Gaps in monitoring systems for Implanon NXT services in South Africa: An assessment of 12 facilities in two districts

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In 2012, the National Department of Health (DoH) adopted the National Contraception and Fertility Planning Policy. The overarching goal of this policy was to expand the country’s contraceptive method mix by promoting long-acting reversible contraceptive (LARC) methods, such as the subdermal contraceptive implant.15 The policy narrative states that injectable contraceptives account for half of contraceptive use nationally and for up to 90% in some areas.1 The analysis of monitoring data from new methods, such as the implant in SA, therefore needs to be delays in incorporating indicators for use and safety within existing information systems.7 The predominance of short-term methods has several drawbacks.15

When new contraceptive methods are introduced, there may be delays in incorporating indicators for use and safety within existing information systems.7 The analysis of monitoring data from new methods, such as the implant in SA, therefore needs to be supplemented by the findings of periodic evaluations, and more rigorous, independent assessments of specific aspects of the services, such as the quality of the routine monitoring systems. We therefore examined the data management and record-keeping systems used.
to monitor implant insertions and removals in two districts of SA, focusing on their quality and standardisation across facilities. Identifying and addressing gaps in these systems will enable the DoH and other stakeholders to monitor whether the goals of implant services are being achieved, and to identify aspects of the services that require strengthening as per the process (Fig. 1). These findings may also inform decisions around the selection of indicators for the programme and the design of data collection tools.

Methods

Study setting

This study, conducted in late 2016, formed one component of a larger evaluation in which we assessed the quality of implant services in SA. We selected six facilities in the City of Johannesburg (CoJ), Gauteng Province, and six in the Dr Kenneth Kaunda District (DKKD), North West Province. Sites were chosen based on the number of implant insertions recorded in the DHIS for 2015. The sampling frame for selecting the study sites in CoJ consisted of 17 primary care facilities, with a total of 1045 insertions in 2015; the sites in DKKD were chosen from 40 facilities, with a total of 727 insertions. Facilities had been providing the implant since February 2014. Sites were chosen based on the number of implant insertions recorded in the DHIS for 2015. The sampling frame for selecting the study sites in CoJ consisted of 17 primary care facilities, with a total of 1045 insertions in 2015; the sites in DKKD were chosen from 40 facilities, with a total of 727 insertions. Facilities had been providing the implant since February 2014.

Development and piloting of a checklist tool

We developed a study checklist to assess the presence and content of monitoring tools for recording and reporting data on the implant at primary care level. The tool was designed in consultation with a clinician, who had trained healthcare providers regarding the implant and was familiar with the services in SA and elsewhere. The checklist was then piloted in seven primary health facilities (three in CoJ and four in DKKD – distinct from the study sites) in late 2015. Facilities for the pilot were also selected based on the number of insertions done (three high- and four low-volume clinics). The research team used the pilot checklist to review the tools used to monitor implant use and the mechanisms for reporting of data to district offices, and finalised the tool thereafter.

The final study checklist documented the presence of the tools (captured as a binary variable: present or not), purpose of five data collection tools that had been identified during the pilot, and variables collected in each (Table 1). The tool also assessed the reporting of statistics from facility to district level.

Audit of monitoring tools in the study sites

During site visits, using the study checklist, the study team reviewed the tools used for monitoring of implant services (any tool used from February 2014 onwards). In addition, family planning providers and clinic data capturers were asked about which data were reported to the district and the frequency of reporting. We present data using descriptive statistics for overall totals and for each district, and examine differences between high- and low-volume facilities.

Ethical approval

The study was approved by the University of the Witwatersrand Human Research Ethics Committee (ref. no. M151147).

Results

Data collection tools used for all facility attendees

All facilities have a Daily Reception Headcount Register, a standardised tool that was well established and maintained across all the facilities (Fig. 2). Although all clinics had a Primary Healthcare (PHC) Comprehensive Tick Register, different versions were being used in the two districts. The facilities in CoJ used the most updated version of the register, which included a section for recording both implant insertions and removals. DKKD facilities used an older version, which only records insertions. Overall, however, based on our observations, in only nine of the 12 facilities were data on insertions actually being captured in the PHC Comprehensive Tick Register, even though these registers included implant insertion fields in all clinics. Assessment of the Reception Headcount and PHC Tick registers during the pilot phase showed similar findings.

