Managing High Risk Pregnancies in Himachal Pradesh

SEWA – Systems E-Approach for Women at Risk

PROCESS DOCUMENT

Contents

Acronyms

ANC	Antenatal Care
ASHA	Accredited Social Health Activist
ANM	Auxiliary Nurse Midwife
BPCR	Birth Preparedness and Complication Readiness
BRGF	Backward Regions Grant Fund
FLW	Frontline Worker
FRU	First Referral Unit
HMIS	Health Management Information System
HRP	High Risk Pregnancy
HP	Himachal Pradesh
MCH	Maternal and Child Health
MOHFW	Ministry of Health and Family Welfare
MO	Medical Officer
NHM	National Health Mission
OPD	Outpatient Department
PMSMA	Pradhan Mantri Surakshit Matritva Abhiyaan
RMNCHA	Reproductive, Maternal, Newborn, Child and Adolescent Health
SUMAN	Surakshit Matritva Aashwasan
SEWA	Systems E-Approach for Woman at Risk
UI	User Interface
USAID	United States Agency for International Development
WHO	World Health Organization

Executive Summary

High Risk Pregnancies (HRPs) are cases where pre-existing or newly developed conditions put the pregnancy at increased risk of complications. Early identification and appropriate management (Including referral) of such condition is the key to safety of mother and to the newborn's survival. In absence of any pre-existing HRP implementation model in the country, USAID *Vriddhi* in collaboration with the Government of Himachal Pradesh developed a new digital HRP management model called 'SEWA – A System E-approach for Women at risk'. The development and pilot of SEWA demonstrates a sustainable and scalable model for early identification and line listing of high-risk pregnant women with appropriate referral and increased engagement with health care worker using a digital tool in the form of android app.

SEWA was implemented as a pilot intervention in two community development blocks of district Chamba which is a mountainous terrain with limited geographical access and reported low HRP identification of 3.5% in the year 2018-19. The key steps in development and pilot implementation of SEWA included - finalizing protocols for identification of HRPs, defining process and roles, mapping health facilities setting up the communication loop, and development of digital solution. The digital app, used by ANM and program officers, tracked pregnant women for a year and recorded ANC visits, referrals, and birth outcomes.

The use of digital solution for HRP was not only a technology upgradation – it was intended to enhance operational scope, improve efficiency, and ensure greater equity in the delivery of MNCH services. In addition, the digital solution seems to be easier and sustainable as the ANMs were already using digital tool 'Anmol' (ANM online) tablets provided by government for their other work.

The intervention year reflected a rise in identification of HRP to 27.9%. Total of 1340 high risk pregnant women were identified. A sum of 2559 conditions were tagged to the identified 1340 women categorized into current pregnancy (81%), previous pregnancy (16%), and any existing chronic illness (3%). The application recorded 53% outcomes for HRP with digital birth preparedness plan prepared and shared with the pregnant women and ASHA by text message for compliance. For referral and referral compliance, the text message was sent by SEWA app to Pregnant Women (PW) and ASHA for compliance to referral visit. Majority of women who required urgent referral accessed referrals. Out of total 405-line listed PW with risk condition requiring referral, the application recorded 332 referrals for specialist care. Thus, the recorded appropriate referral was 82%.

The SEWA application is a feasible and sustainable solution to complement the competency of health care providers for early identification of high-risk conditions and reduce the burden of preventable unprecedented deaths around the time of birth.

Background

Pregnancy is a natural, physiological process and yet, nearly 32,000 women die annually in India during pregnancy and childbirth. High Risk Pregnancies (HRPs) are cases where pre-existing or newly developed conditions put the pregnancy at increased risk of complications. Early identification and appropriate management (Including referral) of such women is key to their safety and to the newborn's survival.

Antenatal care (ANC) is a potential opportunity for screening, diagnosis, health promotion and disease prevention among pregnant women. The Ministry of Health and Family Welfare (MoHFW) recommends at least four ANC visits – for routine examination, health promotion as well as possible risk identification, stratification and management. Thus, provision of quality ANC is important for maternal and fetal well-being. However, the NFHS 4 (2015 -16) report shows low coverage of ANC as below:

- On an average, only one in five pregnant women (21%) utilized full ANC services
- There was wide variation in ANCs across states - from as low as 2.3% to almost two-thirds (65.9%)
- Overall, half of the pregnant women (51.6%) had 4 or more ANC visits, less than one-third (30.8%) consumed IFA tablets for at least 100 days, and nine out of 10 (91.1%) had one or more doses of tetanus toxoid.

- Full ANC utilization varied based on place of residence, caste and maternal education.

Hence, considering the unpredictable nature of course of pregnancy and childbirth, early identification, timely referral, and management of High-risk pregnancies is of high importance to reduce maternal and neonatal mortality.

The Government of India initiated the Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA, 2016) and the Surakshit Matritva Aashwasan (SUMAN) to strengthen antenatal care. In particular, SUMAN seeks to 'end all preventable maternal and newborn deaths' and 'promote a positive birthing experience' by providing assured, dignified and respectful delivery of quality healthcare services at no cost. It also has zero tolerance for denial of services to any woman and newborn at a public health facility.

Considering the challenges of low ANC, limited capacity of frontline workers and snow-bounded terrain, *Vriddhi* worked with the government of Himachal Pradesh to develop a new model to identify and specifically manage HRPs. Since there was no pre-existing HRP implementation model in the country, this initiative, implemented with support of the state government, can be a model for other states as well.

A SEWA training session in progress

Concept Development and State Acceptance

With the objective of strengthening ANC for timely identification and appropriate management of HRPs, the state of Himachal Pradesh identified few gaps in their ANC practices. The major gap was low capacity of Frontline Workers (FLW) i.e. Auxiliary Nurse Midwives (ANMs) to identify and 'line list' HRPs. So, the question was how to improve line listing of such women at primary healthcare level.

The United States Agency for International Development (USAID) supported *Vriddhi* Project decided to work with the state's National Health Mission (NHM) to develop a mechanism that will facilitate line listing of HRPs by ANMs.

