontinuation) or "too few" removals (identifying potential barriers for removal). Many data questions about LARC removals still remain, though with more use we expect data quality to improve.

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