# Revision History

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| --- | --- | --- | --- |
| **Version** | **Date** | **Reason for changes** | **Author** |
| 0.0.0 |  | Project start | Maimoona Kausar |

# Approvals

**IT - IHS**:

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# Product scope description

The project will design an application with the following main objectives;

* Collect and manage vaccination data for women of childbearing age (15-45 years) and children under 5 years.
* Send sms reminders to caregivers when the next vaccine is due according to the schedule specified in the appendix.

The core features of the application are;

* The application will contain 3 main registers -Woman register, Child Register and the Field and Monitoring register. The functions for each of these are explained in detail below.
* Notification alerts (highlighted colored rows on the User interface of the application) would be generated on due vaccinations for both woman and child registers as specified in the mock ups. These are further explained in the next section.
* Data entry would be done offline using enketo forms. This data will be synced once connectivity is available.

**Client Identification:**

Identification of all beneficiaries/clients (child and woman) for vaccinator registry would be via QR Code.

* On enrollment directly into Vaccine Registry i.e. if there is no referral, client would be assigned a pre-printed Vaccination Card with QR Code by vaccinator.
  + This QR Code would be scanned and ID would be saved along with other data submitted for client.
* When an LHW would visit the house, she would simply scan QR Code and fetch information of immunization registers from Vaccinator Registry on OpenSRP server.
* Once enrolled client can be identified easily by scanning the QR Code ID on next followup visits to center.

# Child register

Child Register aims to enroll every child under 5 years coming to vaccination center to track the vaccination schedule given [here](https://docs.google.com/spreadsheets/d/1W-XO3Yw5DFkiY_6XjERCefGwxTWRItGY9Rr5DOhZodI/edit#gid=1829570560).

## **Enrollment**:

When a child not yet enrolled visits center he would be enrolled into OpenSRP via enrollment form specified [here](https://docs.google.com/spreadsheets/d/1usAh3zi_QbrMi5jNjtAauQvWdVh5thJ1k6HqzPVz1QU). As mentioned above in identification section QR Code ID would be scanned first to open the corresponding form or actions for that ID.

* There is a high chance that child have received vaccines before enrollment from non-OpenSRP centers or hospitals, hence, enrollment form allows vaccinator to enter retro data along with current immunization details.
* Along with other demographic details, mobile contact info and reminder approval from child`s caregiver would be captured to optionally enroll child into sms reminder system for next vaccine`s SMS reminders.
* Once successfully enrolled and data is synced with server, child would be automatically enrolled into next applicable vaccine`s sms reminder schedules if reminder approval from caregiver was found true.
  + Enrollment into reminder system is optional and child can opt out of reminders on next followup visit.
  + Sms reminder would be 1 day before, on day, and 6 days after vaccination due date (if child failed to show for scheduled vaccine) specified by schedule [here](https://docs.google.com/spreadsheets/d/1W-XO3Yw5DFkiY_6XjERCefGwxTWRItGY9Rr5DOhZodI/edit#gid=1719494816).
  + Next reminder for vaccine would be cancelled immediately whenever server receives vaccination details of that vaccine.
* Vaccinator would also be registered in notification alerts for child`s next due vaccine. The notification alerts would be a highlighted row in register view with different colors for different time remaining in vaccination.
* UI for data display would be according to the mockups shared by team which could be found [here](https://drive.google.com/a/irdresearch.org/file/d/0B6FoJQBPvu7eQUhPRVJ6VVl4RzQ/view).

## **Followup**:

When child turns up for next vaccine, vaccinator should be able to search data for child and/or open followup form directly by scanning QR Code ID.

**Case 1: Child data exists on device:**

* Child demographic and vaccination history would be pulled from device database and followup form [here](https://docs.google.com/spreadsheets/d/1CL7k7rSSj29EKtPlgsQspmUIYk3l5NoLeSkEWncqZ9I/) would be opened with already-received vaccines disabled.
* If the caregiver complains about receiving messages, he/she would be able to opt-out of receiving messages for future vaccinations.
  + Incase caregiver chooses to opt-out, no SMS reminder would be scheduled and all currently-scheduled reminders would be cancelled
  + If caregiver had chosen to opt-out of reminders in earlier visits and chooses to opt-in again, reminders for all due vaccines would be created again.
* Once submitted and synced with server child would be enrolled into SMS reminder schedules for next due visit
* Vaccinator would be registered into notification alerts schedule for next due vaccinations of child.