Initial interactions with FLWs brought out that poor identification was largely due to lack of consensus on nature and type of high-risk conditions during pregnancy. Further, low rates of antenatal contacts, 'loss to follow up' of such cases and poor engagement with pregnant women were other bottlenecks at field level. As a result, due to incomplete line list, the officer- in charge were not able to provide adequate support and ensure preparedness at higher level of healthcare facility.

Based on this understanding, *Vriddhi*, together with the state government, developed a Concept Note (In September 2017) to enhance capacity of FLWs and aid timely identification of HRPs. The concept was readily approved, and pilot was initiated in one block - Karsog (District Mandi) from December 2017 to September 2018. What was initially an excel based tool was converted to a digital application in 2019 and became the "Systems E-approach for woman at risk" (SEWA) initiative.

Desk Review of HRP and Development of Tool

In order to have an understanding of existing pregnancy conditions, the Health Management Information System (HMIS) data of FY 18-19 (April 18 – March 19) was used as baseline. The data is recorded in HMIS from all levels of facilities for reporting purposes. The baseline data of two blocks of district Chamba was found to be significantly low in HRP identification – only 3.5% as shown in Table-1:

Table 1. Baseline HMIS data of two blocks district Chamba

HMIS DATA OF BLOCK PUKHRI AND SAMOTE, DISTRICT CHAMBA OF FY 18-19 (APRIL 18 – MARCH 19)	
Total Antenatal check-ups done	4,104
Total High-risk pregnancy cases identified	145 (3.5%)
Maternal deaths	1
Still Birth	65
Neonatal death	18

Based on desk review and other published evidence, the *Vriddhi* team developed an algorithm containing high risk conditions which would help FLW in identification and categorization of HRP. This was an excel based file. The algorithm had high-risk conditions based on MoHFW and World Health Organization (WHO) guidelines that can impact current pregnancy to varying levels. Approval on technical content of the algorithms was sought from the state government of HP.

The main responsibilities of peripheral health care workers i.e ANMs were clearly defined as:
i) identification,
ii) categorization of HRPs and
iii) appropriate referral to higher facility for appropriate management.
Now, with the help of these HRP algorithms, the ANM could easily identify, categorize and prepare line list of HRP women. These algorithms guided ANMs in decision making on whether to refer the HRP cases to PMSMA forum or directly refer to higher facility in a timely manner.

However, these excel based algorithms addressed only one aspect of the problem i.e. identification and preparation of HRP line list. The other issues – low engagement with pregnant women, low numbers of antenatal contacts and loss to follow up mainly due to snow bounded terrains – demanded a more comprehensive, innovative solution.

In 2019, the state government approved to upgrade from a basic excel tool to a full-fledged 'digital solution'. This digital solution also aimed to synergize with the Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCHA) India strategy that prescribes various mechanisms to translate policy into action for improved efficiency of health systems.

Need for a 'Digital' Solution

Use of digital technology is rising in healthcare for greater efficiency and effectiveness. Promoting digital solutions is in line with the National Health Policy 2017 which commits highest level of health and well-being for all. The policy lays significant emphasis on leveraging digital technologies to enhance efficiency and effectiveness of healthcare services. NITI Aayog also promotes National Digital Health Blueprint, to adopt digital technologies holistically.

The use of digital solution for HRP was not only a technology upgradation – it was intended to enhance operational scope, improve efficiency and ensure greater equity in the delivery of MNCH services. The use of digital application technology ignores the natural challenges

ANM entering details of pregnant woman in the facility center Cheema, HP

posed by the snow bounded geographical terrains and took advantage of the rising number of mobile users of the area. In addition, the digital solution seems to be easier and sustainable as the ANMs were already using digital tool 'Anmol' (ANM online) tablets for their other work. During the COVID-19 pandemic, it has served the additional purpose of being able to track and support HRPs even without physical contact.

Objectives of Implementation Support Model

- Early identification and line listing of high risk pregnant women
- Timely and appropriate referral of high risk pregnant women for further management
- Increase engagement of high risk pregnant women and FLWs

- Improve ANC programme management with special focus on HRP

The support under this model covered a range of functionaries and beneficiaries as shown in below table.

Table 2. Range of functionaries and beneficiaries

FOR HEALTH MANAGER	FOR FRONTLINE WORKER	FOR HIGH-RISK PREGNANT WOMEN
• Improved ANC programme management • Improved quality of data of high risk pregnancies	• Able to identify and provide customized women centric care • Easy data entry and interpretation of results • Facilitating decision making • Appropriate referrals • Increased follow ups with HRP women • Quick complete data sharing with office bearers for improved action	• Early identification of HRP condition • Referral to an appropriate facility • Increased engagement through SMS based reminders • Better experience of care through regular support from frontline workers

Development of Digital Solution – SEWA Mobile Application

The steps in developing the SEWA App were:

STEP 1: Finalizing protocols for identification of HRPs at sub-centers and PMSMA clinics i.e. development of standardized list of high risk conditions with its trigger values.

STEP 2: Defining process and roles for tracking HRPs – ANMs role in identification and line listing, Accredited Social Health Activist (ASHA) to follow up and mobilize families for follow up actions and visits to health centers, birth preparedness planning, roles of line managers from block to state level.

STEP 3: Setting up the communication loop connecting community level to facility to referral center and back, support and review mechanisms.

STEP 4: Documentation kit consisting of PMSMA register and HRP register for health facilities (MCH centers) and sub-centers was developed. PMSMA Outpatient Department (OPD) slips, birth preparedness planner and HRP sticker to be pasted on MCP Card were developed. The steps from 1-4 were carried out between January – August 2019.

STEP 5: Sensitization and capacity building of stakeholders (September 2019) The entire process was piloted in 2 blocks of Chamba, Himachal Pradesh. Significant steps included sensitization of all stakeholders on the significance of identification and management of HRPs; capacity building of service providers to conduct essential tests; creation of consolidated line lists of HRPs at sub-centers including those identified at any point of contact including regular ANC clinics at sub-centers, health facilities or PMSMA clinics; and setting up tracking mechanisms at community with linkages to district and state levels. (Annexure 1: Agenda of training.

STEP 6: Data collection and initial results (October 2019 onwards) - Linear tracking of identified HRPs till outcome (Delivery) and screening for additional risks especially for gestational diabetes mellitus and hypothyroidism was done for all pregnancies.

