Khushi Baby Stakeholder Summit 2022: Summit Proceedings

Khushi Baby concluded a two-day summit in Udaipur, Nov 16-17th, with the theme *The Leading Edge: Digital Innovations for Transforming Community Health Care in India*.

Key Takeaways

1. Demonstration of the CHIP platform
    a. Mobile application for ASHAs, ANMs, MOICs, and delivery points working in synchrony
    b. Dashboard for health officials with local granularity and ability to initiate interventions
    c. Advanced analytics to understand community health worker data quality, communities at risk of diseases, individuals at risk of diseases

2. Future directions of growing CHIP into an ecosystem
    a. Integrations with health vertical backend systems, payment systems at the state and central level under the ABDM framework
    b. Integration with ARMMAN for health worker training and community outreach
    c. Opening up new modules to cater to evolving primary health worker roles: CHOs, ASHA and ANM supervisors, outbreak investigation teams, RBSK teams, etc.
    d. Integration with telemedicine platforms like eSanjeevani
    e. Opening up data to authorized development partners for research and local intervention purposes
    f. AI-driven screening tools from the community health workers smartphone - starting with moderate maternal anemia detection

3. Commitments for health systems strengthening
    a. ASHAs, ANMs, health officials clearly aligned with the need to remove paper and complete the digital transition
    b. Rajasthan to now mobilize allotted 107 Cr INR towards scale-up of CHIP
    c. New policy announcement to use CHIP across the state for the upcoming Measles and Rubella elimination campaign

4. Growing and sustaining the CHIP platform
    a. Scale-up work to proceed in Rajasthan
    b. Pilots to continue / initiate in: AP, Maharashtra, Chattisgarh, Assam
    c. Opportunity for impact-investors to invest in health systems strengthening and impact tens to hundreds of millions of lives

Khushi Baby shared its journey from classroom project to 55-member technical support partner to the Government of Rajasthan. The KB solution evolved from an mHealth app and digital pendant to track immunizations with local NGO Seva Mandir into a government-run, scalable platform, CHIP (Community Health Integrated Platform), for community health workers of different levels, and across primary health care verticals, aligned with MOHFW guidelines, deployed across Rajasthan.

Scale-up was preceded by a rigorous 2-year, 3200-mother RCT which showed improvements from the digital health intervention on infant immunization adherence in Udaipur. Deep collaboration across the Department of Health was required to understand policy requirements, remove redundancies, and redesign the platform to meet multi-stakeholder needs. The platform was adapted for scale with a move away from tablets, release on the Play Store, and institutionalization within the Rajasthan State Data Center in collaboration with the Department of IT&C. Core features of NFC health records and biometric authentication were similarly made optional and adapted in pilots to include NFC stickers that could be retro-fitted on health cards and facial biometrics that removed separate hardware procurement requirements. Meanwhile new accountability scores, machine learning models, and in-app nudges were introduced. Training and implementation mechanisms changed to include trainers-of-trainers and WhatsApp group based monitoring and support. Co-creation alongside health workers continued as functionality was added.

Health verticals were onboarded in phases as the CHIP platform was used for various campaigns including COVID-19 surveillance, vector-borne disease surveillance, tobacco control, and most recently TB acute case finding. This was in addition to ongoing maternal and child health tracking in 4 districts. Altogether 60,000 community health workers used CHIP to reach 20M+ beneficiaries. Successful advocacy recently resulted in 107 Cr INR approved for scale-up of the CHIP platform across Rajasthan.

The KB team demonstrated the CHIP mobile solution in detail, highlighting features across applications built for ASHAs, ANMs, and Medical Officers which enable digital, clinical, and financial empowerment. The ASHA application includes modules for a digital health census, family planning, maternal health, child health, non-communicable diseases, national programmes, an integrated work plan, and forthcoming claim form calculator. The ANM application syncs seamlessly with the ASHA application and facilitates higher level check-ups and referrals, including a module for management of health camps. The MOIC module facilitates higher level tests, diagnoses, and treatments, and shares data back with ASHAs and ANMs. The Prasav Watch application for intrapartum health tracking, developed by a separate consortium (supported by JHPIEGO, USAID) and integrated by Khushi Baby, was also demoed as an example of the CHIP ecosystem.

These CHIP applications were juxtaposed to the ARMMAN solutions, presented by Dr. Aparna Hegde, which included Mobile Academy for health worker training and Kilkari for beneficiary outreach (26M beneficiaries reached across 19 states). New versions of these respective systems are being developed and will be tested with the Khushi Baby team in Udaipur. An MOU

was signed between Khushi Baby and ARMMAN to leverage the synergies between the respective digital health platforms working at scale in India.

Khushi Baby's dashboard and machine-learning technologies were also demonstrated. The dashboard includes a simple interface for searching across hundreds of primary health indicators, drilling down by geography and time-frame to see rank-lists, time series graphs, and heatmaps, and scheduling interventions with monitoring timeframes directly from the map-view. Geospatial analysis adds further depth, down to the village-level, with spatial outlier analysis, spatial interpolation, and multivariate geographically weighted regressions to assess the importance of spatial factors. Examples were presented on mapping of zero-dose children and multidimensional poverty index across Rajasthan at the village level.