The process would keep repeating for all next followups of this category

**Case 2: Child data does not exist on device:**

* This a case when data does not exist on device but child had been enrolled on a center registered with OpenSRP i.e. has an EPI Card with QR Code ID issued by OpenSRP vaccinator at other center.
* In such situation, vaccinator will scan the QR Code ID on card and app will fetch child data from server.
  + On successful data fetch app would display option to view details or to open followup form for vaccination details according to followup process flow specified above i.e. case 1.
  + In case when no internet connectivity is available app opens a followup form specifically designed to capture data for birthdate, vaccination and reminder approval only.
    - Validations on schedule would not block data entry and trust accuracy of info provided by vaccinator.
  + Upon getting internet connectivity back app would sync the data along with other records and fetches all previously recorded data for such cases.
  + Records submitted without validations would be flagged to be reviewed by admin for comparing and approving the accuracy of information provided by vaccinator.
* Caregiver would again consent for SMS reminders for next vaccine
  + Incase caregiver chooses to opt-out, no SMS reminder would be scheduled and all previously scheduled reminders would be cancelled
  + If caregiver had chosen to opt-out of reminders in earlier visits and chooses to opt-in again reminders for all due vaccines would be created again.
* Once submitted and synced with server child would be enrolled into SMS reminder schedules for next due visit
* Vaccinator would be enrolled into notification alerts schedule for next due vaccinations of child.

In cases where child record is present on multiple centers, notification alerts would be created for all vaccinators who have accessed child record.

Enrolled children would automatically be marked as closed on reaching 5 years of age unless have vaccinations still due or death reported.

# Woman Register

Woman Register aims to enroll all women aged 15-45 years into TT vaccine schedule specified [here](https://docs.google.com/spreadsheets/d/1W-XO3Yw5DFkiY_6XjERCefGwxTWRItGY9Rr5DOhZodI/edit#gid=247193745). Women are also referred by doctors to receive TT vaccine during pregnancy.

## Enrollment:

When a woman visits center for TT vaccine and not enrolled yet, she would be enrolled into OpenSRP via enrollment form specified [here](https://docs.google.com/spreadsheets/d/1MD57qul6XXAjNMUI91Ms1d8mwI0GLfF4xXrtH69wVkQ/). As mentioned above in identification section QR Code ID pre-printed or LHW provided, would be scanned first to open the form for that ID.

* Incase when woman already has received few of her vaccines vaccinator would enter retro data along with current immunization details.
* Once successfully enrolled and data is synced with server, vaccinator would be enrolled in notification alerts for woman`s next due vaccine.
  + The notification alerts would be a highlighted row in data display grid with different colors for different time remaining in vaccination.
* UI for data display would be according to the Woman section in mockups shared by team which could be found [here](https://drive.google.com/a/irdresearch.org/file/d/0B6FoJQBPvu7eQUhPRVJ6VVl4RzQ/view).

## Followup:

When woman turns up for next vaccine vaccinator should be able to search previous data and/or open followup form directly by scanning QR Code ID.

**Case 1: Woman data exists on device:**

* Woman demographic info and vaccination history would be pulled from device database and followup form [here](https://docs.google.com/spreadsheets/d/1WzqQZ_1fk6C2XV737fO4hCUAk8RFXPmBdiTJI-SsSQk/) would be opened with received doses disabled.
* Once submitted and synced with server vaccinator would be enrolled into notification alerts schedule for next due vaccinations of woman.

The process would keep repeating for all next followups of this category

**Case 2: Woman data does not exist on device:**

* This a case when data does not exist on device but woman had been enrolled on a center registered with OpenSRP i.e. has an EPI Card with QR Code ID issued by OpenSRP vaccinator at other center.
* In such situation, vaccinator will scan the QR Code ID on card and app will fetch data from server.
  + On successful data fetch app would display option to view details or to open followup form for vaccination details according to followup process flow specified above i.e. case 1.
  + In case when no internet connectivity is available app opens a followup form specifically designed to capture data for vaccination only.
    - Validations on schedule would not block data entry and trust accuracy of info provided by vaccinator.
  + Upon getting internet connectivity back app would sync the data along with other records and fetches all previously recorded data for such cases.
  + Records submitted without validations would be flagged to be reviewed by admin for comparing and approving the accuracy of information provided by vaccinator.
* Once submitted and synced with server vaccinator would be enrolled into notification alerts schedule for next due vaccinations of woman.

In cases where woman record is present on multiple centers, notification alerts would be created for all vaccinators on who have accessed her record.

Enrolled women would automatically be marked as closed on reaching 45 years of age unless have vaccinations still due. But these cases would also be automatically closed on reaching age of 50 years or on death report.

