

The challenges and potential of electronic immunization registries to solve for immunization barriers

Common immunization program barriers	How electronic immunization registries (EIRs) can help address barriers
<p>Inherent lack of understanding about what drives demand at all levels: There are many reasons that contribute to children not getting vaccinated, but we do not currently understand the breadth and depth of these reasons.</p>	<ul style="list-style-type: none"> • EIR data can identify un- or under-immunized children and explore drivers of their vaccination status (e.g., geography, demographic characteristics, facility type). • EIR data can be used to analyze at what point children drop out of the continuum of care. • EIRs can have embedded decision-support to guide health workers in delivering tailored messages/services to increase acceptance and uptake.
<p>Overly complex processes: This may include processes that are designed for reporting, rather than decision-making.</p>	<ul style="list-style-type: none"> • EIRs can be designed to streamline data capture and reduce the burden of data entry. • EIR requirements should be defined to meet decision-making needs for end users.
<p>Skill level and availability of human resources.</p>	<ul style="list-style-type: none"> • Access to data through EIRs can empower and motivate users and strengthen agency. • If EIRs are designed so that each individual health worker has their own login, EIRs can inform the tracking of human resources for health based on active health worker profiles. • EIR data can identify error rates of individual health workers and link them to additional training or supportive supervision if necessary. • EIRs can have embedded training resources or capacity assessments. • EIR data can be used to forecast service delivery needs by facility or district to plan for adequate human resources.
<p>Geographic and social barriers to access: These include the limited number of health facilities; inadequate prioritization of services/outreach to reach vulnerable populations; and the lack of integration between the public and private sector.</p>	<ul style="list-style-type: none"> • EIR data can identify un- or under-immunized children to explore whether they are concentrated in certain geographic areas and/or if they have shared demographic characteristics (e.g., to inform targeted outreach). • EIRs can track children’s vaccinations across public and private sector facilities.
<p>Microplanning challenges: These include inadequate capacity for microplanning; a lack of up-to-date denominators; inadequate descriptions of at-risk populations; and children who have missed vaccination due to not</p>	<ul style="list-style-type: none"> • EIRs can capture more accurate, timely, and complete denominators to inform microplanning. • EIR data can identify un- or under-immunized children and explore drivers of their vaccination status and their geographic location.

<p>knowing where vulnerable populations are.</p>	<ul style="list-style-type: none"> EIR data can be used to understand population movement or health-seeking behaviors to inform microplanning (e.g., how common it is for children to move between multiple facilities).
<p>Inadequate introduction of new vaccines: A lack of strategic planning for new vaccine introductions impacts stability and the ability to finance.</p>	<ul style="list-style-type: none"> EIR data can inform vaccine forecasting based on current service delivery, which can also inform adequate staffing levels or lack of attendance of health workers at facilities/health posts.
<p>Inadequate governance structures and capacities: This includes a lack of technical capacity for costing, budgeting, and budget implementation.</p>	<ul style="list-style-type: none"> The process of designing an EIR should include discussing and documenting an EIR governance structure. EIR data can provide more accurate denominator estimates to inform budgets.
<p>A lack of resilience in leadership: This includes responsibilities, authority, and the misalignment of accountability with existing structures.</p>	<ul style="list-style-type: none"> EIRs can encourage continuous quality improvement by highlighting trends/outliers/patterns that may require adaptive management. EIRs can provide a platform for remote, virtual supportive supervision.
<p>Gaps in information systems: This includes a lack of incentivization for reporting.</p>	<ul style="list-style-type: none"> EIRs can show which facilities are entering data or not, and factors associated with reporting. EIRs can be designed to mimic health worker workflows to streamline data collection and reporting practices.
<p>Poor quality of stock data from health facilities: This may be due to limited incentives to report quality data and complex data collection processes.</p> <p>Mismatched supply chains to service delivery: Supply chains are considered separate from service delivery.</p>	<ul style="list-style-type: none"> EIR service delivery data can be triangulated to see how consistent it is with vaccine stock data and/or to forecast stock needs. EIR service delivery data can be used to inform decisions about vial size (e.g. whether smaller vial sizes are needed in some areas to reduce wastage). Where EIRs include stock reorder alerts, we can analyze how successful they are in reducing stockout frequency.
<p>Poor quality of service delivery: This may include long wait times and inadequate sensitization.</p>	<ul style="list-style-type: none"> EIRs can identify the number of vaccines provided by day/time to support health worker allocation to match demand. EIRs that capture check-in time and vaccination time can calculate patient wait times. EIRs can identify missed opportunities for vaccination.
<p>Vaccine safety and effectiveness.</p>	<ul style="list-style-type: none"> EIR data triangulated with patient-level data on adverse events following immunization or surveillance data can answer questions about the effectiveness of vaccines given at different times.