



Use of Health Facility and District Data Dashboards to Strengthen Quality of Family Planning Services Findings from an Assessment in Two States of India

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Introduction

India has implemented a national family planning (FP) program for more than half a century. However, there have been long-standing concerns regarding the quality of the FP services provided through the public health system in India. The Government of India (GoI), recognizing the need for improvements, established a mechanism to assure service quality at the state and district levels, and released the revised manual *Standards & Quality Assurance in Sterilization Services* in 2014 [1]. The GoI quality assurance guidelines emphasize the need to have a health facility-level Quality Circle (QC) comprising FP service providers to review and monitor provision of FP services.

The US Agency for International Development's flagship Maternal and Child Survival Program (MCSP) provided technical assistance to the GoI to apply these national guidelines and expand access to high-quality FP services in five states of India from May 2015 to September 2019. MCSP aimed to develop a culture of data use and quality improvement (QI) among FP service providers through the development of data visualization and use approaches to create locally relevant information for use in better management of facility-level FP services. In two of the five states where MCSP had a larger investment-Odisha and Chhattisgarh-MCSP conducted an implementation research study to understand stakeholder perspectives on the data visualization and use approaches for informing FP QI efforts in public health facilities. This assessment aimed to generate evidence for taking a systems approach to improve the quality of FP services through the strategic use of data for decision-making. The assessment examined the introduction of a mechanism for regular analysis and interpretation of FP service delivery data in monthly review meetings of the facility QC committees¹ and district quality assurance committees (DQACs)," while also generating evidence for whether field-tested dashboards should be adopted at state and national levels. This brief summarizes the results of testing the use of two different types of FP data dashboards—a computer-generated dashboard and a laminated,

i QCs are formed by facility FP providers to periodically review and monitor issues related to QI, help resolve the identified problems, recommend solutions, and ensure that high-quality services are provided.

ii DQACs have been formed by all states at state and district levels to ensure that the GoI standards for FP, including female and male sterilization, are followed.

erasable poster wall chart—at MCSP-supported health facilities in Odisha and Chhattisgarh, including how the information was used and perspectives from FP providers on the feasibility and usefulness of data dashboards.

Background

Use of service delivery data for decision-making by health workers and managers remains a challenge and is a priority area for improvement by the GoI. In India, data are collected routinely using a Web-based health management information system at facility and district levels. However, the data often flow up the health system for reporting and are not effectively used at facility level for timely decisionmaking to improve quality of care and health outcomes.

In addition to lack of data use at the local level, there are challenges in the generation of high-quality data, workforce capacity-building, and monitoring of vulnerable tribal populations [2]. No formal feedback system exists from the national-level FP division to the lower levels, including

Assessment Objectives

- Describe and assess various data visualization and sharing approaches to improve decision-making for strengthening quality of FP services.
- Compare various data visualization and sharing approaches to improve decision-making for strengthening the quality of FP services.
- Understand key stakeholders' and providers' perspectives on various data visualization and sharing approaches.

primary health centers, community health centers, district hospitals, and district and state management, which can sometimes result in discrepancies in reporting going unnoticed. This situation creates problems in decision-making, motivation, and incentivizing documentation of accurate and reliable data.

There is growing evidence regarding what works to improve the use of routine data for health program and policy decision-making in low- and middle-income countries [3]. For example, data visualization (mapping specifically) helped decision-makers in Tanzania target HIV services to populations who were not accessing them [4]. Program experience has also shown that effective data use to improve quality involves a continuous, cyclical process of goal setting, data collection, data examination, and data-informed action [5]. Reflection on data becomes knowledge, and that knowledge can be used to assess how a program is performing, determine which areas of the program need improvement, and inform concrete action [6]. MCSP's multicountry experience also revealed that data dashboards are a promising approach for promoting better data use at the point of care. Dashboards are versatile tools that facilitate basic analysis of routine data, visualization, and action that health systems can implement as part of broader capacity-building and QI efforts [7].

In the formative phase of this assessment, MCSP gathered qualitative data from potential users of the FP data dashboards at target health facilities in the two states. MCSP staff asked facility staff in two districts in each state to identify what they considered to be actionable FP indicators and gathered feedback on beta versions of the data dashboard visualizations/designs and layout. Potential participants were identified in consultation with district- and facility-level authorities from Odisha and Chhattisgarh. A total of nine in-depth interviews (IDIs) were conducted with DQAC members, and five focus group discussions were conducted with QC members. Results were used to create two types of FP data dashboards before rollout to the two states for pilot testing.

