# Identifying high-risk chronic patients for targeted primary care interventions in Veneto, Italy

## Overview

Over the past decade, despite reporting health outcomes slightly above the national average, the Regional Government of Veneto, Italy, faced an increasing challenge to respond to growing levels of multimorbidities among its ageing population. Drawing from international experiences that sought to optimally provide services for those in greatest need, a pilot project was launched to introduce Adjusted Clinical Groups. The approach works to identify high-risk patients for proactive care with the aim of minimizing the need for more costly services at later stages of illness. Developing Adjusted Clinical Groups relied on measures found in electronic health records, including disease patterns, age and gender, to build a comprehensive profile of morbidity within the population, subgroups and individuals. In piloting the introduction of Adjusted Clinical Groups in Veneto, general practitioners received a list of priority high-risk patients in their geographic area. Ultimately, the model of care was transformed, calling for general practitioners to reach out to priority patients, engaging them in health promotion and disease prevention services and closely monitoring their condition over time. Implementation of this model has expanded the role of nurses, encouraging them to work in partnership with general practitioners for the delivery of outreach services. Patients and their caregivers also have greater involvement in the care process. Veneto's pilot project has been implemented in three phases: phase one (2012–2013), as an exploratory period to test the feasibility of the project within two of Veneto's 21 local health units; phase two (2013–2014), as a period of expansion, extending the project to six local units and involving health professionals in planning service improvements using data collected; and currently, phase three (2014–2015), working to scale-up the project across the entire region. While results and the future continuation of the pilot project will be assessed through an evaluation planned for 2016, the project has generated considerable interest from other regions and research institutions in Italy as a promising new model of health services delivery.

## Problem definition

Over the past decade, Italy has undergone a demographic shift towards an increasingly ageing population, with one-fifth of the population (21%) over the age of 65 in 2012, compared to a WHO European Regional average of 14% that same year.[1] In the Veneto Region of north eastern Italy, this shift has been particularly pronounced, with life expectancy trends slightly above the national average.[2]

With an ageing population, Italy has seen a characteristic shift towards greater chronicity and multimorbidity (Box 1). In 2010, circulatory diseases, cancers and chronic lower respiratory diseases were found to be the major causes of mortality.[3] New health pressures have placed greater demand on health services delivery to provide proactive disease prevention and health promotion, as well as continuous and coordinated services for managing chronic illnesses and instances of acute needs; a challenge in the context of the system's primarily reactive model organized according to disease categories.

Box 1

What problems did the initiative seek to address?

- Ageing population.
- High prevalence of multimorbidities and chronic diseases.
- Acute, reactive health system model.
- Fragmented delivery of health services.

## Health services delivery transformations

### Timeline of transformations

Faced with the challenges described, in 2012 the Veneto Regional Government embarked on a three-year pilot project (Table 1) to introduce Adjusted Clinical Groups – an integrated data management tool developed by Johns Hopkins University in the United States of America, as a means to reorientate the model of care for a tailored package of services according to needs and risks. The tool works to identify individual high-risk patients through predictive modelling, allowing targeting of services for intensive case management and preventive care before an individual's health worsens, reducing the demand for often more costly health services in the future.

In 2015, the project entered its final phase and, at present, is being scaled-up across Veneto. A regional database has been developed to enable predictive risk modelling for Veneto's 5 million inhabitants. This data is then used to identify high-risk patients and proactively offer primary care services to help prevent future health complications and reduce unnecessary hospitalizations. The impact of the initiative will be evaluated in 2016 to determine if Adjusted Clinical Groups will be permanently incorporated in Veneto's health system.

### Description of transformations

**Selecting services.** Services have shifted to place a greater focus on outreach, prevention and early interventions for patients at high risk for chronic disease and future hospitalizations. "We target only the population that has a certain level of multimorbidity and complexity, as well as a high risk of negative events, high probability of hospitalization within six months and high probability of high cost in the next year."

**Designing care.** Following the introduction of Adjusted Clinical Groups, high-risk patients are now proactively recruited. These patients and their caregivers are included in the care process and provided with a copy of their care plan explained to them by providers during a home visit. "The plan is placed somewhere obvious, often in the kitchen on the fridge." Markers for worsening symptoms are explained and patients and caregivers are encouraged to contact providers as soon as these are identified. This targeted approach has ensured the delivery system is optimally attuned to the needs of individuals at greatest risk of ill-health. Health providers are now "running after the patient and recruiting them," not the other way round.

**Organizing providers.** The pilot project has introduced new partnerships between nurses and general practitioners, with nurses taking on additional responsibilities, such as autonomously managing patients and providing input on care decisions. "The biggest change taking place is the ability of general practitioners to work in a team. … They had to change their expectations of the professional role of nurses." Together, general practitioners and nurses proactively reach out to patients, conduct home visits and provide continued follow-up to help patients manage symptoms more effectively and prevent unnecessary hospitalizations.