# Field and Stock Monitoring register:

## Daily Summary:

At day end vaccinators fill a daily vaccine stock usage form and provide information on daily usage of vials and wasted vaccine doses Vaccines that have been consumed are automatically pre-populated from the data entered for clients. The form is present [here](https://docs.google.com/spreadsheets/d/1eE-MhknNfWkdQmMknUAS-BNOtNTzFrpfY3mU9PWqg-A).

## Monthly Summary:

At month end vaccinator also has to submit a form for stock position i.e. vaccines inhand, inventory received etc to allow system to be able to determine the status and usage of current stock. Again, the vaccines consumed would be automatically filled and the vaccinator would need to fill stock received and stock in hand.The form is [here](https://docs.google.com/spreadsheets/d/1eE-MhknNfWkdQmMknUAS-BNOtNTzFrpfY3mU9PWqg-A).

# Schedule reminder system:

As mentioned in enrollment and followup process above in Child and Woman Registers, there are two types of scheduled alerts.

**1- Sms reminders**

For caregivers of child for next due visit

* Scheduled automatically via Motech JSON Sheduler whenever child enrollment or followup data is submitted and synced with server.
* The data would be pushed into OpenMRS and would use Smstarseel module to manage SMS. This requires :
  + Creating JSON schedule documents for vaccines (Penta 1/2/3, Measles 1/2) with corresponding logic.
  + Modification of existing Smstarseel module of OpenMRS to be able to handle complex logic of schedules.

Enhancements in Schdeule tracker module of OpenMRS to be able to push data to Smstarseel for SMS handling.

**2- Notification alerts**

For vaccinators on client app as highlighted sortable records for due vaccines of children and women

* Scheduled automatically for vaccinator to be able to see highlighted records on his mobile client app and details of whose vaccine is due most recently. These are for children and women vaccinations.
* This is also maintained via Motech JSON schedules and requires JSON schedule document for each vaccine (BCG, Penta 1/2/3, OPV 0/1/2/3, PCV 1/2/3, Measles 1/2, TT 1/2/3/4/5).

# Barcode Scanner:

Since Identifiers are maintained via QR Code as specified above in Identification and Registers section, the app would require:

* Enhancements in mobile client to be able to scan QR code
* Extending search to be able to scan and search QR Code ID
* Enhancing mobile client code to be able to search on server and fetch and maintain data from other centers,
* Enhancement in mobile client core to temporarily log and sync records which had not been verified with server due to internet connectivity issues.

# Reporting:

Although all reporting would be done by science team but it would require a training of OpenMRS reporting module. IT team would provide services for complex reports. Team should identify reporting needs by 15th Oct so that IT team can analyze how much work is required for reporting from IT side.

# Deliverables

* Child Vaccine Register with view specified by Mockups
* Women Vaccine Register with specified by Mockups
* Field and Stock Monitoring register specified by Mockups
* Schedule notification alerts generated for due vaccines for vaccinator
* Schedule sms alert generated for due vaccines for caregivers
* Complete log of sms received on device by caregivers or anyone else
* Sms received or sent would be viewable and searchable on web app
* Barcode Scanner identification and search

# Acceptance criteria

The final application will be ready to be deployed by the deadline specified by the donor.

* The User Interface of the application will look like the Mock ups specified by the science team.
* The development team will provide guidance and training for, but not limited to, reporting schedules.
* The development team will provide weekly updates to the science team on their progress.
* Printable permanent register. Also printable annual report that vaccinators submit at the end of the year. This is the requirement for the government EPI.
* Age Appropriate coverage of vaccinations should be easily extractable for data analysis.

# Project exclusions

* Science team would be trained on how to create reports in OpenMRS and reporting would be handled by team itself.
* No change in UI of [OpenMRS](http://46.101.51.199:8080/openmrs/) would be done (This means that the OpenMRS system would be adopted on as is basis. UI color, layout would not be customized)
* Science team manages QR code creation and management.

# Constraints

# Assumptions

Following documents would be finalized and provided by Science team on time (by 1st Oct) and there would not be any changes after final approval

* Xlsforms with complete skip logic and constraints and concept mappings embedded into xlsform or concept requested to Andy.
* Final workflow document showing the field process and data flow from forms to registers
* Final mockups
* Final schedule documentation
* ID scheme for vaccinator, children and women should be finalized

Final reporting template would be provided by Oct 15.

No integration with any external system would be done.

No changes would be done in any of the above

All data entry for locations and team members would be done by Science team itself.

IT would get timely and final response on queries