STEP 7: SMS reminders (October 2019 onwards) - Every pregnancy was screened for risk and HRPs were line listed, paper trails were created to track interventions and outcomes of HRPs and stakeholders from ASHAs at the community to ANMs to referral points to district and state level authorities were engaged in the process. But the process needed further streamlining for the model to become viable and scalable.

How the android application SEWA works:

Step A: Download application on android phone from Google play store where the app is freely available.

Step B: The frontline workers follow the algorithm to line list, track and follow up HRPs from pregnancy till outcome. Figure 1 shows the screenshot of dashboard of ANM when she logs in.

Step C: From here, the ANM starts making a new entry of any pregnant women. During interaction, the ANM is able to assess risk conditions and does risk categorization following a specially developed algorithm. The app helps and prepares a 'line list' of high risk pregnant women by identifying high risk conditions, doing risk categorization, and helping the FLW (Here, ANM) to decide the antenatal care pathway.

Figure 1: Screenshot of ANM dashboard

The algorithm showing the Antenatal Care pathway is shown in Figure 2 below.

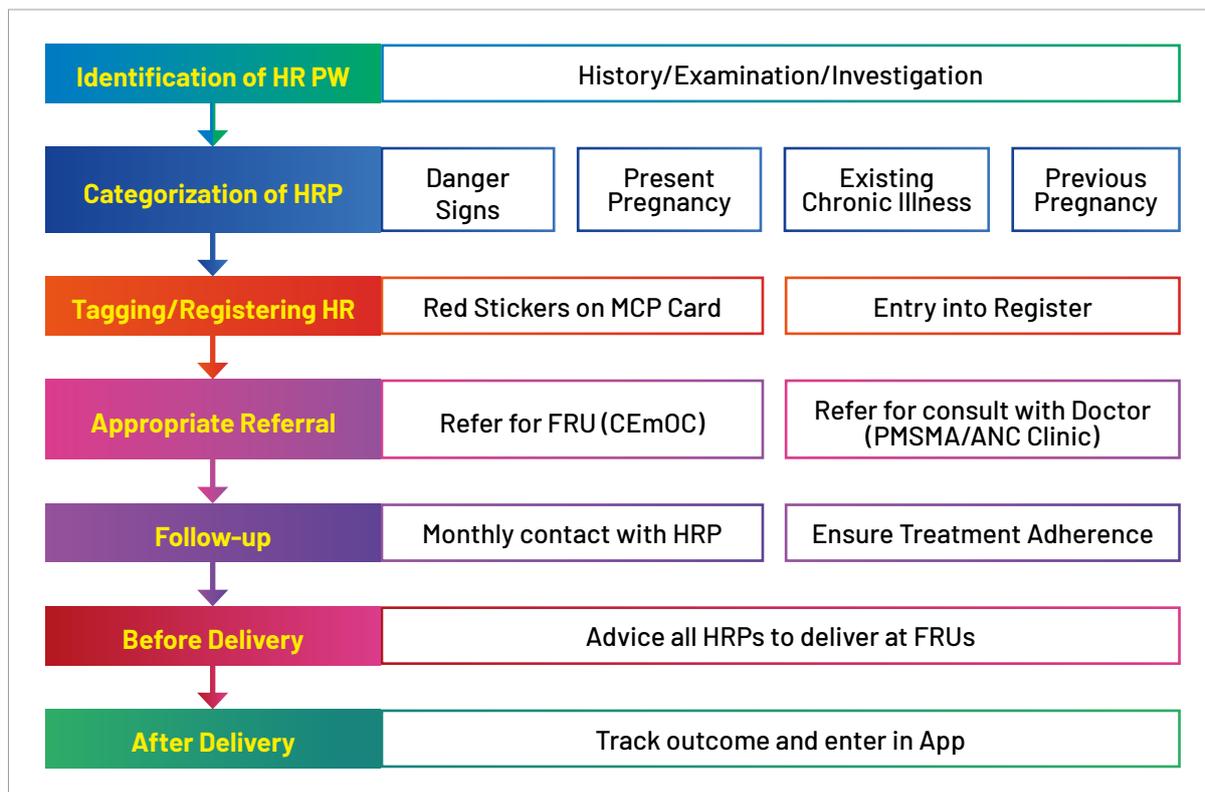**STEP D:** How the application does risk categorization:

Figure 2: Antenatal Care Pathway Algorithm

As the history taking is a first and significant step of any antenatal contact, the SEWA application utilizes this step to identify and categorize high risk pregnancies. The application follows a risk categorization algorithm which has three main risk categories:

• **Current Pregnancy Complications** based on general physical examination and obstetric examination. (Shown in Figure 3)

• **Pre-Existing Chronic illness** based on history or record review of the case (Also called as previous medical history)(Shown in Figure 3)

• **Previous Pregnancy Complications** - Based on history and records of previous pregnancy (Also called as Obstetric History) (Shown in Figure 3)

• **Danger Signs Category** – This category is not part of the algorithm as this category has all emergency risk conditions which demands rapid assessment and management.

The previous pregnancy complication, and Pre-existing chronic illnesses are noted in the application which are referred as 'Tags'. Tags for these conditions are constant and once given to any PW, calls for further evaluation by a higher expert (MO/ Specialist). However, tags for Current Pregnancy Complication are added during examination of the PW. The examination includes general physical and abdominal examination. These tags demand higher consultation and verification through higher lab tests for which the PW is referred to an appropriate level of facility or PMSMA as per the gestational age.

Figure 3: Risk Categorization using SEWA HRP Application

Step E: At the end of the contact, the SEWA application self generates the total number of tags given to any woman and depending on the risk conditions, helps the ANM decide whether to send the PW to PMSMA or higher facility directly for specialist care.