MCSP-Supported Data Use Interventions

MCSP implemented data use interventions in public health facilities providing minilaparotomy services for female sterilization and other FP services within two districts of Chhattisgarh state (Durg and Dhamtari) and two districts of Odisha state (Cuttack and Khurda) as part of a set of interventions to improve the quality of FP services. MCSP aimed to work with the state governments to improve the use of data for action in its project focus facilities and districts through the development and use of FP data dashboards, including user-friendly visualizations of compiled monthly FP indicator data. Based on earlier formative research findings with stakeholders to identify useful FP indicators and visualization formats, MCSP developed computer-generated dashboards (for printing and posting on the wall) and reusable, laminated, preprinted poster dashboard templates where health providers and facility managers can add monthly data values for

actionable indicators in line graphs, bar charts, and tables to assist health service providers and managers in discussing and using the data during QC and DQAC meetings.

The intervention and the associated assessment were conducted in collaboration with the governments of Odisha and Chhattisgarh. Sixteen facilities were selected in consultation with the DQACs to ensure strong collaboration with providers and facility-level managers in implementing the intervention. MCSP introduced two types of FP data dashboards in the 16 facilities to compare approaches for visualizing FP data. Health service providers and managers can use the following types of dashboards when discussing and using the data during QC and DQAC meetings:

- A computer-generated dashboard printed and posted on the wall
- An erasable, laminated poster wall chart where facility staff can add monthly data values for set of actionable indicators in line graphs, bar charts, and tables



Figure I. Sample computer-generated family planning dashboard

MCSP assigned two facilities per district to each of the two approaches (for a total of 16 facilities—eight using the computer-generated dashboards,ⁱⁱⁱ and eight using the laminated poster dashboards, four of each type in each state).

iii MCSP also introduced computer-generated dashboards in three other states where the project was working (Maharashtra, Assam, and Telangana), but those states did not receive extra supportive supervision in data use and were not included in this assessment.

The MCSP team met with facility in-charges to share the purpose of the data use intervention, the level of engagement needed from staff, and the plans for the assessment after at least 6 months of data dashboard use. Upon receiving agreement from the facility in-charge, MCSP oriented facility staff to the dashboards, including their content, how to update them, and how to review and use them over time. MCSP suggested that facility staff review the dashboards during regular QC meetings at their facilities. MCSP staff mentored facility staff over the course of the intervention during monthly supportive supervision visits (SSVs) by using a supervision checklist. Mentoring aimed to guide providers in understanding how to calculate and interpret the FP indicators, address data quality concerns and problems encountered in calculating and graphing indicators, physically verify data in registers versus dashboards, review data in QC meetings, and use data for decision-making. Information captured in the SSV monitoring tool was used for adaptive management throughout the implementation period.

Aggregate service delivery data specific to each facility were used to populate both types of dashboards. QI indicators included FP counseling before and after delivery and before discharge, FP method mix among acceptors, method acceptance over time, and follow-up visits for FP clients by method accepted, including progestin-only pills, centchroman, sterilization, and intrauterine contraceptive devices (IUCDs). For the computer-generated FP dashboard, each facility-based data manager entered monthly progress report data into a spreadsheet and generated a dashboard for the specific facility. Then, the data handler could print the dashboard and paste it in a designated place within the facility. See Figure 1 for picture of a sample computer-generated FP dashboard.

Methodology

MCSP developed and applied two data collection tools for the assessment: an SSV monitoring tool for use during monthly joint SSVs by MCSP staff and an IDI guide administered by MCSP staff with participating health facility staff.