**Managing services.** The regional health authority for Veneto is responsible for planning, setting the strategic direction and monitoring local health units. In Veneto, statisticians are working at local health units to extract priority patient lists for each general practice using Adjusted Clinical Group predictive risk models; these lists are then distributed to general practitioners for outreach and follow-up services. Veneto is now using data to predict the future prevalence of disease to further tailor service priorities accordingly. In order to ensure continuous access to services, on-call nurses are available any time of day and patients can reach nurses by phone directly as needed.

**Improving performance.** Training is being provided for general practitioners and nurses to not only equip them with the necessary skills to provide proactive, targeted health services, but to also foster collaboration and teamwork. To promote partnership working between nurses and general practitioners, training sessions are

Table 1
What were the chronological milestones for the initiative?

| | |
|---|---|
| 2012–2013 | Phase one: data exploration and feasibility studies on introducing Adjusted Clinical Groups conducted within two local health units. |
| 2013–2014 | Phase two: analysis of local chronic disease data and predictive risk modelling carried out within six local units; potential services for high-risk patients designed. |
| 2014–2015 | Phase three: initiative scaled-up across all 21 local units in Veneto; proactive outreach services are being offered to a sample of high-risk patients identified through risk models. |
| 2016 | Evaluation of pilot project is planned to determine the future of the initiative. |

combined and held together for these two professional groups.

*When you say you want to change the mentality, this is not enough. So we are planning a special training course for this purpose with nurses and physicians. We used to have training programmes for nurses and general practitioners separately, but now we thought we should put them together in the same room.*

## Health system enabling factors

In Italy, responsibility for the organization and delivery of health and social services is decentralized to the regional level. The Veneto Regional Government oversees the health system via the Department of Health and Social Services. Services are provided by 21 local health units, two research hospitals and one regional cancer centre. Regions must provide a nationally defined basic benefit package to all citizens. Health is mainly financed by earmarked central and regional taxes and Veneto receives their allocated share from the National Health Fund for distribution to local health units. Approximately 10% of national health funds are centrally reserved and a portion of this funding was used to finance the initiative, allowing local unit budgets to remain unaffected by changes (Table 3).

Table 2
How was the delivery of health services transformed through the initiative?

| Before | After |
|---|---|
| **Selecting services** | |
| Nationally defined basic package of services available to the population. | Focus of services shifted towards prevention and early intervention. |
| **Designing care** | |
| Delayed entry of patients into care; patients and caregivers not typically involved in the care process; patients sought out care only after symptoms occurred or worsened; many patients required specialist care due to delays in seeking treatment. | High-risk patients recruited into care earlier; patients and caregivers included in care process and provided with a copy of their care plan; patients and caregivers receive education on identifying and responding to changing health conditions. Providers now "running after the patient". |
| **Organizing providers** | |
| General practitioners deliver majority of services with nurses "just following orders." | General practitioners and nurses work as a team with nurses taking on additional responsibilities; home care visits and follow-ups conducted by primary care providers for high-risk patients. |
| **Managing services** | |
| Veneto Region holds responsibility for the delivery of services to their population via local health units. | Services better managed in local health units through the use of data to adapt services in response to changing health needs. |
| **Improving performance** | |
| Trainings for nurses and physicians held separately. | Trainings for nurses and physicians held together to promote teamwork. |

The introduction of Adjusted Clinical Groups has relied on the existing information system, measuring the morbidity burden of the population based on disease patterns, age and gender. Adjusted Clinical Groups have drawn from insurance claims, prescriptions or other electronic medical records to build a comprehensive picture of morbidity burden within the population, subgroups and individual patients.[4] Recent investments have been made in strengthening Veneto's health information systems and the "huge amount of data registered for administrative purposes has become a goldmine to support integrated care". While Adjusted Clinical Groups also have the potential to be applied to performance monitoring and budget allocation, general practitioners are resistant to these changes which has consequently prevented payment-for-performance incentives from being implemented. The Veneto Regional Government is, however, strategizing other ways in which to use Adjusted Clinical Groups to improve health system performance including, for example, how to plan for future health workforce needs.

