

# The Use of Smart Phone Adapters in Otolaryngology Residencies: A Survey of Program Directors

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## Abstract

**Objectives.** Several adapters have recently come on the market which link smart phones to traditional endoscopes. However, no studies exist to date which evaluate potential benefits and drawbacks of these products for otolaryngologists. This study seeks to identify the extent to which otolaryngology residency programs use smart phone adapters and to describe advantages and disadvantages of this new technology.

**Study Design.** Cross sectional survey.

**Subjects and Methods.** A survey was distributed to directors of U.S. otolaryngology residency programs with questions directed at extent of use, barriers to use, and advantages and disadvantages.

**Results.** There was a 42% (45/106) response rate. Of responding programs, 28.9% (13/45) reported having used an adapter. The most common uses were consultations (70.6%, 12/45) and overnight call (58.8%, 10/45). When considering using the adapters, the most important factors were diagnostic accuracy, compatibility with existing equipment, and ease of set up. The most significant barriers to use were cost and privacy concerns. The most commonly used adapter was the ClearScope Adapter (38.9%, 7/18). The majority of respondents indicated their program was likely to use adapters in the future (53.3%, 16/30).

**Conclusions.** This relatively new technology has not yet reached widespread use. Barriers such as cost and privacy concerns have prevented many programs from using the adapters, though most expect to use them in the future. Those using adapters primarily used them for ENT consult service and overnight call. More research on the benefits of these products and ways to improve HIPAA compliance would be warranted.

## Introduction

In recent years, several new products have come on the market which link cell phones to traditional endoscopes used across a variety of specialties. Studies conducted in other specialties have shown many benefits such as improved patient outcomes,<sup>12</sup> enhanced resident training,<sup>3</sup> and improved communication between physicians.<sup>4</sup> Additionally, patients often appreciate the opportunity to see images which can enhance their level of understanding of their condition, and capturing the image via cell phone has been found to be an easily accessible option for providing this service.<sup>1</sup> This survey was intended to collect data from all U.S. otolaryngology residency programs to describe rates of use of cell phone adapters, benefits of use, and barriers to use experienced by the programs.

## Methods and Materials

A cross sectional survey was conducted by distributing surveys to the program directors of all 106 U.S. ACGME-accredited otolaryngology residency programs. The survey was developed following a brief literature review of smart phone adapters for endoscopes used by other specialties to identify commonly derived benefits from similar products. Survey questions were designed to identify the extent of use and barriers to use of this new technology. For those survey participants who had used the adapters, additional questions were designed to identify advantages and disadvantages experienced while using the various products. These questions focused on adapter set up, ease of use, diagnostic capabilities, resident training, patient care, and documentation.