- **SSV monitoring tool:** This tool consisted of a combination of questions for a facility staff member to answer as well as a checklist of items related to data visualization and use that could be observed by walking around the facility and looking at the completed dashboards. MCSP staff used the tool during monthly SSVs to each of the 16 participating facilities over the course of the implementation period (6 months). Tool items were related to public display of the dashboard on the facility wall, providers' understanding of the meaning and calculation of the indicators, any data quality concerns observed, problems encountered by facility staff in calculating and graphing indicators, physical verification of data in register versus the data plotted on the dashboard, and review and use of data in QC meetings as recorded in available meeting minutes and as reported by facility staff.
- **IDI guide:** The IDI guide was designed to be used with facility-based staff who were either involved in completing/updating the dashboards (staff who were involved in plotting data on the poster dashboard and the data manager for facilities using the electronic dashboard) and/or a member of the QC in study facilities using a dashboard. Questions included in the IDI guide pertained to data use based on the dashboard, the meaning of the indicators and trends in the dashboard, practices of discussing the dashboard in QC meetings, any perceived barriers to use of the dashboard and decision-making, and provider perceptions about use of the dashboard. MCSP also sought to understand if and how visualization of FP service data helped the facility management and staff in decision-making to improve a facility's performance. QC members included medical officers, FP counselors, block program managers, and block data managers.

MCSP planned to conduct 16 IDIs with health facility staff at eight of the 16 participating facilities—two in each selected facility. IDI respondents were purposively recruited and interviewed, in consultation with the facility in-charges, approximately 6 months after the intervention started based on their involvement in FP service delivery or data collection and reporting.

The IDIs were audio recorded, translated, and transcribed into English for analysis. The analysis was done manually, with information coded by themes of interest and organized in a matrix. During the IDIs, interviewers also recorded detailed field notes. Data from these field notes were used for data corroboration.

For the erasable laminated wall poster FP dashboard, facility staff manually plotted trends for the selected indicators on preprinted poster templates every month. See Figure 2 for a sample completed laminated poster FP dashboard.





Key Findings

MCSP staff conducted 16 IDIs with QC members in the assessment facilities during April and May 2019. One QC member from each facility participated in the assessment as shown in Table 1. These QC members were the medical officer, counselor, block program manager, and block data manager.

Table I. Type of in-depth interview respondent by state, district, and type of dashboard

State	District	Type of Respondent	
		Electronic Dashboard	Poster Dashboard
Chhattisgarh	Cuttack	Block Program Manager Block Data Manager	Block Program Manager Block Data Manager
	Khurda	Block Program Manager Block Data Manager	Block Program Manager Block Data Manager
Odisha	Durg	Counselor Block Program Manager	Counselor Block Program Manager
	Dhamtari	Block Program Manager Block Data Manager	Block Data Manager Medical Officer
Total	4	8	8

The assessment found multidimensional utility of the two dashboards as a tool to help identify errors in data, identify weak aspects of FP service delivery, inform discussion of performance indicators during staff meetings or QC meetings, and make decisions for improving FP services.

Data Collection and Reporting in the Health Management Information System

The assessment found that there was no uniform system for FP service data recording across all assessment facilities. The focus on completeness and correctness of data was lacking if not linked with potentially auditable records within a GoI financing scheme.

As a data handler said: "We take utmost care for correctness of IUCD and postpartum IUCD data in comparison to the acceptor of other methods."

IUCDs and postpartum IUCDs have separate facility registers.

Use of FP Data Dashboard to Review Service Performance

Most of the respondents found the dashboard very useful. They could quickly grasp the trends in FP service delivery within the facility. Respondents reported that the dashboard helped them to discuss issues and gaps found in service provision. Before the introduction of the FP dashboards, this was not possible because data were kept in the form of reports in paper files or in computers. Facility incharges/managers were provided with the data just before the QC meeting, which they might or might not review because of time constraints or too much data on a single sheet of paper. The FP dashboard was able

Perceptions of the FP Dashboards

- Helps in seeing the FP service delivery progress over time by month.
- Helps as reminder tool for follow-up.
- Helps in checking and correcting data.
- Helps to see the data in visual form.
- Engages providers in understanding data.
- Helps in analyzing the context or situation for low level of achievement.
- Prompts decision-making.

to show facility staff and management FP program performance over several months.

A counselor mentioned: "It is a good initiative because it draws attention toward data elements/indicators, which are crucial for the program but often ignored, such as follow-up of sterilization clients. For example, when facility in-charge saw the data of zero follow-ups on the dashboard, he asked [the counselor] regarding this, and I explained that the situation of follow-ups is not good in our area. As a result of this, a letter was issued for all the field-level staff to improve the follow-up of sterilization clients. All became possible because of the visualization of data."