Khushi Baby also highlighted work with Google AI to segment 20K ASHA workers by their data quality phenotypes, and on how to use data quality to enhance individual risk prediction models for maternal and child health outcomes (maternal anemia, antenatal care drop out, stillbirths, low birth weight, severe underweight for age, severe acute malnutrition). Finally Khushi Baby shared details of a new research project with Wadia Hospital to use conjunctival and tongue images to classify moderate anemia among pregnant women. The machine learning models, if successful, could prove pivotal in moving past Sahli's method for hemoglobin classification used by 250,000 ANMs on a weekly basis across the country.

The conference was also well attended by 100+ participants and stakeholders. Representatives came from Government of Rajasthan (SPM, PD MH, Immunization, RBSK,RKSK, SNO CH,SNO Immunization, SO, ASO, PO ASHA); development partners: WHO, USAID, BMGF, UNFPA, UN WFP, NIPI, JHPIEGO, PATH, PHFI, PSI, Plan India, ASCI, Save the Children, GH Labs, Seva Mandir; and philanthropic groups such as UBS Optimus Foundation and Kotak Mahindra Bank. Two former secretaries of health who managed health services for a combined 200M beneficiaries, Sujata Saunik (Additional Chief Secretary, Government of Maharashtra) and Rohit Kumar Singh (Secretary, Government of India), shared their perspectives during keynote addresses.

Smt. Sujata Saunik spoke to the current moment for digital health transformation, highlighting the growing health workforce, infrastructure, cross-sectoral partnerships, and digital health framework investments with Ayushman Bharat. She shared promising examples from her tenure in Maharashtra. The mHealth tool EMcounter was used to track real-time epidemiological data at the Nashik Kumbh Mela with over 18 million pilgrims. Remote sensing data has also been successfully used to predict influenza and diarrheal disease in Pune and Nagpur and now such models are being scaled up across the state. She emphasized the need for a common meeting point amongst stakeholders.

Shri Rohit Kumar Singh reflected on his experiences from serving in Rajasthan, particularly during the first COVID-19 pandemic. He highlighted Rajasthan's unique emphasis on health as a nodal priority through the *Nigori Rajasthan* campaign. As part of this campaign, there emerged a need for a digital health census to understand health disparity gaps. Initial pilots of this health

census helped prepare the department for the challenges of the initial COVID-19 pandemic, and later facilitated a state-wide health census to screen for COVID-19 and chronic comorbidities, reaching 14 million beneficiaries and 60,000 community health workers. Commending Khushi Baby on its problem characterization, persistence and adaptation through his tenure, he urged collaborators to value the youth who are pushing new ideas and the importance of breaking silos.

Mr. Neeraj Jain, India and South Asia country director at PATH, highlighted developments in next generation sequencing, artificial intelligence (particularly for screenings), big data (and collaborating with private providers), self-testing point of care diagnostics, mHealth, and telemedicine (e.g. eSanjeevani), now in need of convergence under the ABDM framework. Mr. Jain noted that Khushi Baby was one of 17 innovations selected under the PATH Primary Health Care challenge, now in the pipeline for pilot deployments in USAID-funded *Saksham* districts in Chattisgarh and Assam.

Government officials, including Dr. Tarun Chaudhary (PD Maternal Health), Dr. Ashok Aditya (RCHO Udaipur) and Dr. Lokesh Chaturvedi (State Program Manager, National Health Mission), spoke to the need to deploy technology that would not increase the work burden, the importance of collaboration amongst development partners, and to the urgency of completing the digital transition. Udaipur in particular was highlighted as a case study for other districts to model after.

Four champion community health workers also took the stage. Bhavna Bhatt, consistently a top performing ANM over the last 5 years, spoke to the utility of the app in searching beneficiaries, reviewing due-lists, and having communities call proactively to confirm upcoming health camps after receiving automated voice calls. Meena Garg, ASHA, spoke to the utility of the due-list, specifically in informing mobilization of RMNCH+A services. Sheela Vihat, ANM, added that she learned how to use the mobile app independently, gaining confidence along the way, and saving time from paperwork. Bharti Meenariya, ASHA, added that she could see beneficiaries across various programs including NCD, communicable diseases, and pending vaccinations. All health workers still noted that by policy they are still required to fill out paper equivalent registers, despite the favorable experience on the CHIP platform.

The second day of the event was centered around a visit to eight villages across Udaipur, where Village Health and Nutrition Day (VHND) camps were taking place for delivery of maternal and child health services. The visits highlighted use of the CHIP platform in the local context.

Dr. Sachin Gupta, Advisor Maternal and Child Health at USAID India, shared his reflections after the visit, noting how the current digital health environment had become “data rich, but information poor.” Dr. Gupta commented on the proliferation of digital solutions and the need for platforms like CHIP, with demonstrated ability to interoperate across systems like Prasav Watch, could be a one-stop solution to capture digital health convergence efforts. Dr. Priya Balasubramaniam, Director PHFI-RNE Universal Health Initiative, spoke to the importance of research and governance to integrate and sustain digital health innovations and to promote

local and mutual learning around these innovations. Dr. Yashpal Jain, State lead JHPIEGO, further shared about how the Khushi Baby - JHPIEGO collaboration has strengthened end-to-end antenatal to delivery tracking through the CHIP ecosystems. He spoke to the need to further strengthen high-risk categorization frameworks, to improve targeted outreach to high-risk pregnant women, and to ultimately remove the Reproductive and Child Health (RCH) register to unlock the potential of the health workers. Finally Dr. Pradeep Chaudhary, Rajasthan lead at NIPI, also commended the Khushi Baby team for its efforts, progress, and proactiveness towards collaboration.