Integration of Smartphones into Clinical Pharmacy Practice: An Evaluation of the Impact on Pharmacists’ Efficiency
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Introduction
- Personal smartphones are commonly used by healthcare practitioners.
- A comprehensive literature search failed to reveal an evaluation of the impact of smartphones on clinical pharmacy practice.
- VIHA is one of the first health authorities in Canada to endorse the iPhone as a potentially valuable tool for clinical practice.
- Proposed efficiency benefits include: Rapid communication between pharmacists and physicians, nurses, and other pharmacists.

Overall, pharmacists report that smartphones increase their job performance.

Almost half of pharmacists reported that the smartphone increased their job performance.

Difference in interpretation of how to collect data between observers.

Small sample size (n=14).

This research provides sufficient evidence to continue to support the use of smartphones within VIHA’s pharmacy department.

Methods
Design
- Multi-center (9 VIHA facilities on Vancouver Island, B.C., Canada), time-trial, survey and observational prospective study.

Inclusion Criteria Front Line Staff:
- Permanent full or part time pharmacist and provides unit-based clinical service greater than 50% of the time OR routinely takes on-call shifts.

Inclusion Criteria Leaders/Project Staff:
- Holds a position as pharmacy leader or job requires travel to multiple sites.

Exclusion Criteria:
- Project Research Team.

Objectives
- To measure smartphone’s impact on pharmacists’ efficiency, to assess pharmacist acceptance of corporate smartphones, and to investigate how these devices are being used.

Results of Time Trial
Table 2: Time to Answer 22 Situational Drug Information Questions

Results of Survey

Percentage of Pharmacists:
98% (60/61) agree or strongly agree that they find Smartphones to be useful.
87% (53/61) agree or strongly agree that the Smartphone aids their job performance.
68% (41/61) agree or strongly agree that they require further training on use of the Smartphone.
63% (54/86) had never owned an iPhone before.
46% (28/61) agree or strongly agree that the Smartphone has increased their confidence and competence in resolving DTNs.

Discussion
- Technology is increasingly being used to improve efficiency of health services. We have observed that the use of smartphones are replacing the use of pagers, landlines and other non-computer devices.
- Pharmacists are being used as a convenient and expanded source of drug information that may allow pharmacists to spend more time in patient care areas.
- Smartphone use decreased the time to answer 22 situational drug information questions but did not significantly affect time spent walking to obtain a resource or use technology. This suggests that either more time is needed for pharmacists to integrate smartphones into their daily practices or that smartphones themselves do not attract further development to facilitate more functions such as printing documents and tracking drug therapy problems.
- The decline in usage minutes and texts in March may have been due to the use of smartphones by more pharmacists taking vacation around school children’s spring break.
- Overall, pharmacists report that smartphones increase their job performance despite not demonstrating increased efficiencies during direct observation.

Limitations
- Time Trial:
  - Rounding/estimation of times by participants.
  - Some dissimilar questions between the two-time trials.

Direct Observation:
- Small sample size (n=14).
- Inability to observe and capture every occurrence.
- Didn’t capture time pharmacists spent at the bedside.
- In difference in interpretation of how to collect data between observers.

General:
- Uptake in the use of smartphones and incorporation into clinical practice is still in progress. This was probably an insufficient time-frame to determine the full impact of these devices on pharmacists efficiency, especially since 68% of pharmacists had not owned an iPhone before.

The lack of familiarity with the device, small sample size, and varied collection methods limits the reliability of our direct observation results.

Conclusions
- Pharmacists readily accepted smartphones into their practice but were still becoming familiar with the potential uses and benefits during the first four months post-implementation.
- Impacts on most measures of workflow were not changed by smartphone introduction during the first four months following implementation.
- Variable effects on time to answer simulated clinical questions were observed, but smartphone usage facilitated a faster response time overall.
- Almost half of pharmacists reported that the smartphone increased their confidence and competence to resolve DTNs.
- The full effects of smartphones on pharmacists clinical activities will require longer observation timeframes.

Application to Practice
This research provides sufficient evidence to continue to support the use of smartphones within VIHA’s pharmacy department.
- Future quality-focused research would aid other health departments and organizations in deciding whether to endorse smartphone technology in their own departments.