A staff nurse shared: "The dashboard is very useful, as before its [introduction and] implementation, the staff working under FP service provision [e.g., IUCD service provider or female sterilization service providers]

were working in isolation in a way that she is looking only after [female] sterilization and didn't had a clue regarding spacing methods, client counseling, or follow-up of the clients."

Most health workers said they used the FP dashboard to discuss trends in FP QI indicators during meetings. Dashboard use patterns were not uniform across facilities. In two of the 16 facilities, staff used the FP dashboard in their monthly meetings when all staff were present, while other facilities used it during their QC meetings. In one facility, the FP dashboard was also used in other meetings of health staff in addition to the QC meeting. In all 16 facilities, staff discussed acceptance levels for various FP methods, follow-up of acceptors, and availability of contraceptive stock. They then recorded discussions and decisions in the minutes of the meetings.

Block data manager: "The dashboard is used in QC meeting as well as staff monthly meeting. In QC meeting, discussion happens deeper to discuss about quality and improvements, while in monthly meeting, we discuss data in general for general updates. In monthly meeting, showing this data is specifically important, as field workers are there and they can see that how their efforts are contributing toward the performance of facility and where they can do better."

Interpretation and Analysis of Routine FP Program Data

The visualization of stock data helped facilities better manage contraceptive stocks by providing a better understanding of trends in acceptance by method. When trends became clear, discussion of the dashboard data enabled facilities to engage in a deeper analysis of the situation and initiate corrective actions. Respondents shared that whenever facility staff plotted zero stock of any contraceptives on the dashboard, it prompted them to send a request to the district store for resupply immediately.

Counselor: "The reasons behind the declining trend in sterilization and acceptance of postpartum IUCD was due to outbreak of dengue epidemic and stock-out of IUCD in the facility in that period."

FP Data Quality

Assessment findings show that FP data quality was of little concern to facility staff not engaged with or responsible for data collection. Meanwhile, both providers and program managers were under the impression that FP data generated in facilities were of good quality since the staff assigned to reporting were collecting and reporting them. The assessment also found that even if there were discrepancies in the data, facility staff were not able to identify these nor to assess the quality of data. Findings suggest that engaging facility service providers and other managerial staff in making service data quality a shared responsibility was critical for effective data reviews and QI. Usually, staff in facilities where the electronic dashboard was used did not perceive issues with data quality. Staff of these facilities reported that there were no concerns, as the data handler checked data during compilation.

Block program manager: "About data quality, data manager would be in better position to explain you. Data or dashboard reaches me after completion, so any issue related to plotting of data or quality of data, he would be the best person to tell you."

Adherence to National Guidelines Related to QI Mechanisms

The assessment aimed to assess the existence of QCs as mandated by national guidelines, especially if the QCs are active. The GoI guidelines state that the QC committee should meet each quarter and record meeting minutes. In all 16 intervention facilities, QCs existed, but QC meeting schedules varied from state to state and facility to facility. Frequency of QC meetings was linked with the frequency of Fixed Day Static service for sterilization. Accordingly, facilities conducted QC meetings monthly, quarterly, or, in three facilities, twice a month if the need arose.

Topics for discussions of the dashboards at QC meetings included quality of sterilization, availability of beds in postoperative wards for sterilization clients, bed with clean sheets for clients, cleanliness of toilets, and other conditions for clients' comfortable stays. Other issues, such as documentation or staff duty assignments, were also discussed in QC meetings. Importantly, however, respondents noted that dashboards were only discussed in the QC meeting when MCSP staff participated in the meeting. This suggests that a 6-month timeframe was insufficient to instill a culture of data use among the QC committees, and alternative strategies may also be needed.

In summary, the FP dashboard informed QC discussions and helped facility staff prioritize agendas for discussion after analysis of their real-time program data, but if MCSP staff were not present, they were reportedly often not discussed.

Counselor: "In QC, [the facility in-charge, block program manager, FP counselor, and staff nurse] have discussed regarding nonavailability of stock and its reason. They also discussed on why deliveries are getting less. Then they thought that referral is more, which is why deliveries are less. So they cross checked data of referral and found that deliveries of some clients could be conducted in the facility instead of referring them. Based on this, they have issued notice that the pregnant women should not be unnecessarily referred and keep the papers of the patients before referring them to higher centers. This resulted in reduction in number of unnecessary referrals, and now they have a good documentation of referral cases."

