Integration of a Remote Management Platform for Chronic Disease Management

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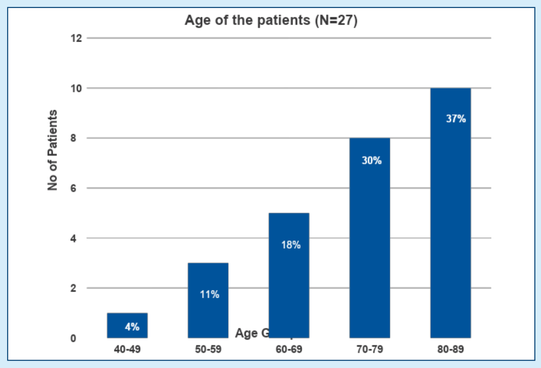
Objectives

Create an integrated monitoring care pathway for patients with COPD, CHF and/or DM using the Aetonix aTouchAway application, allowing patients to manage their chronic condition using automated and real-time feedback from HCPs in the Complex Medicine Clinic (CMC) at William Osler Health Systems (WOHS).

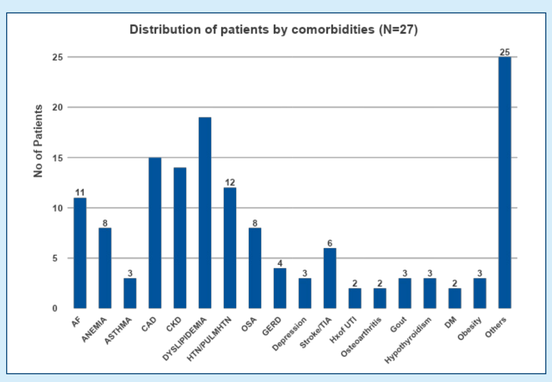
Methods

- Workflows for CHF, DM, COPD developed and tested Dec 2019-Feb 2020.
- Patient reported experience measures (PREMs) related to the technology measured.
- SF-36 pre & post study survey provided.
- Number of clinical interventions & avoidable ED visits/ hospital admissions measured.
- Comprehensive inclusion/exclusion criteria followed; patients identified by clinicians via purposing sampling method.
- 6-month prospective study
  - Phase I Dec 30, 2020-June 30, 2021 – 10 patients with equipment.
  - Phase II Feb 2, 2022-Aug 30, 2022 – 10 patients with equipment & 10 on Bring your own device (BYOD).

Demographics



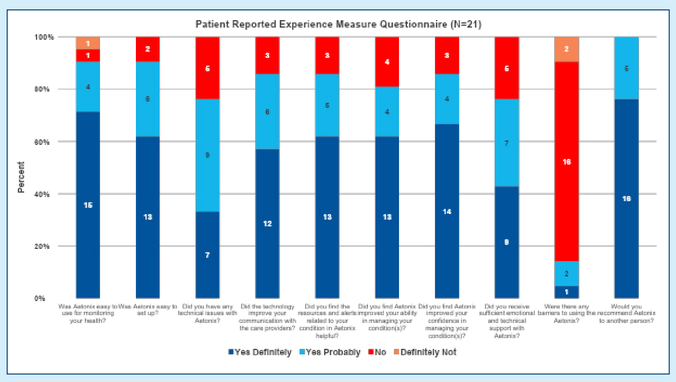
- (N=27) 74% of the patients were older than 65 years of age.