## Outcomes

Outcomes of the initiative will be assessed by the final evaluation in 2016. This evaluation will determine whether the initiative continues to be implemented and secured with formal policy. However, key informants report observing indirect indicators of success and the

Table 3.
How has the health system supported transformations in health services delivery?

| System enablers | Example |
|---|---|
| Accountability | • Decentralized model of managing and delivering health services supported the experimentation and development of this initiative. |
| Incentives | • National health funding derived from taxation is pooled regionally and redistributed to local health units; approximately 10% of national health funds are centrally reserved and part of this funding financed the initiative. |
| Competencies | • Regional government strategizing ways to use Adjusted Clinical Groups to plan for future health workforce needs. |
| Information | • "Goldmine" of data routinely collected for administrative purposes.<br>• Evaluation will assess the impact of the pilot; permanent adoption of Adjusted Clinical Groups depends on evaluation findings. |
| Innovation | • New Adjusted Clinical Risk applications and predictive models developed based on the methodology of Johns Hopkins University.[4]<br>• Italian universities and national health agencies interested in researching Adjusted Clinical Groups. |

initiative has already generated considerable interest from universities and other Italian regions.

## Change management

### Key actors

The Veneto Regional Government has led the introduction of Adjusted Clinical Groups, with support from a variety of actors (Box 2). Pioneers of the approach in Italy, government officials in Veneto showed significant foresight in their willingness to explore new approaches for addressing emerging health issues. International actors, notably Johns Hopkins University which first developed the Adjusted Clinical Groups concept, were instrumental in providing inspiration for the initiative and structural guidance.

Local actors were also heavily engaged throughout the process to ensure buy-in for the changes proposed and suitable adaptations for the local context. Furthermore, the Veneto Regional Government assembled a working group composed of local experts to lead the initiative. "We did not hire new people. We took statisticians and nurses who were working in the region and we took some of their time to build a team." To help garner support from the health workforce, providers were recruited as champions for the initiative to encourage peers to become involved. "We asked the head of the health district to help identify champions who would help promote this work. We began this work with one or two general practitioners for each area; we couldn't have everybody right away."

Box 2
Who were the key actors and what were their defining roles?

- **Veneto Regional Government.** Led development of initiative; provided necessary funding for activities; formed working group to oversee design and implementation of activities.
- **Johns Hopkins University.** Developed Adjusted Clinical Groups tool used in the pilot project.
- **Working group.** Composed of government officials, statisticians and health providers; responsible for overseeing the pilot project, developing risk models and evaluating progress.
- **Champions.** Health providers recruited to promote the initiative among peers.

### Initiating change

The Veneto Regional Government's strong commitment to data driven change created an environment conducive to services delivery improvements. Taking a forward-looking focus, regional officials became increasingly concerned that the traditional approach of cutting the most expensive programmes to reduce health care costs was no longer sustainable after what they described as a "revolution of chronic disease" which had created an "epidemic of patients with multimorbidity". Some officials began to wonder if the system of diagnosis-related groups could be applied outside of hospital settings, leading them to search for international examples of this approach.

*The turning point was a trip to Sweden for three days. … They were using a tool developed by Johns Hopkins University to classify patients outside of the hospital. Once you go out of your boundaries you open your mind and find out that there are often solutions and you don't have to invent anything. You simply have to look around.*

## Implementation

The pilot project was implemented in three gradually progressive stages. The first phase, applied to just two of 21 local health units, was used to develop the methodology, experiment with data and test the feasibility of the initiative. "Show that you are knowledgeable and that your methodology is sound. The people you are involving have to feel you are competent and you are supporting them with a quality initiative." During the second phase, which expanded the project into six local units, health providers were given information on the initiative and asked for their input and ideas.

*Just in an exploratory way, we said: "look this is what we have. Do you think this might be useful for your practice, or could you come up with a way in which it would be useful for your practice?" And we started to see the possible feedback we could have from health professionals when we provided the information.*

Having collected a sufficient amount of data and ideas from general practitioners and nurses "we decided to expand to the whole population to not only measure, but to identify and contact patients and to provide a different way of getting people into the health service." While leaders of the initiative indicated changes were taking place with some resistance, services nevertheless transformed and patients began receiving proactive outreach and follow-up services. Continuous feedback and support was highlighted as being critical for maintaining the enthusiasm and momentum for change.

## Moving forward

Formal policy changes to permanently adopt proactive case management of high-risk patients in primary care using Adjusted Clinical Groups are being considered pending results of an evaluation to be carried out in 2016.

### Highlights

- Government officials looked outward to find existing solutions to adapt and apply to the local context: "there are often solutions and you don't have to invent anything. You simply have to look around."
- The initiative was gradually implemented in a three-phase pilot project; time was taken to explore, verify and refine the initiative before scaling up across the region.
- Strong data collection was critical for allowing predictive risk modelling using Adjusted Clinical Groups; the initiative capitalized on the "goldmine" of data collected for administrative purposes.
- Nursing roles were advanced by the initiative and nurses now work in partnership with general practitioners to manage high-risk patients.
- Services were reorientated to become more proactive with high-risk patients being targeted for tailored interventions and preventive services; health providers are now "running after the patient and recruiting them," not the other way round.

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