Influence of Dashboard on Decision-Making

The assessment found that before the implementation of dashboards, discussions in QC meetings followed a generic agenda, and decisions were passed on as general instructions. After the implementation of the FP dashboard, in more than half of the facilities, QC meeting minutes showed decisions were justified using dashboard data. For example, in one facility, the data on the first follow-up visit for sterilization clients showed an increasing trend over several months but showed low levels of completion for the second follow-up visit. The QC found that auxiliary nurse-midwives (ANMs) in the field usually did conduct the second follow-up visit, but that the data on those follow-ups were not reaching the facility. The QC decided that sector supervisors should discuss this issue in their sector meetings to improve the transfer of follow-up visit to share during subsequently, supervisors at the facility.

Review of QC meeting minutes showed that facilities made many decisions to improve performance of FP services, as shown below in Table 2.

Electronic Dashboard Use Facility	Poster Dashboard Use Facility
(n 8 facilities)	(n 8 facilities)
 Auxiliary nurse-midwives involved in conducting and reporting second follow-up data clients (2) Appointment of a new operating room assistant (1) Supply of minilaparotomy kits, no-scalpel vasectomy kits, and surgical shadowless lamp (1) Infection prevention training (4) 	 Increased focus on female sterilization client follow-up (2) Better Fixed Day Static planning (1) More use of interactive voice response systems^{iv} for client pre-registration (3) Strengthening commodity supply (2) ANMs involved in conducting and reporting second follow-up data (2) Infection prevention training (1) Training on counseling (2) Orientations on respectful care (1) Letter issued to designate a person to take proper client consent before sterilization

Table 2. Actions taken by facility staff to improve the quality of family planning services

Data source: QC meeting minutes

iv A mobile technology-based interactive voice response system developed by MCSP and rolled out in two states, Chhattisgarh and Odisha, since July 2018. The dedicated, toll-free phone line has three channels: providing information on FP methods to communities, capturing and collating clients' feedback on quality of Fixed Day Static service provision at project facilities, and scheduling appointments for Fixed Day Static services at project facilities.

IDI respondents shared that analysis and review of the dashboard influenced decision-making:

- Counselor: "Management is taking informed decisions based on data. Nowadays, there is a decline in sterilization services, as evident from the graph in dashboard. They are focusing on counseling and communicating this to the clients."
- Block program manager: "Dashboard really helped them in stock monitoring of contraceptives through visualization. Earlier, we had this data, but it was in the stock register, and we were not able to provide response to the corresponding questions if asked by management. But now, we can provide status and reasons, as the data is in front of us. Through this, we also came to know and see the trend of deliveries and are able to identify the reasons for downfall in the number of deliveries."
- Block data manager: "Dashboard provides lots of programmatic information, like where we are low performer and where we have to improve. It provides all the desired information provided we have to work. ... This is very useful to assess our performance, and we will continue to use in future also."

Challenges in Using the Dashboard

At facilities where the electronic FP dashboard was used, most staff did not report barriers in use. They responded that the data displayed in the dashboard were sufficient and easy to understand. However, when probed regarding FP method mix data on the dashboard, most of them were not able to explain the meaning of the trends. With the computer-generated dashboard, some staff reported challenges with entry and calculation of client follow-up indicators; in many cases, follow-up indicators were showing values over 100% because numerators included numbers from previous months. Assistance was provided during SSVs to help address challenges that arose along the way.

Respondents reported the following barriers in facilities that used the poster FP dashboard:

- Updating a poster dashboard was logistically challenging since it was hung on a wall; to add a new data, the facility staff preferred to take it down to update it. After updating, it had to be hung up again, which was not very convenient.
- Only four marker colors were available to complete dashboard for nine FP methods. Some facilities used colored tape to add more options.
- Plotting of method mix data in initial month was complicated by the need to convert cycles of pills or condoms provided to a number of users.

Without MCSP following up, the practice of consistently and regularly updating the FP poster data dashboard remained a challenge for some staff. Ongoing support and encouragement were required to foster a culture of data visualization and use at facility level.

