

## PROJECT BRIEF

# Cryotherapy market dynamics: Assessment and recommendations

## INTRODUCTION

Cervical cancer is a highly preventable disease, which nevertheless kills more than 265,000 women each year, with more than 85 percent of those deaths in low-resource settings. Simplified screening methods paired with appropriate treatment could greatly reduce this deadly burden, but few women in low- and middle-income countries are currently getting screened, and even fewer of those who need treatment actually receive it. The high price of cryotherapy equipment and the lack of affordable and reliable supplies of the gas required have been cited as major barriers to greater coverage of these critical services. To determine whether there are market interventions that could ameliorate the current low levels of coverage, PATH undertook an analysis of supply and demand factors through the Cryotherapy Market Dynamics Project.

## KEY FINDINGS

We identified four symptoms of market shortcomings: high prices of cryotherapy products, inadequate supplies of a critical input (gas), uncertain or unreliable quality of one low-cost device, and low uptake or demand for precancer treatment. The analysis also revealed that this market resides in a complex program environment of interdependent and dynamic relationships that determine the ultimate success or failure of screening and treatment programs. These program implementation factors have the biggest effect on cost per use, a dominant issue for durable goods. This is very different from the situation with commodities like drugs and vaccines, where the initial purchase price is often the dominant driver of uptake and cost-effectiveness.

The supply analysis revealed that there are only a few manufacturers of cryotherapy equipment, and the number of devices sold each year is modest. Resupply of gas is already a constraint in some countries because of high cost, weak procurement systems, or difficult logistics related to distribution outside of major cities. The potential for this to be a major barrier to the expansion of screening services to more rural settings is high. This is especially true for mobile



*Gas-based cryotherapy creates financial and logistical challenges.*  
PATH/Denise Njama-Meya.

clinics where a heavy gas tank can limit their mobility and capacity. A combination of non-gas and potentially lower-cost gas-based devices could increase coverage at relatively low cost. The engineering and business assessment of a low-cost Indian device leads us to conclude that further investment in improving the device is not justified at this time, given the uncertainty of the amount of investment needed to achieve reliable quality, the lesser interest in additional gas devices, and the limited production capacity in the manufacturer's current facility. The cost-of-goods-sold analysis suggests there is not much room for reducing the price of traditional equipment, except through procurement mechanisms that allow for consolidated purchasing and bypassing of regional wholesale distributors.

Key drivers of the low demand for treatment include the low rates of screening—which are attributable to lack of services, shortages of trained health workers, and low community awareness—and considerable barriers to completion of treatment among screen-positive women. The

high cost of treatment equipment and gas and the underutilization of it due to poor distribution of services pushes up the cost per woman treated. Demand for more expensive nitrous oxide gas based on misunderstanding about the adequate performance of more affordable and available carbon dioxide gas further distorts costs.

The demand forecasting model developed for this project enabled us to consider various scenarios for distribution of precancer treatment equipment. The model considered the level of facility (primary, secondary, or tertiary); availability of mobile or outreach services; rural vs. urban settings; gas vs. non-gas equipment; and single-visit or two-visit approaches. There are significant trade-offs between accessibility and equipment utilization; for example, single-visit approaches increase completion of treatment but at high cost and inefficient use of equipment. With the input of local data, the model could be used to guide country planning of the best product mix and optimal equipment placement.

## RECOMMENDATIONS

Given this understanding of the complex interplay of market and programmatic factors, it is apparent that a multi-pronged set of interventions is needed to address the identified issues. Some of the interventions are at the global level, while others must be undertaken at national level and tailored to the needs of specific countries.

On the supply side, the difficulty of assuring access to gas means that non-gas treatment technologies will eventually be the preferred technology. However, given that it is likely that countries will need a mix of gas and non-gas treatment technologies for the foreseeable future, we need to rapidly increase the range of suitable non-gas equipment options while also ensuring that reliable and affordable supplies of gas are available—at least in urban areas—for the traditional cryotherapy units already in place. We also need to support more efficient procurement mechanisms and remove restrictions on care providers.

On the demand side, we should use the model at country level to optimize the deployment of equipment and ensure a high proportion of screen-positive women complete their treatment. Investment in advocacy, training, and community awareness is needed to increase the availability and quality of screening services. Strengthening complementary system

elements like health information systems and patient counseling could further reduce treatment barriers. If demand can be increased through the identified actions and investments, it would spur the purchase of more treatment devices, enabling manufacturers to potentially reduce prices and provide more reliable maintenance services. It would also increase the utilization of the cryotherapy equipment, thus reducing the cost per treatment.

While several of these measures address program delivery more than traditional market factors, in the case of precancer treatment devices, program delivery is a critical factor in product utilization and thus the cost per use, as well as product demand. If these measures are undertaken in a coordinated and systematic way, there could be a substantial impact on the availability and affordability of cryotherapy and other precancer treatment options.

## FOR MORE INFORMATION

Vivien Tsu  
Associate Director, Reproductive Health  
PATH  
vtsu@path.org



[www.path.org](http://www.path.org)

PATH is the leader in global health innovation. An international nonprofit organization, we save lives and improve health, especially among women and children. We accelerate innovation across five platforms—vaccines, drugs, diagnostics, devices, and system and service innovations—that harness our entrepreneurial insight, scientific and public health expertise, and passion for health equity. By mobilizing partners around the world, we take innovation to scale, working alongside countries primarily in Africa and Asia to tackle their greatest health needs. Together, we deliver measurable results that disrupt the cycle of poor health. Learn more at [www.path.org](http://www.path.org).

**STREET ADDRESS**  
2201 Westlake Avenue  
Suite 200  
Seattle, WA 98121 USA

**MAILING ADDRESS**  
PO Box 900922  
Seattle, WA 98109 USA