Step F: To close the loop, ensuring the high risk PW has consulted the higher facility, the app sends sms notification (Shown in Figure 4 below) to the pregnant woman and ASHA of her area as a reminder to regularly attend antenatal follow up. This helps in increase

ANMs under training for HRP app in Shimla, Himachal Pradesh
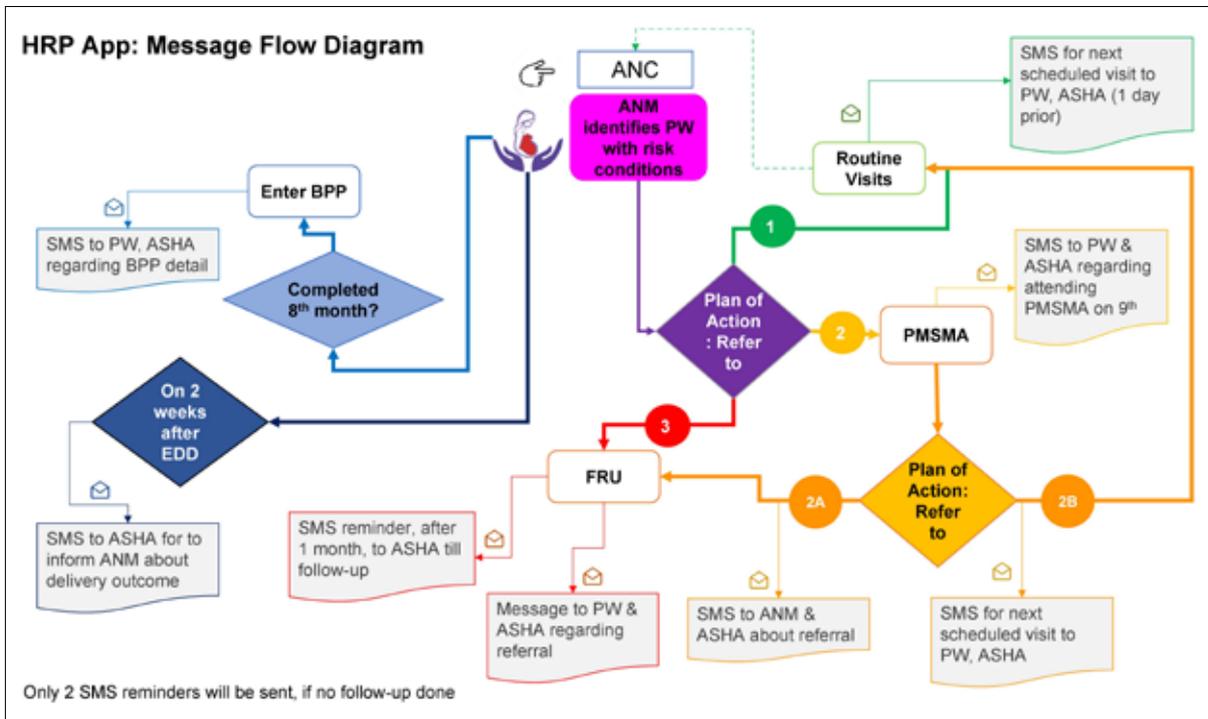
Figure 4: Message Flow Diagram

engagement of ASHA with PW and her family members and indirectly helps to improve the postnatal practices. The figure 4 below is showing the flow of messages to ASHA.

Step G: At the end of each month or whenever required, user can generate total line list and share with office managers for further action and follow up as shown in figure 5.

Summary of Steps: All the steps A – G have been shown in figure 6 below.
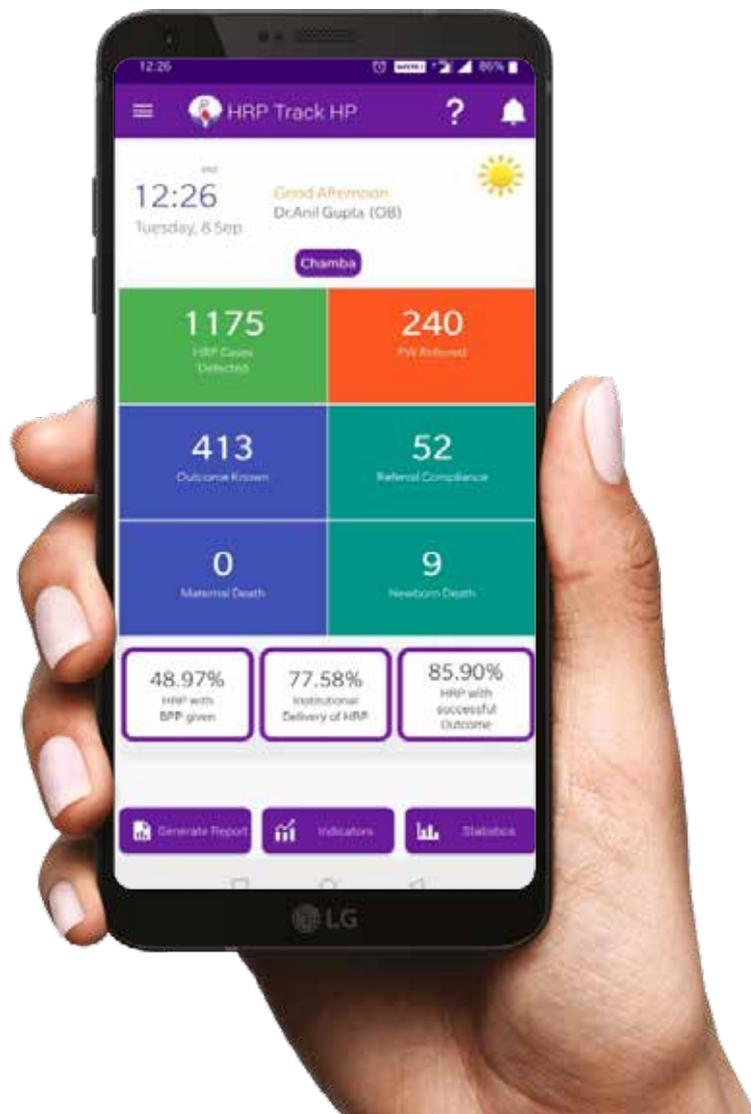
Figure 5: Shows the screenshot of office bearer

How SEWA Application Works

PW for Antenatal check up at health facility → FLW-Fills essential contact details with User Interface of PW → Risk Identification and categorization based on standard algorithim → • Routine Care
• HRP referred to PMSMA/FRU depending on risk status