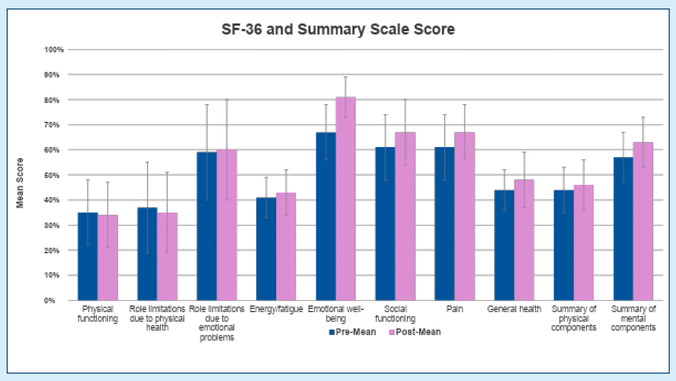
- 48% of the patients had >5 comorbidities, 37% had 4 to 5 and 15% had three or less.
- Dyslipidemia (70%), CAD (56%) and CKD (52%)- the most prevalent comorbidities apart from workflows used 21 patients completed the PREMs questionnaire.
- CHF was the most used workflow, with multiple condition workflows used 81% of the time and 3 condition workflows used 33%.

Findings

Patient Experience



- 21 patients completed the PREMs questionnaire.
- 90% found aTouchAway easy to set up and use for monitoring.
- 86% felt aTouchAway improved their confidence in managing their conditions, and felt confident in knowing it was easier to connect with HCP instead of going to ED.
- 100% would recommend aTouchAway to another person.



- SF-36 survey showed a statistically significant difference between pre and post mean scores (P=0.02789).
- 6 of 8 domains showed improvement trends at end of study: including social functioning, Pain, emotional well-being.
- SF 36 mean score declined in two domains (physical functioning, Role limitations d/t physical health) because of disease progression rather than the effect of the intervention.

Clinical Intervention

	Phase I	Phase II	Total
Total Alerts Generated	474	234	708
Called back	64 (13.5%)	53 (22.6%)	117 (16.5%)
Clinical Intervention made	38 (8.0%)	57 (24.3%)	95 (13.4%)
Appointment move earlier	9 (1.8%)	14 (6.0%)	25 (3.5%)
Avoidable ED Visits	26 (68.4%)	28 (49.1%)	54 (56.8%)
Average alerts per working day	4	2	3

- Primary reason for clinician interaction (82%) was threshold variance (CHF, COPD, BP, BS, weight).
- 56.8 % of the interventions completed led to avoidable ED visits/hospitalization based on 15 patients.
- These interventions included adding oral therapies, and bringing patients into the clinic to give intravenous therapies to address the acute exacerbation.
- 18% of clinician interaction related to tech support (battery changes, WIFI, device pairing).

Conclusion

- Integration on care pathways for patients with COPD, CHF and/or DM using the Aetonix aTouchAway application and kits improved the patient experience, confidence, and ability in managing their conditions from a patient and HCP perspective.
- In between formalized appointments, the platform enabled interventions to address CHF and COPD exacerbations resulting in avoidable ED visits/hospitalizations and improved CMC clinic capacity.
- Workflows developed for this project allowed for other institutions to utilize and adapt them in their settings. Expansion of the remote management to other settings including family health teams, home care, regional outpatient clinics managing DM, COPD and/or CHF would allow for larger studies to be explored to assess patient experience and clinical outcomes including the ability to manage patients closely virtually while avoiding ED visits.
- As the demand for remote management increases, the workflows and the Aetonix aTouchAway application will evolve.

Summary

Like most acute care hospitals in Ontario, WOHS is challenged with inpatient bed and outpatient clinic capacity which impacts access to care. Advances in remote patient monitoring technology creates an opportunity to extend the care from hospital to support safe and effective transitions home, prevent readmissions, and improve the recovery experience for patients. Studies demonstrate that telemonitoring as it relates to chronic disease management, is associated with improved clinical management and patient self-care. In this evaluation the developed integrated care pathways for patients with COPD, CHF and/or DM using the Aetonix aTouchAway application/kits improved the patient experience, confidence, and ability in managing their conditions. The platform enabled interventions to address exacerbations including bringing patients into the clinic for IV treatment resulting in avoidable ED visits/hospitalizations. Larger studies and increased use of the platform in various settings should be considered in future studies.

Acknowlegements

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William Osler Health System