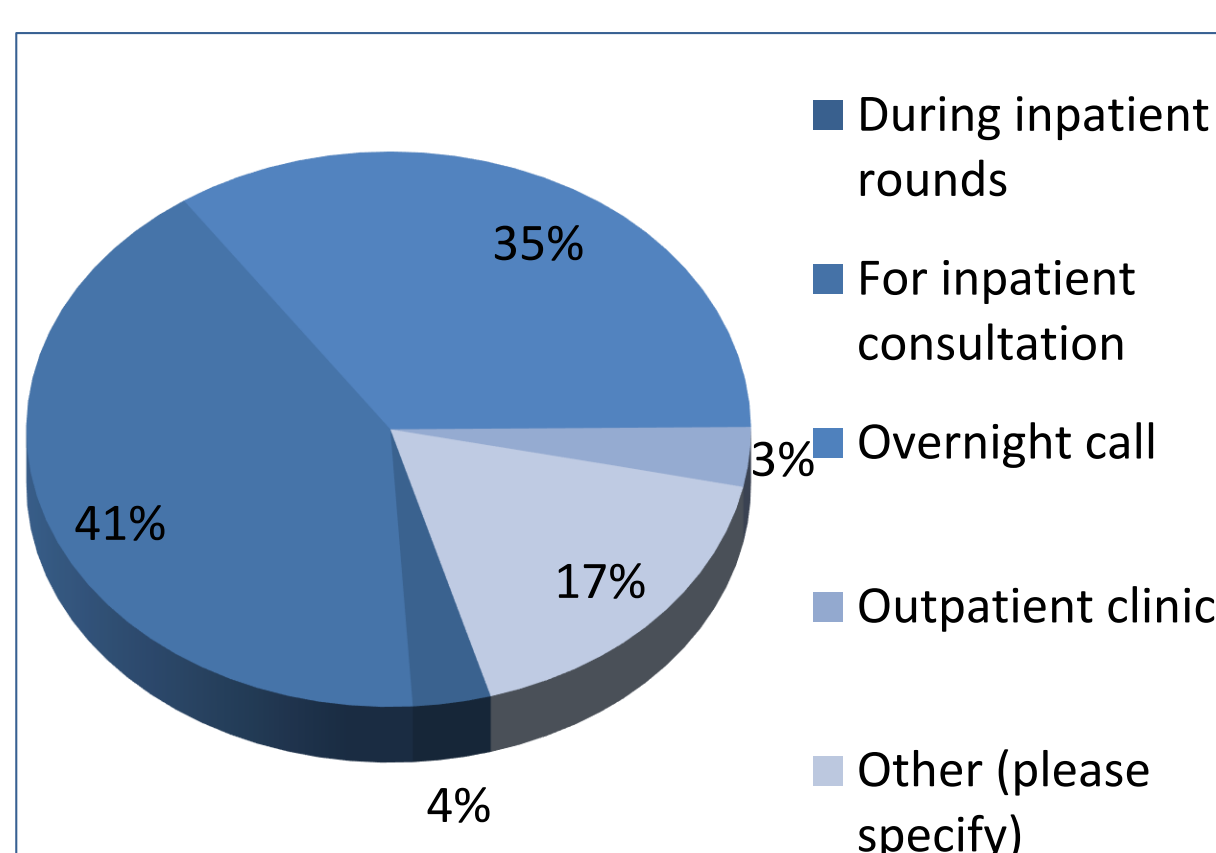


Chart 1. Most frequent uses for adapters.

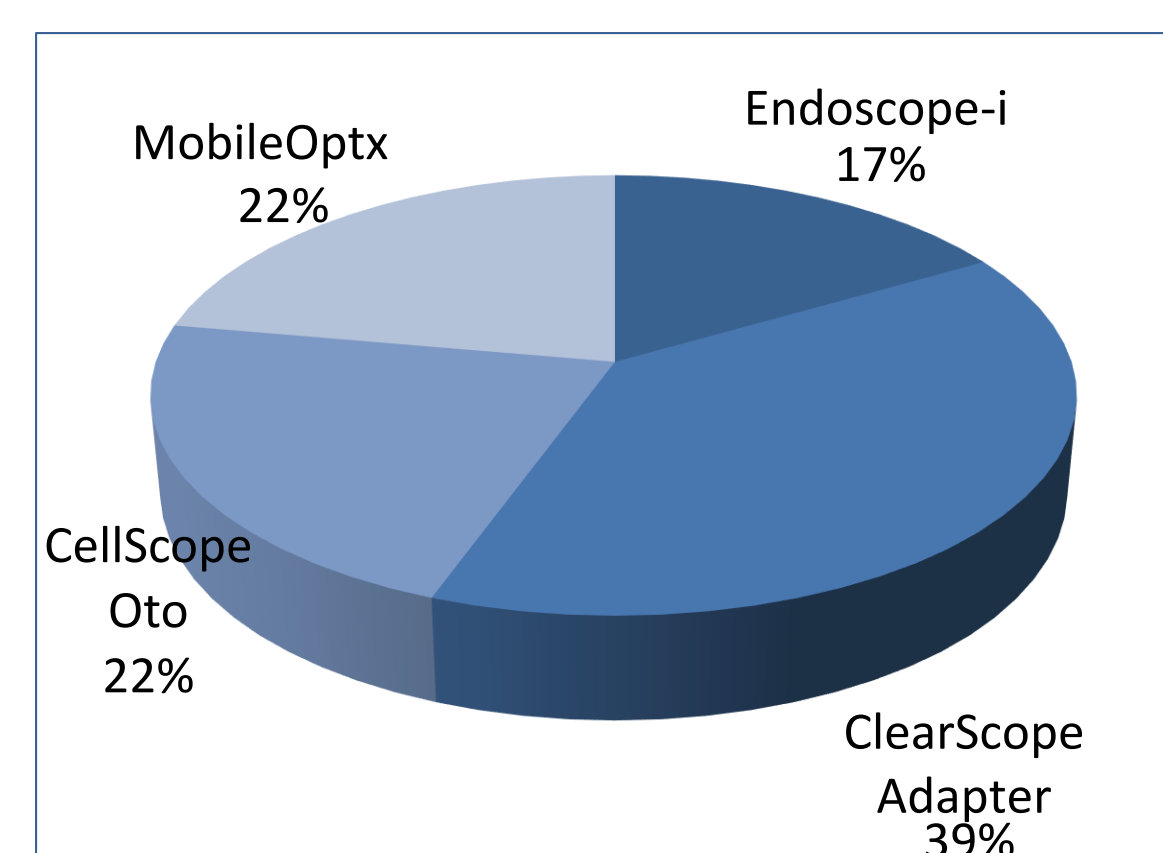


Chart 2. Type of adapter utilized.

## Results

There was a 42% (45/106) response rate. Of those programs who responded, 28.9% (13/45) reported having used a smart phone adapter for their otoscopes or laryngoscopes. In programs which had used the products, the most common uses were for ENT consultations (70.6%, 12/45) and overnight call (58.8%, 10/45). When programs were deciding whether or not to begin using smart phone adapters, the most important factors considered were diagnostic accuracy, ease of using adapters with existing equipment, and ease of acquiring and setting up the adapters. For those who have not used the adapters, the most significant barriers to use were cost and concern for privacy. The most commonly used adapter was the ClearScope Adapter (38.9%, 7/18). The majority of responding programs indicated their program was somewhat likely or very likely to use cell phone adapters in the future (53.3%, 16/30).