SEWA Dashboard
• All HRPs details (Type, area, period, BPCR Plan)
• Cases due for follow-up
• Follow up ensured
• Deliveries outcomes
• Analytics based on above

Timely Reviews, Successful maternal and neonatal outcome

• Links PW with PMSMA and FRU
• SMS to ASHA and PW in regional language about follow up care and next scheduled visit
• ASHA facilitate referral visit
• Safety messages and facility linkage, if symptoms of COVID-19

Figure 6: Flow diagram representing how SEWA App works

Features of the SEWA Application

The specifications for the SEWA App were made considering the ground situation and peculiarities of the health eco-system. In particular, the following aspects were considered:
• Limited capacity of FLWs to identify high risk pregnancies
• Lack of consensus on nature and type of high-risk factors
• Low birth preparedness plan preparation
• Poor decision making causing inappropriate/ inadequate referrals
• Low internet availability in the snow bound terrains leading to offline feature in the App
• Need to collect quality data for timely generation of report for action by FLW

Designed with the User in Mind

The SEWA App was made with the User Interface (UI) similar to the file / folder / register used by the healthcare workers. Features specific to their needs were incorporated for example, they need to communicate / call the Pregnant Woman / High Risk Pregnancy so there was direct dial to call feature in the application to ease their work and save time.

The users were consulted for software design and adaptations were made to reflect their practices and convenience. For example:
• Health workers identify the Pregnant Women by face and name rather than a random number - hence prominence given to these features to assign individuality and character.

- For reporting purposes, inputs were taken from administrative and managerial user groups on the type of reports and filters they would need to generate meaningful information.
- RCH portal and its usefulness was the crux of the application - and the User Interface & fields were designed intricately to replicate, and yet enhance, the REGISTER system being used by the healthcare workers on the ground. Field headers were intentionally kept same as the register headers.
- The button colors and layouts were made considering the visual cues used by the FLW routinely.
- Direct dial to call feature in the application - to ease their work and save time.

Security and Privacy of Data

This application is designed to work on android smart phones and tablets. Web version of application is also available which enables the user to use the application in all browser, computer and also through browser of android and iOS mobile phone and tablets. The App size is 18.5MB and the user data synced from server is stored in internal memory.

The App was made considering high level of security and privacy. For instance:

- It used the User Interface like a file/folder/register used by the FLW to maintain privacy of sensitive information.
- There was SSL certificate for the web version, encryption of local database on the device and encryption with masking of data in the backend.
- There was IP blocking and single-point access to the database.
- The app allowed only One Point of Contact approach for the addition of new users to the system.
- Two factor authentication was enabled for access to the server and other critical components.
- A separate Admin Module was made for security and control over users and accessibility.
- There was mapping of each user to their geographical location which helps in follow up.
- Use of basic tools, no external plug-ins and minimum use of APIs to ensure minimal upgrades and low maintenance
- Cross-platform syncing of data to ensure there is no loss of operability.

Geographical Area Selection for Pilot Testing

For pilot testing, the 2 blocks (Pukhri and Samote) of aspirational district Chamba, Himachal Pradesh were selected in consultation with state NHM. District Chamba is one of the aspirational district identified by NITI Ayog, Government of India.

In terms of backwardness, the Ministry of Panchayati Raj named Chamba one of the country's 250 most backward districts (In the year 2006). District Chamba is one of the two districts in Himachal Pradesh currently receiving funds from the Backward Regions Grant Fund Program (BRGF), GoI as well. Besides all this there are challenges of accessibility to health services due to hilly terrains which remain snow bounded during winters. Distinctly and far located from state headquarter leads to less vigilant and monitoring by state officials.

The two blocks - Pukhri and Samote thus selected from district Chamba had low number of total antenatal contacts, poor detection of at-risk pregnancies and high number of maternal deaths and still births (As already mentioned in Table 1 above.)

The quality of antenatal care coverage contributing to poor identification of at-risk pregnancies and low rates of safe delivery of district Chamba is shown in Table 3 below (NFHS -4). The table clearly shows low institutional births, poor early registration at first trimester and high rates of anemia in pregnant women.

Table 3. Baseline data of MNCH Coverage in district Chamba, HP, India in 2015-16

NFHS 4 (2015-16)	CHAMBA	HP	INDIA
1st trimester registration	57.2	70.5	58.6
4 ANC Visits	47.5	69.1	51.2
Full ANC	21.3	36.9	21
Institutional Births	56.2	76.4	78.9
Anemia in Pregnant women (15-49 years)	65.8	50.4	50.3

Details of infrastructure and human resource of pilot sites is mentioned in the below Table 4.

Table 4. Pilot site, Chamba, HP, (Source: district CMO office records 2019)

PARTICULARS	PUKHRI	SAMOTE	TOTAL
Total Population	88,871	142,523	231,394
ANC registered (FY 2018-19)	1,554	2,281	3,835
Civil Hospital	0	2	2
Community Health Center	1	1	2
Primary Health Center	8	12	20
Health Sub-Center	28	43	71
Block Medical Officer	1	1	2
Medical Officer	10	23	33
Health Supervisor	6	7	13
Health Educator	0	1	1
Female Health Worker	19	29	48
Male Health Worker	6	16	22
ASHAs	88	146	234

Pilot Testing, Orientation and Capacity Building

For pilot testing and orientation to the tools, posters and handouts were developed to train the frontline workers. These included guidance on clinical triggers for the risk conditions and actions required algorithms. The focus of the training was on the HRP conditions, essential testing, and the use of App to track pregnant women with risk conditions.

Training was broadly divided in two components:
- **Public Health Training** - including program overview, competency to identify HRP condition, tracking, recording, and reporting
- **Information Technology Training** – including overview of technology being used, competence to use the technology

HRP App training was conducted from 25-27 Sept 2019 in three batches (1-Pukhri block which was held in Chamba, 2 batches for Samote block which were held at Kakira and Samote). A total of 121 Program Officers and health workers (21 – Medical Officers, 96 – Staff Nurses and 4 -Counsellors) were trained in 3 batches. HRP App was launched under chairmanship of Deputy Commissioner, District Chamba.

