

The impact of a computer guided consultation (Intelligent clinical decision support software) in the delivery of guideline-level Asthma care within General Practice

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Background

Asthma is a common source of morbidity, hospital admission and healthcare utilization within primary care.

We have previously reported that the approach of a computer guided consultation in COPD allows consistent delivery of specialist, guideline quality care even in hands of clinicians with basic disease specific training.

(Angus RM *et al. Feasibility and impact of a computer guided consultation on guideline based management of COPD in general practice. Prim Care Respir J.* 2012 Dec; 21(4): 425-30)

LungHealth Guided Consultation

The LungHealth Asthma Computer Guided Consultation (CGC)

The CGC acts as an intelligent structured electronic Asthma including:

- Staging of the patient's Asthma treatment according to the BTS SIGN guidelines (
- Assessment of Asthma control
- Identification of key trigger factors (including occupation) for Asthma and presence of cardinal “red flags” in the Asthma history
- Assessment of adherence to medications
- Recording and intelligent interpretation of key physiological measurements such as Exhaled Nitric Oxide (FeNO) incorporating this into a therapy de-escalation algorithm
- Alerting the operator to a patient meeting “NRAD criteria” risk factors
- Prompting the operator to escalate or de-escalate asthma therapy where appropriate

The consultation generates a summary report on completion which acts as a standardised electronic patient record which may be printed or emailed. The CGC has read and write back to the primary care server.

Results

- Patients on Asthma registers in Greater Manchester PCNs were identified as part of the STARRS-GM pathway and underwent remote review with video consultation by nursing staff using the CGC linked directly to the GP clinical system.
- 139 patients (age 59 (SD 18) years; 61% Female; ACT score 18 (SD 5)) were reviewed. The CGC reported “poor” Asthma Control in 66% (91/139) whilst 41% (57/139) had required ≥ 1 oral steroid courses in the past 12 months.
- The ACT scores were significantly higher in those patients exhibiting “Good” ($p < 0.001$) and “Partial” control (t test; $p < 0.001$) when compared to those with “Poor” control. The number of steroid courses in the previous 12 months was significantly lower in those patients exhibiting “Good” (t test; $p < 0.001$) and “Partial” control ($p < 0.01$) when compared to those with “Poor” control.
- 22% (31/139) were found not to have a personalised Asthma management plan during CGC review which was alerted by the CGC and subsequently, all but one patient had this created on review completion (McNemar's test; $p < 0.001$).
- 5% (7/139) were found not to have been prescribed regular Inhaled steroid therapy, this also being alerted by the CGC resulting in inhaled steroid therapy being initiated.
- Good control was reported by the CGC in 24% (34 patients including 15 at “Additional controller” and 8 at “Specialist Therapies” stages) with the software prompting stepping down therapy where appropriate.
- Overall, 42% (58/139) were recommended by the CGC to need alteration in Asthma therapy following review.

The CGC has been developed and owned by LungHealth Ltd. Drs Chakrabarti, Angus, Davies, Professor Pearson and Mr McKnight are all directors of LungHealth Ltd and were all involved in the development of the CGC. The STARRS-GM project has been developed as part of a Joint Working initiative between HInM (Health Innovation Manchester) and AstraZeneca UK

The STARRS-GM pathway

2 cohorts of patients were first identified using the MiQuest Software tool:

Cohort 1: Patients deemed at “high risk” of adverse Asthma outcomes i.e. those collecting 6 or more Short Acting Bronchodilator Agents (SABA) together with any one of the following additional NRAD “at risk” criteria” highlighted below were identified:

- Patients who have had a hospital admission as a result of their asthma in the last 12 months
- Patients attending OOH/A&E as a result of an asthma exacerbation
- Patients who have received two or more short courses of prednisolone in the previous 12 months
- Patients under-using their preventer medication (defined as $< 75\%$ of recommendation)
- Patients with no recorded inhaler technique or patients whose inhaler technique is recorded as poor
- Patients who have not received an annual review for their asthma

Cohort 2: Patients, on high dose inhaled steroid therapy with all the following criteria were identified deemed potentially suitable for de-escalation of anti-inflammatory therapy ACT/ACQ controlled upon last review

- No exacerbations in the previous 12 months
- No hospital admissions in the previous 12 months
- No A&E or OOH attendances in the previous 12 months

Conclusion

We have demonstrated that the introduction of clinical decision support software in the form of a computer guided consultation when conducting Asthma reviews within primary care is not only feasible but leads also to increased implementation of guideline level standard of care integral to improving patient outcomes and in decreasing health inequality.