![Fig. 1. A monitoring and evaluation framework for implant services in South Africa. (*Evaluation of monitoring systems reported here was one component of a larger evaluation of implant services.*)](image)

![Fig. 2. Data collection tools for capturing implant insertion and removal data, and reporting of data to district level at six facilities in the City of Johannesburg and six in Dr Kenneth Kaunda District. (PHC = primary healthcare.)](image)
A broken implant. In these cases, which occurred over the course of the study, 14 clients who had presented with implant removal, reason for removal and name of provider who removed the implant had been discarded and the cases not communicated to the district or national level DoH.

None of the 12 facilities was completing the Active Surveillance Reporting Form for Sub-Dermal Implant, and none of the staff was aware of the form's existence. Similarly, none of the seven sites in the pilot study was using this form.

Overall, 10 of the 12 facilities provided information to the district offices on the number of insertions done and nine reported removal numbers. No facilities reported the reasons for implant removals, or adverse events associated or potentially associated with the device.

Differences in monitoring of implant insertions and removals between high- and low-volume facilities

Recording of insertions in the PHC Comprehensive Tick Register was similar between high-volume (5/6) and low-volume (4/6) facilities (Fig. 3). Recording of removals in the PHC Comprehensive Tick Register was done in all three high-volume and three low-volume facilities in CoJ, and none in DKKD. However, more low-volume inserting facilities (5/6) were using implant insertion registers than high-volume inserting facilities (3/6). Half the high-volume and half the low-volume inserting facilities used the implant removal register. All the high-volume facilities reported insertion statistics to the district, compared with only four of the six low-volume facilities. More high-volume facilities (6/6) reported removal statistics to the district.

Data collection tools used only for implant insertions and removals

The Implant Insertion Checklist had been created specifically for the CoJ and was present in all six facilities in the district, but only used in five of them. No facilities in DKKD were using this or a similar checklist. However, in eight facilities (four in CoJ, four in DKKD), facility-based nurses had, on their own initiative, developed an Insertion and Removal Register to capture detailed data on implant insertions and removals. These consisted of either A4 sheets of paper or A5 books. While all eight of these entered data on insertions, only six collected data on removals. These registers were also noted at several of the clinics visited during the pilot phase of the study.

The ‘home-made’ Insertion and Removal registers collected considerably more detailed information on insertions and removals than the other registers. The variables collected varied across facilities, but included data on name of provider who did the insertion, date of expected return following insertion, date of removal, reason for removal and name of provider who removed the device. The tools also often contained data that could be used to identify aspects of the services that require further attention or investigation. For example, data in one removal register showed that the implant had been removed in 14 clients who had presented with a broken implant. In these cases, which occurred over the course of a year, the broken devices had been discarded and the cases not communicated to the district or national level DoH.

None of the 12 facilities was completing the Active Surveillance Reporting Form for Sub-Dermal Implant, and none of the staff was aware of the form's existence. Similarly, none of the seven sites in the pilot study was using this form.

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### Table 1. Purpose, description and variables collected in data collection tools identified in the pilot study

<table>
<thead>
<tr>
<th>Name of data collection tool identified in pilot</th>
<th>Purpose of tool</th>
<th>Description of tool and variables collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Reception Headcount Register</td>
<td>To register all clients accessing the facility</td>
<td>Developed by DoH and nationally standardised. Documents the names, contact details and locator information of all clients attending PHC, including implant initiators, but does not specify reason for attendance</td>
</tr>
<tr>
<td>PHC Comprehensive Tick Register</td>
<td>To document visits to PHC services</td>
<td>Captures number of clients attending different services at a PHC. Includes client name and services that they receive. Contains a woman's health section, capturing data on implant insertions and removals</td>
</tr>
<tr>
<td>Implant Insertion Checklist</td>
<td>To gather information on implant insertions and removals</td>
<td>Developed by CoJ, to be completed for each implant insertion. Contains date of insertion and client information, e.g. name, client file number, date of birth and contact details</td>
</tr>
<tr>
<td>Implant Insertion and Removal Register</td>
<td>To capture detailed client information on implant insertion and removal, in addition to monitoring absolute numbers thereof</td>
<td>Contains concise instructions on how to insert an implant</td>
</tr>
<tr>
<td>Active Surveillance Reporting Form for Subdermal Implants</td>
<td>Developed by DoH to track contraception use, medical history and adverse events related to implant use</td>
<td>A nationally prescribed form for capturing pharmacovigilance data exclusively for the implant. Variables to be collected include anthropometric measures; concomitant medications for TB, HIV and epilepsy; and herbal products; laboratory results (pregnancy test, haemoglobin, CD4 cell count, HIV viral load); reproductive health history (parity, breastfeeding, contraception use and cervical cancer screening); content of implant counselling; insertion and removal date; reason for removal; and any adverse drug reactions</td>
</tr>
</tbody>
</table>

