Diagnostic transfer from specialized to primary care is one the core action plans to consolidate an integrated care ecosystem. Nextcare-Action 4 addresses this issue taking forced spirometry as the main use case.

Nextcare Action 4 - Diagnostic transfer to primary care. Regional deployment of forced spirometry

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Purpose

The current document describes the action plan for large scale deployment of the regional forced spirometry (FS) program which is the core objective of *Action 4 in the Nextcare project*. That is, *Transfer of diagnostic testing from specialized to primary care*. The regional deployment program (2016) was published in[1]. The document updates the status of the program and defines the actions required for completion of the action within 2017.

The setting

The program identified the four pivotal components needed for regional deployment in Catalonia (7,5 million inhabitants) of a collaborative FS program across healthcare tiers. The four core components of the FS program (Figure 1) are: i) Enhanced automatic FS quality assessment; ii) Accessibility to standardized (and quality-labeled) FS testing across healthcare tiers; iii) Generation of an individual FS report including historical information from a given patient; and, iv) Clinical decision support systems (CDSS) in the clinical workstation of primary care professionals, facilitating accessibility to the patient FS historical report, as well as access to off-line remote support by specialized professionals, upon request.

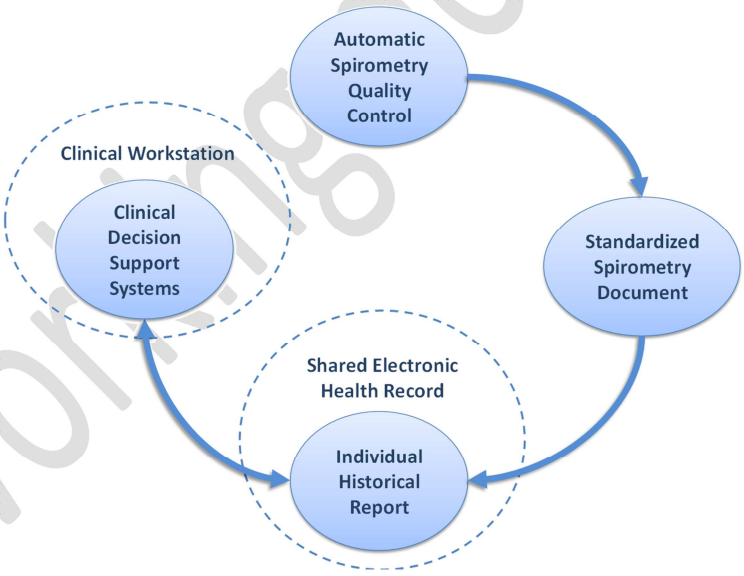

Figure 1 – The FS will allow access to forced spirometry testing (raw data, clinical results, quality control and historical data) from any clinical work-station of any healthcare provider. After the first year, transferability of the model to other healthcare environments and other diagnostic techniques will be analyzed. The new system will allow the future implementation of "data analytics" with impact on case management.

[1] Vargas Cl et al . Regional Implementation of Collaborative Lung Function Testing. npj Primary Care Respir Med 2016; 26; 16024

The FS program relies on the existing regional interoperability setting among healthcare providers, which has two principal components, namely: i) the regional shared electronic health care record allowing health information exchange among providers; and, ii) the personal health folder that facilitates citizen's accessibility to his/her healthcare information.

The underlying hypothesis is that the proposed FS program facilitates the transference of diagnostic testing from specialized care to the community which should generate significant healthcare efficiencies and provide valuable information on longitudinal changes of lung function either spontaneously or due to interventions.

Historical evolution

The different elements of the FS program were ready for deployment by mid-2016. But, large scale deployment in the region has been delayed because of the need for refinement of specific aspects of the implementation plan. The document identifies the status of the different building blocks as well as the phases envisaged to complete the entire program within 2017.

Building blocks

1. Transfer of FS information into the regional health record (HC^3)

Technical issues to achieve an appropriate transfer of the structured FS information (Clinical Document Architecture, CDA) into the regional health record (HC^3) are solved.

2. Transfer of FS information from the equipment to the clinical workstation

It is solved for the clinical pilot to be conducted in Barcelona from early May (May to July 2017). However, the transfer of FS information to the clinical workstations of the entire region (implementation of JAVA functionality) will be completed within July 2017.

3. Integration of the quality control algorithm into measurement equipment

Translation of the algorithm to C^{++} will be completed within April 2017. Thereafter, two simultaneous steps will be done: (i) new clinical validation of the algorithm during the clinical pilot in Barcelona (from May to July 2017); and, (ii) Integration of the algorithm into the measurement equipment (July 2017).

4. Clinical pilot in Barcelona

It will be done in one primary care unit in Barcelona (Numancia) from early May to July 2017 with a threefold aim: (i) to assess functionality of the entire circuit; (ii) to perform a new clinical validation of the algorithm; and, (iii) to evaluate acceptability of key performance indicators of large scale deployment.

5. Display of the FS testing and historical information into HC^3

Technological issues solve. But implementation is delayed until July 2017.

6. First survey to all regional primary care units (n= 369)

A Google-based survey is planned during the period May-June 2017. It has a threefold aim: (i) to describe the status of FS testing (equipment, knowledge, organizational aspects, identification of responsible professionals, etc…); (ii) to raise awareness on the FS program; and, (iii) to test acceptability of the evaluation protocol to be conducted in September/October 2017.

7. Design and development of the clinical decision support system (CDSS)

The design of the new CDSS for the Ecap system (covers 85% of the region) will be completed by the end-of –June 2017 and the development plans will be elaborated.

8. Second survey to all regional primary care units (n= 369)

The purpose is evaluation of acceptability and quality of the deployment with all functionalities in place (except final version of CDSS). It will be a Google-based survey to be done before the end of October 2017.

9. Data Analytics

Design of data analytics with a twofold purposes: (i) Quality control of FS testing; and, (ii) Risk assessment of both subsets of patients and individual subjects. It will include both technological requirements for data analytics and for display of the information (dashboards). It will be cased on the experience acquired during Summer 2016 (Master thesis of one Biohealth Computing student: Adnan Okko). The plan should be completed by late October 2017.

10. Report on regional requirements for consolidation of the FS program

The results of the two surveys will provide information useful to generate recommendations to achieve refinement/full consolidation of the FS program during 2018. The report will be generated in November 2017.

11. Generalization of the program to other geographical areas

The purpose is to generate a report formulating recommendations for deployment of the program in geographical areas without the regional interoperability tools available in Catalonia. It should be available within October 2017

12. Generalization of the program to other diagnostic testing procedures

We plan to generate a report formulating recommendations for generalization of the program to other diagnostic tests with potential to be transferred from specialized to primary care. It will be completed within October 2017.

13. Final report and dissemination

The final report including the results of the different building blocks will be elaborated during November 2017. We are planning three main outcomes: (i) Recommendations to the Catalan Government; (ii) Submit publication to an international peer reviewed journal; and, (iii) Proposal to ERS/ATS of an update of current FS standardization document. All the above tasks should be completed within 2017.