## Can virtual visits be used more effectively to reduce the need for in-person follow-up?

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## INTRODUCTION:

Numerous studies have compared various aspects of virtual visits to in-person visits, like costs, access, hospital admissions, and patient satisfaction. However, little research has focused on the percentage of virtual visits that couldn't resolve patients' issues, necessitating subsequent in-person follow-ups due to inefficiencies. Physical exams and simple treatments like injections cannot be performed in a virtual visit, possibly limiting their functionality in a field like Orthopaedic Surgery where these interventions are frequently needed and causing more patients to return for in-person visits.

In this study we aim to evaluate the effectiveness of virtual visits by identifying increased in-person follow-up leading to more overall visits. We ask the following questions:

What are the most effective virtual visit types in limiting subsequent follow-up?

Will virtual visits lead to more follow-up than in-person visits?

If follow-up is needed after a virtual visit, could the problem have been resolved with only one initial in-person visit?

By answering these questions, we hope to help guide physicians in their decisions of what visits to offer virtually or inperson.

## METHODS:

This retrospective cohort study was conducted within an urban, Midwest, multihospital, academic health system. Thirteen providers from diverse subspecialties within orthopaedic surgery were selected based on their substantial virtual visit volume in the year 2022. Using these providers, 525 visits were randomly selected for both virtual and in-person initial visits. Only patients aged 18 and above were considered for this study.

For each initial virtual visit, the type of visit and department of the provider was assessed, as well as whether a follow-up in-person visit for the same problem occurred within the subsequent 21 days. In instances where an in-person follow-up occurred within 21 days after a virtual visit, we documented the reason that the follow-up visit took place. Demographic data including age, race, and sex were also collected for all patients. Similar data has been collected for initial in-person visits and whether they required follow-up within 21 days.

Chi square analysis was used to determine significance between visit type, provider department, and patient demographics on the occurrence of in-person follow-up visits for the same problem within 21 days of the initial virtual visit. Subsequently, T-testing was used to compare initial virtual or in-person follow-up rates after 21 days. After eliminating routine, scheduled follow-up visits, the follow-up rates were again compared. Significance level was set at 0.05. RESULTS:

Whether or not an initial virtual visit required an in-person follow-up for the same problem within 21 days was significantly associated with the type of virtual visit. Initial visit types of follow-up for imaging, follow-up for a problem, and new patient required an increased amount of in-person follow up compared to pre-op and post-op initial visits (p < 0.0001, Table 1). Hand and sports departments also required significantly more in-person follow-up visits compared to other departments (p < 0.0001, Table 1). Age, race, and sex were not found to be significantly associated.

Without controlling for routinely scheduled follow-up, no significant difference was found in 21-day follow up rates between in-person and virtual visits. After eliminating routinely scheduled follow-ups, virtual visits were significantly more likely to have a follow-up within 21 days (Figure 1, p = 0.02). 44% of the in-person follow up visits after a virtual visit were made due to the need for physical exam or injections, and thus, could have been avoided if the original visit had been in-person instead of virtual.

## DISCUSSION AND CONCLUSION:

This data adds valuable insight into the topic of the efficacy of virtual visits in reducing healthcare costs and improving patient access to healthcare. Our research suggests that although virtual visits may indeed have benefits initially, increased in-person follow-up rates immediately after these visits for purposes that could have reasonably taken place in a single, in-person visit may negate some of the short-term advantages.

Simple applications to daily practice could include increased physician discretion in offering virtual visits based on the chief complaint. Additionally, the data supports the use of virtual visits for post-ops and pre-ops to provide accessible and cost-effective care to patients, seeing as these visit types were much less likely to necessitate subsequent follow-up. It could also discourage the use of virtual visits in some specialties that need much more initial treatment like injections and physical exams, including sports and hand. Future research could investigate the cost of the increased follow-up rates to quantify the value of virtual visits in healthcare as well as investigating these trends in the entire healthcare field.