**PHC = primary healthcare; DoH = Department of Health; CoJ = City of Johannesburg; TB = tuberculosis.**

*The five tools were identified at one or more of the pilot study sites. Variables collected in each tool are italicised.*
national programmes.\textsuperscript{[10]}

methods, if not corrected, often lead to withdrawal of methods from
the introduction of contraceptive methods.\textsuperscript{[9]}

Problems with new
initiatives that are urgently needed to strengthen implant services
and removal statistics to the district. Data are not available to guide
more high- than low-inserting facilities were reporting both insertion
extent of and reasons for the decline in implant use. Importantly,
the Planning programme is therefore unable to understand the true
occurrence (and timing) of removals. The South Africa Family
planning of service improvements.

Discussion
The study shows major gaps in tools and standardisation of monitoring
systems for implant services. Data are not systematically reported to
district level, e.g. a quarter of facilities do not submit numbers of
removals. Overall, gaps in data collection and reporting, even in
high-volume clinics, mean that the current DHIS underestimates
the actual utilisation of the implant and give little indication of
the occurrence (and timing) of removals. The South Africa Family
Planning programme is therefore unable to understand the true
extent of and reasons for the decline in implant use. Importantly,
more high- than low-inserting facilities were reporting both insertion
and removal statistics to the district. Data are not available to guide
the initiatives that are urgently needed to strengthen implant services
in the country.\textsuperscript{[30]} This is especially pressing given the importance of
robust data for directing service delivery in the first years after the
introduction of contraceptive methods.\textsuperscript{[31]}
Problems with new
methods, if not corrected, often lead to withdrawal of methods from
national programmes.\textsuperscript{[10]}

The World Health Organization (WHO) framework for the
introduction of new contraceptive methods suggests a three-stage
process, which starts with determining a need for the new method
according to end-user needs (Stage 1), conducting service delivery
and end-user research (Stage 2), and exploring implications of
research for utilisation of the method (Stage 3).\textsuperscript{[9]} As per Stage 1, the
DoH introduced the implant, recognising the need for an expanded
method mix and methods that were not user dependent. This study
addresses both Stage 2 (service-delivery research, monitoring in this
instance) and Stage 3 (implications of assessment of monitoring for
implant programmes). Poorly functioning monitoring systems hinder
efforts of Stage 2 and compromise any efforts to strengthen services
in Stage 3.

The Policy Project suggests that a performance-monitoring sys-
tem should not be developed in a vacuum, but rather constitute an
integral part of the overall service delivery system that is capable of
identifying problems and taking corrective actions.\textsuperscript{[21]}
Traditionally,
too much emphasis has been placed on mere recording of new
acceptors of contraception, without consideration of other perti-
nent information, such as method continuation and reasons for
shortage,\textsuperscript{[12]}
As noted in this study. Additional data sources,
such as a repeat of this evaluation, may be needed in a few years
to assess improvements in monitoring systems and other gaps in
programming.\textsuperscript{[21]}

Furthermore, there is a need for disaggregated data on implant
insertions and removals, such as by age and whether women are new
contraceptive users or method switchers. DHIS data are sourced from
the PHC Tick Register, which as a monitoring tool is constrained by
the limited data it gathers, which does not include age, for example. It
is, however, encouraging that the PHC Tick Register has evolved over
time, with later versions encompassing data on removals, although
these were not yet being used in DKKD. Seemingly, deficiencies in
the data collection tools were apparent to health providers, who
themselves then developed data collection tools to capture pertinent
information. This demonstrates considerable initiative and resource-
fulness of nurses, and illustrates their awareness of the importance of
data collection. Even though these data are useful for the purposes of
fine-tuning services at individual facilities, standardising data collec-
tion and reporting across clinics could alter district and even national
programming.