Some staff also initially experienced difficulties in calculating and graphing the FP method mix data. The most common challenges faced by the facility staff in preparing poster data dashboard included:

- 1. Number versus percentage: Some indicators are numbers, while others are percentages, leading to confusion among some staff.
- 2. Data getting erased: While updating the poster dashboard data manually, previous months' data mentioned at the lower part of the diagram was erased.
- 3. Plotting the data

Counselor: "I encountered difficulty in plotting the data on the dashboard because they are representing the graphs by cutting tapes of different color and pasting them on the dashboard, and cutting a tape of right size

is difficult. Also, if the number of acceptors is less, such as one or zero, then it's difficult to plot it on the dashboard, again due to cutting such a small piece of tape."

Block data manager: "Earlier when the dashboard was implemented, we encountered problems in plotting the data on dashboard. But now as the months passed, we got habituated for plotting the data on dashboard and are facing no more problems."

Respondents were confident that after a few more months of practice, the staff would no longer experience any issues.

Suggested improvements to the computer-generated dashboards are listed below:

Conclusions

- FP providers valued the FP data dashboards but required support over the 6-month implementation period to use them correctly and consistently.
- Engagement of facility staff in plotting data on the poster dashboard generated buy-in and prompted providers to follow facility performance over time.
- Visualization of data helped to inform decisionmaking within the facility.
- Sustainability of the dashboards appears to be at risk in the absence of external support. Creating a culture of data use and competency that includes interpreting indicator trends may require more time and additional effort.
- The dashboard should display the data over 6 or 12 months instead of showing only 3 months, as QC meetings tend to discuss the data of last 6 months to 1 year.
- The dashboard should include indicators on the number of antenatal care visits and deliveries to make it more comprehensive.
- In the follow-up section of the dashboard, both numbers and percentages should be included and displayed.
- For method mix data, a pie chart would be better understood than a bar chart.

Discussion and Conclusions

The assessment suggests that many intervention participants found the FP data visualization and use approaches to be innovative and useful for informing FP QI efforts, although some facility staff initially encountered challenges in updating, interpreting, and using the data. Engagement of facility staff in plotting the data on the poster dashboard helped them to understand their own service delivery data and performance trends over time. Visualization of data reportedly led some users to correct data errors and also guide decisions. Each data dashboard tested had its own limitations and challenges, but the poster appeared to be better, since it engaged providers and had greater visual appeal due to the multicolor charts, which attracted both facility staff's and visitors' attention.

While there were clear reported benefits to using the poster dashboard, a lot of external support over the first few months was needed to ensure that the dashboards could be used correctly. QC members at facilities using both types of dashboards required support and encouragement to discuss the data during their regular meetings.

Facility staff from about half of the assessment facilities in Odisha and Chhattisgarh reported they plan to continue using the FP dashboards, as they are now well-versed in the process of developing the poster and electronic dashboards. They also found them useful for monitoring and data-driven decision-making. In addition, based on the positive experiences using the computer-generated FP dashboards at MCSP-supported health facilities in Maharashtra (which was not part of this assessment), the Maharashtra state government decided to scale up use of the electronic FP dashboard across all facilities in the state.

Program/Policy Implications and Recommendations

Overall, facility staff found the FP dashboards useful in correcting erroneous data, for use as an advocacy tool for influencing higher authorities, understanding context for good or poor performance for a service, and in

making decisions to improve performance of FP services. Dashboards helped give life to critical FP data by taking them out of files/reports and converting them into a visual tool for review and discussion among service providers and decision-makers at facilities. GoI supervisors should continue to encourage providers to use the dashboards at health facilities, modifying the content and visualizations used on the poster dashboard to suit the facilities' needs.

The dashboard can and should be displayed at a location in the health facility where providers and general visitors can see it, which can lead providers to ask questions and enhance accountability to clients. Large and visually appealing dashboards with multicolor diagrams attracted attention from facility staff and encouragement from external visitors from the Ministry of Health and Family Welfare and donors, especially if displayed at prominent locations in facilities.

Supplies needed to update the poster dashboard, such as markers and tape, need local sources to be sustainable and should be included in health facility budgets.

The 6-month duration of supportive supervision for the use of the FP dashboards was insufficient for many facility staff to use the dashboard to its full potential. This implies that longer timelines, and perhaps additional solutions, are needed to build data visualization and use capacities, and institutionalize a culture of data use within service delivery settings. Supportive supervision should be continued for at least 1 year to ensure facility staff are competent and comfortable using the dashboards.

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