The participants were trained on using the digital tool and ANMs were asked to do the orientation of the respective ASHAs for the process and messages to PW and ASHA for key reminders such as referral, next visit and birth preparedness plan.

The data collection was initiated immediately after the orientation training. However, initially, fear of losing data, resistance to enter data during rush hour (OPD timings) and some resistance from older FLW to switch from paper to digital mode was felt during the orientation training. The NHM authorities suggested to continue with filling respective registers for a period of initial one month and during this time they should slowly stop filling them. The confidence of authorities in SEWA application from the outset boosted morale of many FLWs.

The offline feature of the application helped the FLW initially to fill data at their ease.

Monitoring and Review

District monthly review meetings chaired by the CMO are the main platform to review the progress of the intervention in two blocks with block medical officers. Further the platform of block monthly review meetings with all the health workers and medical officers of block chaired by the BMO is used to review the progress with all the centers doing the ANC and recording HRP in the application. During these meetings, *Vriddhi* team members supported frontline workers by answering their queries, resolving issues from use of App and hand hold them to improve identification and tracking of every pregnancy. Progress and shortcomings are also reviewed and discussed during these meetings.

Outcomes

RESULTS AND ANALYSIS

Following are the **key achievements** of the HRP program through HRP SEWA Application:

1. There is a significant increase in HRP **identification rate** - from 3.5% (FY 18-19) to 29% (Oct 2019 to Oct 2020) - in district Chamba, Himachal Pradesh.
2. The **risk categorization** under three main categories as per standard protocol was been captured:
   • Current Pregnancy Complications (81%),
   • Pre-Existing Chronic Illness (3%),
   • Previous Pregnancy Complications (16%).

The details of the risk categorization and status of all risk conditions have been presented in Table 5 and Figure-7 overleaf.

Mother Reena Devi holding baby after successful pregnancy period

Table 5. Status of Main Risk Categorized Condition

CURRENT PREGNANCY COMPLICATIONS		PRE-EXISTING CHRONIC ILLNESS		PREVIOUS PREGNANCY COMPLICATIONS	
Low weight / Too thin	352	Tuberculosis	15	Abortion	170
Anemia in pregnancy - cumulative number for moderate (916) and severe anemia (25)	941	Diabetes Mellitus	2	Severe Anemia	14
Pregnancy Induced Hypertension	52	RH negative	42	Pregnancy Induced Hypertension / Eclampsia	8
Gestational Diabetes Mellitus	68	Hypothyroid Disorder	8	C-Section Operation	144
Ante-Partum Hemorrhage / Accidental Hemorrhage	9	Hypothyroid Disorder	4	Still Birth or Neonatal Death	44
Mal presentation	97	Infertility (Under Treatment)	4	Others	32
Hypothyroidism	30	Other	4		
Other	519				
Total	2,068	Total	79	Total	412

HRP Conditions
n=2559

Previous Pregnancy Complications — 16%

Current Pregnancy Complications — 81%

Pre-Existing Chronic Illness — 3%

Left chart legend:
- Anaemiain Pregnancy
- Low Weight/Too Thin
- Mal Presentation
- Gestational Diabetes Mellitus
- Pregnancy Induced Hypertension (PIH)
- Hypothyroidism
- Ante-Partum Haemorrhage (APH) / Accidental Haemorrhage
- Other

Right chart legend:
- Abortion
- C-section Operation
- Still Birth or Neonatal Death
- Severe Anaemia
- Pregnancy Induced Hypertension (PIH)/Eclampsia
- Other

Bottom chart legend:
- Rh Negative
- Tuberculosis
- HypoThyroid Disorder
- HyperThyroid Disorder
- Infertility (Under Treatment)
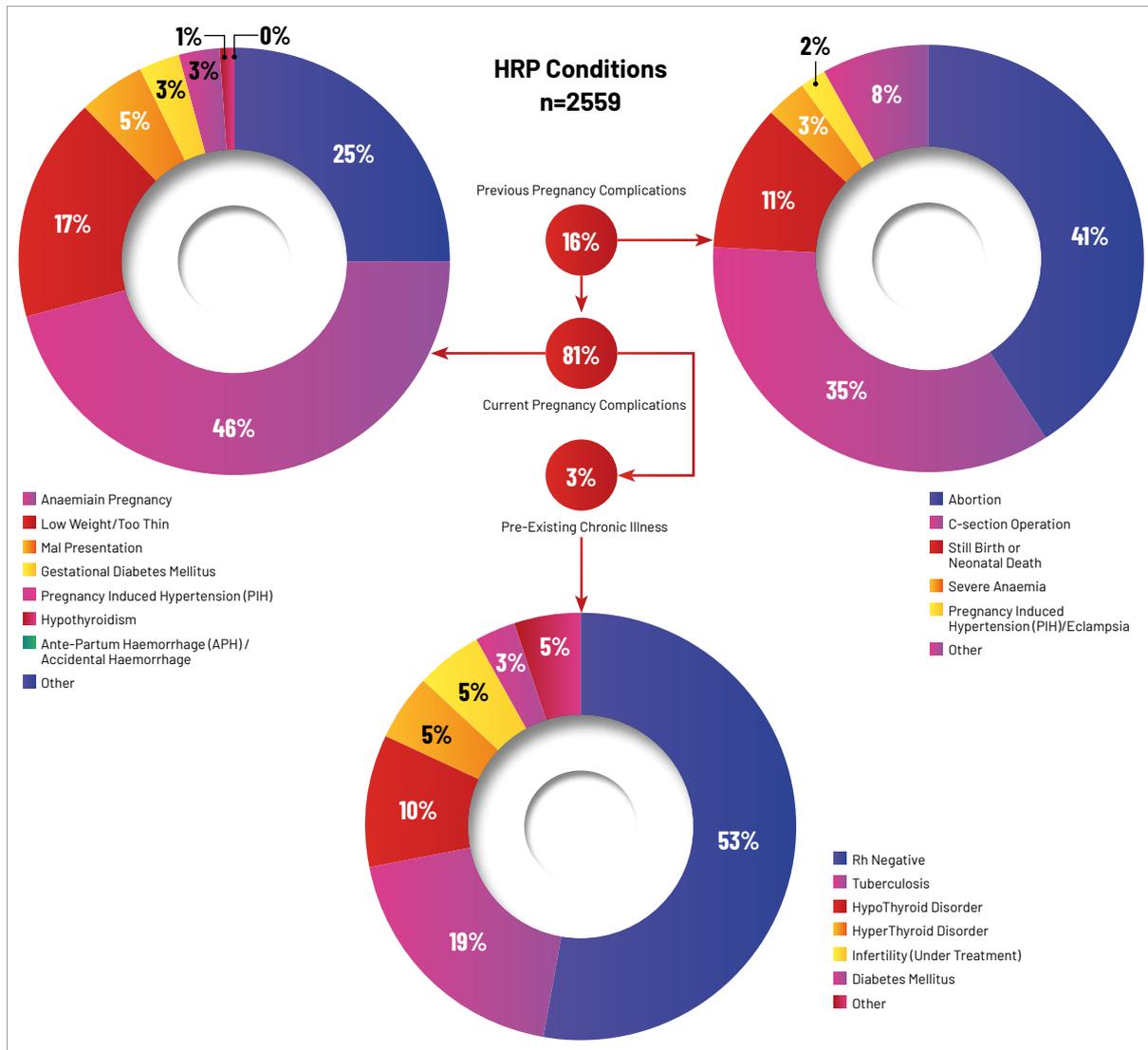- Diabetes Mellitus
- Other

