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# Packing smart for better reach of vaccines

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**Packing smart for better reach of vaccines**




Over the past decade, the world has invested enormous resources and energy into the development of new and life-saving vaccines. Current vaccination programs save more than three million lives per year and new vaccines that focus on diseases affecting people in the world's poorest countries can protect millions more.

Apart from research and development of new vaccines for diseases, many research and non-profit organizations are working towards improving vaccine formulations to protect them from heat and freeze damage, improve presentation and packaging to meet user needs, minimize environmental impact, and develop new equipment to store, monitor, transport vaccines.

According to WHO, there is five percent wastage for all single-dose vials, 50 percent wastage rate for 10-20 dose vials and 10 percent wastage rate for two to six dose vials of lyophilized vaccines and 25 percent wastage rate for 10-20 dose vials and 10 percent wastage rate for two to six dose vials of liquid vaccines. The US Center for Disease Control and Prevention (CDC) estimates that the federal Vaccines Children program alone incurs more than $20 million in vaccine waste annually from poor refrigeration and vaccine exposure to freezing temperatures.

PATH and its partners have achieved improvements in heat stability of vaccines, facilitating outreach of vaccines beyond the constraints of traditional cold storage.

To monitor the heat exposure of vaccine vials, PATH has developed vaccine vial monitors (VVMs) by working with Temptime. It is a label that adheres to the vaccine vial and changes color to indicate if the vaccine has been exposed to too much heat. They improve outreach services to remote locations and reduce unnecessary wastage of vaccine. Now over 3.2 billion VVMs are being used on vaccines in immunization programs all across the world. They will allow health workers to recognize and replace more than 230 million doses of inactive vaccines and deliver an additional 1.5 billion doses in remote areas over the next decade.

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PATH is also working with collaborators on low-cost solar refrigerators that do not require batteries and smart refrigerators that keep vaccines cold and yet shield them from freezing. Both the technologies aim to make refrigeration more affordable to facilitate immunization services in remote settings.

To help countries better manage their supply chain, PATH has also developed a Microsoft Access-based software tool called Cold Chain Equipment Manager (CCEM). The tool helps vaccination programs manage equipment requirements down to the facility level, forecast equipment needs for different scenarios, and generate procurement lists according to national policies. The CCEM differs from other available equipment management tools because, in addition to the usual data management, analysis, and reporting functions of a conventional inventory, it allows countries to view the cost and logistical implications of potential programmatic changes through "what if" scenarios.
By adopting new technologies, organizations have been able to ensure that besides developing safe and effective vaccines, they are transported to the right places at the right time and in the right condition.