Commodity use does not appear to be captured in the DHIS for
the implant, which should show numbers of devices ordered and
returned, analogous to how antiretroviral drugs are monitored.
Antiretroviral stocks are monitored by the DoH at drug depots and
facility level. Stock delivered to individual facilities is also captured,
and stock ordering and returns are accounted for at drug depots. The
Handbook of Indicators for Family Planning Program Evaluation,\textsuperscript{[12]}
developed through the Evaluation Project, suggests that to measure
service delivery operations, commodities need to be monitored.
They suggest tracking quantities of contraceptives procured annually,
quantities in stock at central stores, amount distributed from central
stores, and inventory levels and stock-outs at service-delivery points.
These data could complement facility-level reporting, and together
provide useful insights to inform the fine-tune, reorientation and
planning of service improvements.

Of particular concern is that adverse events and other aspects of
pharmacovigilance of the implant are not being collected. Removals,
but also insertions, can have complications, which should be brought
to the attention of district and provincial authorities. Even though
complications are rare, a review of clinical studies of Implanon NXT
showed that complications occur in ~1% of insertions.\textsuperscript{[13]} These
included deep insertions with fibrous adhesions, and non-palpable
or broken implants.\textsuperscript{[13]} The Active Surveillance Form for Sub-Dermal
Implants has not been rolled out to the facilities, possibly as the
number of data points it contains (24 variables) makes its comple-
tion onerous for health providers. If the purpose of this form is solely
pharmacovigilance, fewer and more relevant indicators need to be
selected and the form should be used.
Study limitations
The study is limited by not having examined the quality and completeness of the data. Furthermore, the findings may not reflect the monitoring systems in the entire country, or of clinics that perform a moderate number of insertions. The generalisability of the findings are, however, enhanced by the inclusion of 19 sites (seven pilot study sites and 12 study sites) across two provinces, encompassing both urban and peri-urban locations. Also, sampling of both high- and low-volume clinics allowed for more detailed analysis of data systems.

Conclusion
This study is the first assessment of data management and reporting structures for monitoring the contraceptive implant in SA. The findings highlight aspects of the monitoring system that need to be strengthened to provide timely, actionable information to guide improvements in the country’s implant services. Our study underscores the need for standardised tools, and data collection and reporting guidelines. A single nationally standardised data collection tool could be developed, which consolidates and replaces the insertion checklist, insertion and removal registers, and pharmacovigilance forms. This could facilitate collection of data for a few carefully selected indicators of performance and obstacles to service delivery. Indicators need to be carefully considered and prioritised, so as to collect sufficiently detailed information, but without overburdening healthcare providers. Clearly, data monitoring needs to extend beyond absolute counts of utilisation and discontinuation, which themselves are currently poorly collected. Other important data include client characteristics (especially age and most recent contraception), insertion and removal dates, reasons for removals, details of removal procedures (e.g. duration of the procedure and complications) and contraception choice after removal. As an immediate step, the reporting of data from the PHC Tick Register could be strengthened, and encompass insertions, removals and reasons for removal. Lastly, it is possible that deficiencies noted in this study are common to family planning services in SA in general, a concern that warrants further investigation.

Acknowledgements.
We thank the Department of Health for allowing us access to the health facilities, the anonymous reviewers of this article, clinics that participated, and Ntombezithu Dumakude for her contribution to tool development and the pilot study. We would also like to acknowledge the data collectors (Fortunate Gombela, Iris Sishi, Lindwe Mbuyisa, Ntombezithu Tlwa, Sizwe Sidabuka and Tebogo Mokoena).

Author contributions.
DP: project leader and responsible for project design, implementation and write-up, and supported by CM, MP, OAA, NN, MFC, and SM; HR: senior author, providing oversight and review.

Funding.
Funding was received from the United Nations Population Fund (UNFPA), which also provided technical assistance.

Conflicts of interest.
None.


Accepted 23 August 2017.