Figure 7: Details of the risk categorization of all three categories

From the 1,340 HRP identified, a total of 2,559 HRP conditions were tagged with an average of 2 conditions tagged to each HRP. From the 2,559 conditions tagged 81% (2,068) were identified as condition associated with current pregnancy and 16% (412) condition were tagged due to previous pregnancy complication and 3% (79) conditions were tagged due to pre-existing chronic illnesses. The summary table of same showing all conditions detected through the SEWA application are shown in Table 6.

Table 6. Summary: Total listed high-risk conditions

CATEGORY	NO. OF CONDITIONS	IDENTIFIED	% OF TOTAL
Current Pregnancy Complications	28	2,068	81%
Pre-Existing Chronic illness	16	79	3%
Previous Pregnancy Complications	16	412	16%
Total	60	2,559	100%

3. **Birth Preparedness and complication readiness** – Preparation of Birth Plan and Complication Readiness (BPCR) is of utmost importance for high risk pregnancies. Appropriate planning of delivery by FLWs with the women and her family is done in the last trimester.

This BPCR Plan contains:
- Expected date of delivery
- Place of delivery
- Details of transport
- Birth companion
- Details of blood donor (If required)

Once the plan is made, details are filled in a paper version of BPCR card (Prepared by Project *Vriddhi*) for reference. The same information is also entered in the SEWA application. So far, the application has recorded **53%** of delivered HRP with **digital birth preparedness plan prepared** and shared with PW and ASHA by text message for compliance.

4. **Referral and Referral Compliance: For referral and referral compliance**, the text message was sent by SEWA app to PW and ASHA for compliance to referral visit.

Out of total 405 line listed PW with risk condition requiring referral, the application recorded 332 referrals for specialist care. Thus, the recorded appropriate referral was 82%.

5. **Line listing of HRP cases:** Since the line list helps in timely review and preparedness, the App generated a line list of 1340 HRP cases from Oct 2019 to Oct 2020. The critical fields are as below:

- Identification details of the pregnant woman
- Sub center/ANM/ASHA details,

- HRP tags given Current Pregnancy Complication, Previous Medical Conditions & Previous Pregnancy Complications.
- EDD
- Complete case record with critical values of Hb, OGTT, BP, Thyroid, USG
- Pregnancy outcome
- Any maternal/newborn complication, or death details

6. **Outcomes**
- Enabled ANM to identify and record 29% new HRP cases compared to 3.5% (Baseline data)
- Risk Conditions and risk categorization was done at primary care level for almost 2559 cases at first contact.
- Line listing of HRP cases: 1340 identified HRP cases from Oct 2019 to Oct 2020. Out of these total HRPs, at the time of writing this report, 49% of HRP cases had delivered. Out of this 49%, successful delivery outcome was recorded for 94.7% of HRP cases and 5.3% were abortion cases. Rest of HRP cases have not delivered yet.
- 53% of delivered HRP with digital BPCR Plan preparation.
- SMS reminders 25,620 resulted in increased engagements (Include messages related to COVID-19)
- Increase in institutional delivery from 57% (HMIS FY 19-20) to 79.2%. Safe delivery achieved for 93.4% of cases (Rest abortion cases)
- Referral: Out of total 405 line listed HRP, 332 referrals for specialist care

Increase in institutional delivery of HRP cases: As compared to 57% of institutional delivery in aspirational district Chamba (HMIS FY 19-20), the app recorded 79.2% institutional deliveries for HRP cases.

Now, with the use of SEWA application, 70% of HRPs delivered in FRU/under specialist care with CEmONC services.

In aspirational district Chamba, Himachal Pradesh, the HRP digital application – SEWA was started after orientation and capacity building of healthcare providers of the region and data collection started. Initially, there were two schools of thoughts – first, it will not be successful due to hilly terrains and then ANM may not be friendly to fill the data in digital application. The initial outcomes showed promising results and captured the prevalence and incidence of high-risk condition of the region. The SEWA app was easy to use and has inbuilt features to keep the data safe, protected, and offline data entry.

Support During COVID-19
## (Layering up of Activities to Reach the Unreached)

This App downloaded in the Anmol tablet of health workers and used as a platform to improve the awareness regarding COVID-19 precautions and infection prevention measures to be taken by FLW as well as PW. Amid COVID-19 pandemic, 374 HRP cases were registered in HRP SEWA App. Using this digital platform, health workers (ASHA and ANM) were sent messages with information on counselling points to be used for high risk pregnant women. The layering of SEWA intervention with COVID-19 specific precaution massages along with the regular intervention massages during COVID-19 time to all the FLW and line listed high risk women ensured reaching the unreached during challenging times.

High risk pregnant women were also approached through text messages to take preventive measures against this disease as shown in Table 7. Downloading of Arogya Setu App was advocated through sharing a link via this app to health workers and high risk pregnant mothers.