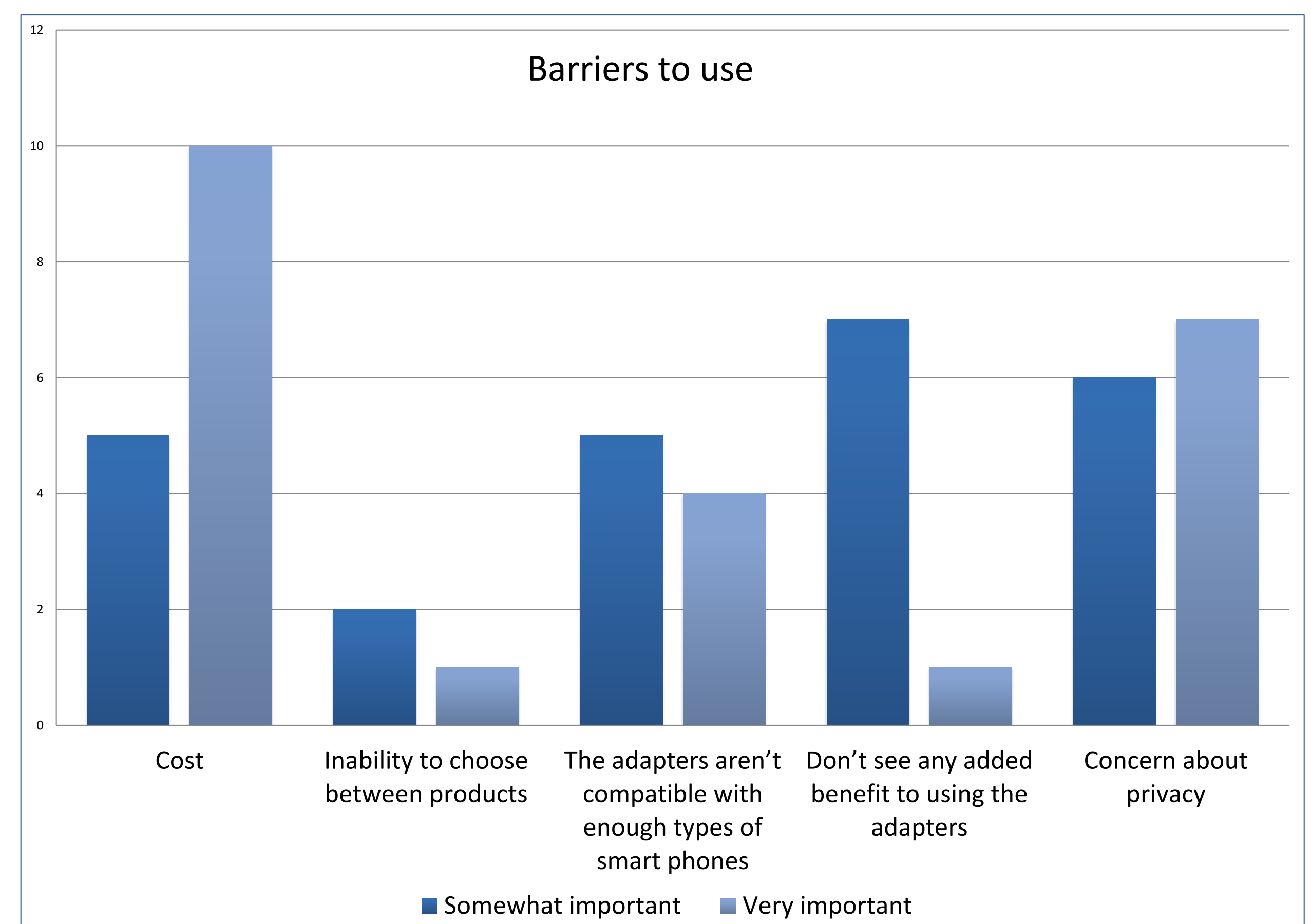


Chart 3. Barriers to using smart phone adapters.

## Discussion

Cost and privacy concerns were the biggest barriers for programs beginning to use smart phone adapters. Of these two, privacy perhaps poses the most difficult challenge to programs, as institution regulations often prohibit the collection or transmission of personal health information on personal technological devices. As forms of secure, encrypted transmission improve, the environment may become more conducive to utilizing this technology in the future. Despite the barriers to use which were cited by programs, most programs did suspect that they were likely to use this technology in the future.

One drawback of this study is that only 45 of 106 programs participated in the survey, leading to possible sampling bias.

## Conclusions

Cell phone adapters for laryngoscopes and otoscopes are a relatively new technology which has not reached widespread use yet. Less than one third of responding programs had attempted to use this new technology in clinical practice. Barriers such as cost and physicians' concern for their patients' privacy have kept many programs from using the smart phone adapters. However, those using the adapters found frequent uses for them on ENT consult service and during overnight call. Despite possible barriers to use, most programs felt that it was more likely than unlikely that they would use these products in their programs at some point in the future. More research on the benefits of using such products, as well as more options for maintaining HIPAA compliance would be warranted, as further information on these topics may increase programs' confidence in choosing to incorporate this technology.

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