

Effectiveness of Virtual vs In-Person Inhaler Education for Hospitalized Patients With Obstructive Lung Disease

BACKGROUND:

- Hospitalizations for asthma and COPD are thought to be preventable due to available treatments. However, these treatments are usually given through inhaler devices which are easy to misuse.
- Assessment of technique at healthcare encounters is recommended by guidelines but often not performed.
- In person education is shown to be more effective than brief verbal directions but is difficult to implement and can have varying quality.

OBJECTIVE:

- To assess whether the virtual teach-to-goal intervention is noninferior to an in person teach-to-goal intervention for improving inhaler technique.

METHODS

- **Design:** randomized, controlled, non-inferiority trial
- **Duration:** January 13, 2016 to September 20, 2017 with analyses between October 25, 2017 and September 23, 2019
- **Inclusion criteria:** Physician-diagnosed COPD or asthma patients from an urban academic hospital aged 18 years or older admitted inpatient or discharged with a meter-dose-inhaler for rescue and/or controller medications, if they passed a vision screen, and if inpatient teams provided assessment.
- **Exclusion criteria:** ICU, physician declined to provide consent, patient unable to or declined providing consent, previous participant in this study
- **# patients enrolled:** 118
- **Drug regimens/dosages used:** Virtual teach to goal technique (VTTG) counseling and in-person teach to goal (IPTTG) technique counseling methods were used.
- **Primary outcome measure:** Correct inhaler technique, with 10 or more steps out of 12 correct, after the educational intervention.
- **Secondary outcome measure:** Correct inhaler use before and after education within the intervention groups as well as 30-day correct inhaler technique versus posthospital education within the education cohorts and health care utilization for 30 days post discharge.
- A non-inferiority margin of -10 was set for those patients having correct inhaler technique at discharge.
- Data handling method used was intent to treat.

RESULTS

- All of the patients completed the intervention (59 in each group)
- **Primary outcome measure:** 41 of 59 (69%) in VTTG scored at least 10 versus 49 of 59 (83%) in the IPTTG group at discharge. The difference was -14% (95% CI lower bound, -26%).
- **Secondary outcome measures:** 26 of 49 (53%) in the VTTG group scored at least 10 versus 32 of 51 (63%) in the IPTTG at the 30 day follow up visit. The difference was -10 with a 95% CI lower bound, of -26%. For the all-cause acute care use, VTTG use was 24% whereas IPTTG was 29% which yields an unadjusted difference of -5% (95% CI upper bound, 9.6%).
- **Author's conclusions:** The study found that virtual TTG may be nearly as effective as in-person TTG for correcting baseline inhaler misuse in hospitalized patients.

STRENGTHS

- It was randomized and controlled.

- It blinded the researchers performing analyses.
- It is a novel idea and one that could be very relevant in today's climate.

LIMITATIONS

- The population was primarily urban, underserved, black patients, which was higher than their normal proportion of this patient population in clinic.
- This study also allowed trained nonclinical research personnel to perform the in-person TTG.
- There was a significant difference in the baseline inhaler misuse between the groups.
- The devices were provided to patients in this study to complete the virtual education.
- The study also stated real world testing is needed and that if staff time is needed for the virtual TTG then the cost savings could be diminished because virtual TTG is much more time consuming than in-person TTG.
- The study did not have adequate power which could lead to incorrectly concluding noninferiority.
- Virtual TTG lacks patient-provider relationship and a hands-on component which may cause patients to have a more negative view of their health care providers and cause them to feel like providers don't have enough time for them (lack of care) or want to teach them.
- Used all-cause acute care visits which might not have been related to COPD or asthma
- Only used MDI inhalers (versus dry powder or soft mist)
- There was never a mention of how they determined who got 1 vs 3 rounds for the IPTTG or how many patients still scored low after 3 rounds.
- Also, could've surveyed all of the patients to get their opinion on if they would prefer in-person versus virtual education.
- Listed their noninferiority margin as conservative due to anticipated concerns that physicians would be skeptical, but it couldn't have been much larger and still have been close in effectiveness.
- Also, all of the CIs weren't in ranges, just a lower or upper bound

CONCLUSIONS

- Although the study showed that virtual TTG to be inferior to in-person TTG, it could be shown as comparable if additional, improved studies are done to determine its actual feasibility and practicality in clinical practice.
 - This could be a useful alternative, especially in the climate of COVID-19, for re-teaching, or review.
 - This could be a cost-effective alternative provided, patients have access to the technology required.
- Future research:
 - Further studies are needed to determine the place this has in clinical practice and its practicality. A more diverse population should be used and should also look at effectiveness with other inhaler types.

Reference: Press VC, Arora VM, Kelly CA, et al. Effectiveness of Virtual vs In-Person Inhaler Education for Hospitalized Patients With Obstructive Lung Disease. JAMA Network Open. 2020;3(1):e1918205.

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