Table 7. Target audience and type of message during COVID-19 times

TARGET AUDIENCE	TARGET REACHED	MSG. ABOUT
Pregnant women	972	Preventive measures to be taken by PW during COVID-19
Health worker	362	Counselling to be done at home visits to PW by health worker
Pregnant women	973	Advocacy to download Arogya-Setu App
Health worker	362	Advocacy to download Arogya-Setu App
Health worker	362	Ensuring birth preparedness with facility identification during COVID-19 times
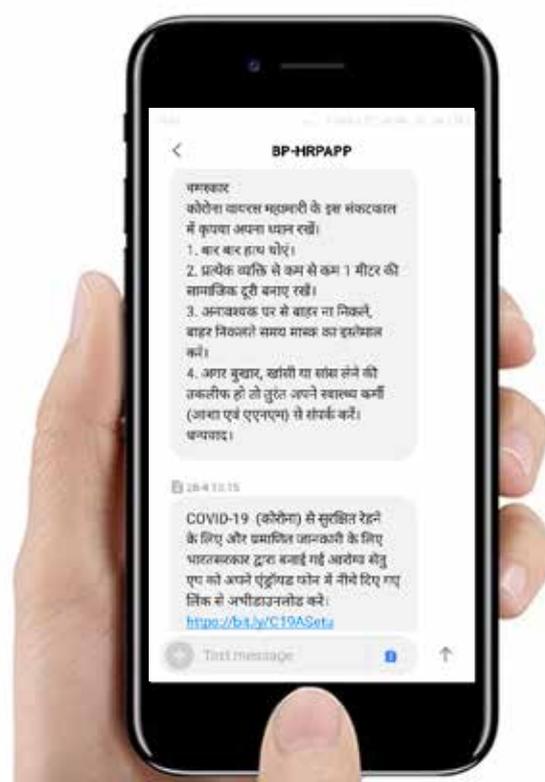
Challenges and Lessons Learnt

1. Initial resistance of FLW to use digital technology and fill data in SEWA application during rush OPD hours posed a challenge. However, SEWA features, cross-platform syncing of data and offline entry helped the situation. The button colors and layouts considering the visual cues used by FLW on their android phones helped them to get accustomed to SEWA quickly.

2. Most FLWs were already using Anmol tablets to record data. Initially, it was thought that the same tablets can be used to download and use the SEWA application. However, non-functionality and non-availability of these tablets among few FLWs was a challenging situation. Few FLWs with no tablets or non-functional tablets were happy to download and use the application on their phones.

3. Poor availability of internet network at the healthcare facility emerged as a key challenge for users (FLWs) to update HRP data, delays preparation of the line list and submitting monthly report.

Way Forward
SCALABILITY AND SUSTAINABILITY

The mechanism of HRP tracking was conceptualized as per the state government's need and desire. The government of Himachal Pradesh has been constantly involved and taken the lead in the process of HRP App development. The budget of ₹13.1 million was proposed in the Program Implementation Plan (PIP) for the year 20 -21 to continue the HRP App interventions. It has also been approved by the Government of India under the National Health Mission budget for the year 20-21. Looking at the success of HRP App in the aspirational district, the Govt. of HP is scaling up further in the entire state. The state government had printed all the tools and formats designed during pilot phases with support of project (PMSMA/HRP register, Birth preparedness plan, HRP stickers) for all districts, and plan to start the manual process of HRP identification & tracking and further to align with the National and State digital health priorities.

Voices From the Field

"The HRP App has helped us to keep a record of all women in our district/block who are under high risk pregnancy, and timely reach out to them. Also, it has guidance on additional knowledge of risk conditions and appropriate management (Place of referrals etc) under our jurisdiction. This helped in tracking every condition of each woman and appropriate measures and referrals for the beneficiaries. This has improved trusts with the women and society, giving confidence to each one of us with better maternal and neonatal outcomes. Further, it has increased accountability of health workers especially in terms of providing antenatal care to high-risk pregnant women".

Health worker Darshana, SC

Annexure
Agenda of Training for SEWA HRP

ANC Quality Improvement: Digital tracking of at-risk pregnancies
District MCH & Block: Pukhri   Date: 25th Sept-19   Venue: Bachat Bhawan, Chamba

Time	Session details	Facilitator	Training methodology
10:00-10:15	Registration		
	Inaugural session		
10:15 - 11:00	Welcome Address	CMO Chamba	Address
	Significance of ANC and early identification of at risk cases	Dr Harish, Project Director, Vriddhi	
	ANC quality & coverage in HP	Dr Anadi Gupt, SPO, MH, HP	
	Inclusion of digital platform to track and follow up at risk cases	Dr Sachin Gupta, USAID	
	District Priorities and perspective	Shri. Vivek Bhatia, DC, Chamba	
	Launch of HRP App		
	Vote of thanks – State Technical Advisor H.P; Vriddhi		
	Tea: 11:00 – 11:15		
	Session 1: ANC: Importance of ANC & identifying and tracking of HRPs (Participants break into 2 Groups)		
11:15- 11:30	**Ice breaker: Introduction of participants**		
11:30- 12:15	Arrive at consensus on –	IPE Global	Group discussion
	1.Importance of ANC and challenges		Use VIPP cards
	2.Components of ANC		Use of charts
	3. Risk conditions in pregnancy		
	4. Action for pregnancies with risk conditions		
12:15 – 12:30	How will App help in tracking HRPs?	IPE Global	Group discussion
	Session 2: Orientation on App		
12:30 – 01:30	HRP Track HP Platform (Application) Walkthrough, it's various modules and features	Dr Suraj	Large Group Discussion Use of presentation
	Lunch 01:30 to 02:15		
	Session 3: Hands on practice on App		
02:15- 03:15	Hands on Application	Dr Suraj/IPE	Small Group facilitation
03:15- 04:00	Hands on Live Application with Original Data	Dr Suraj/IPE	Small Group facilitation
04:00- 04:30	Supportive supervision mechanism	Dr. Anil	Large group Discussion
04:30	Vote of Thanks & Way Forward by District/Block official		

Notes

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