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# South Devon and Torbay

Proactive case management using the community virtual ward and the Devon Predictive Model

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Co-ordinated care for people with complex chronic conditions

# **South Devon and Torbay**
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# About this research

Age-related chronic and complex medical conditions account for the largest and growing share of health care budgets in all industrialised nations. However, people living with multiple health and social care needs often experience a highly fragmented service leading to sub-optimal care experiences, outcomes and costs. To address this, strategies of care co-ordination have been developed to promote more cost-effective care through integrated services.

For older people in need of both health and social care support, the divisions in the organisation, funding and delivery of care in the United Kingdom (UK) can result in poor user experiences and outcomes. There have been many innovative projects to promote better care co-ordination for older people, but these have often not met their objectives and the failure rate has been high because of poorly designed interventions, difficulties in targeting those most likely to benefit from care co-ordination and the unmet patient needs that improved follow-up can uncover. There is a lack of knowledge about how best to apply care co-ordination tools in practice.

This case study is part of a research project undertaken by The King's Fund and funded by Aetna and the Aetna Foundation in the USA to compare five successful UK-based models of care co-ordination (see Appendix 1 for methods used to collect the study data). The aim of each case study has been to understand the strategies used to deliver care co-ordination effectively; examine barriers and facilitators to successful care co-ordination; isolate key markers for success for the practical application of the tools and techniques of care co-ordination; and to identify lessons in how care co-ordination can best be supported in terms of planning, organisation and leadership.

Further details about this project can be found at: www.kingsfund.org.uk/coordinatedcare

# Acknowledgements

# 1  Introduction

*The health and social care system in England*

The National Health Service (NHS) is responsible for providing health care to the public in the UK. It is publicly funded mainly through taxation and services are provided free of charge to all patients in the UK, excluding certain exceptions permitted by Parliament. Since its establishment in 1948, the overarching principle of the NHS has been to ensure that health care is available to all on the basis of need not ability to pay.

Responsibility for health care is devolved to the governments of each of the four constituent countries (England, Scotland, Wales and Northern Ireland). In England, community, mental health and general hospital services are provided by a number of bodies, from statutory NHS organisations to charities, social enterprises and private organisations who provide NHS funded services.

Primary care providers act as the first point of contact for physical and mental health care services. General practitioners (GPs) are local primary care physicians based in GP practices alongside nurses and support staff. They operate as independent businesses paid through a national contract administered by NHS England. Dentists, opticians and pharmacists also provide primary care services.

General practice accounts for around 90 per cent of all patient contacts in the NHS and the majority of people are registered with a GP practice (The King's Fund 2011). When specialist treatment is required, patients are referred to hospital or other specialist providers. In this way, general practice acts as the gatekeeper to specialist care. Urgent and emergency care services are available directly through out-of-hours services and hospitals.

Planning and purchasing of NHS services is referred to as commissioning. In England, general hospital services, urgent and emergency care, mental health and community services are commissioned at population level by 211 clinical commissioning groups (CCGs) who hold the majority of the NHS budget (£65 billion in 2012/13). Each CCG is formed from the GP practices in that area who come together to assess the needs of their population and commission services from NHS or other provider organisations which meet those needs.

> **NHS England**
>
> NHS England is a statutory body which commissions primary care health services (including GPs), public health and prescribed specialist services such as trauma care on a national basis.

In contrast, responsibility for funding (and some provision) of social care services, for example, for assisted living at home and long-term care, is held by local government (through local authorities), with users having to pay for services directly and/or gain access through means testing based on levels on need and ability to pay. Residential and domiciliary care is predominantly privately provided, and there is substantial self-payment. There are also a wide range of voluntary sector providers who deliver a range of health and social care services. While there are national rules for residential care costs, home

care is subject only to guidelines and there is considerably more variation in the organisation and delivery of domiciliary services at the local level. Direct payments are increasingly being made available to eligible recipients of local authority-funded social care, allowing individuals to control and directly purchase services to meet their own needs.

Alongside the introduction of CCGs in April 2013, responsibility for public health has shifted to the local authorities. Health and wellbeing boards have been established to support dialogue and the development of joint service strategies between the health and social care system. This is underpinned by a statutory duty to work in partnership. Significant emphasis has been placed on encouraging jointly funded and delivered services that promote person-centred care co-ordination as a means to improve the experience of patients and service users and ensure they receive high-quality care.

## 2 Integration of care for older people in Torbay and Devon

**Summary: Community virtual wards in South Devon and Torbay**

*Background*

In 2010, Devon Primary Care Trust (PCT) introduced community virtual wards across its GP practices to proactively identify those at high risk of emergency admissions using a predictive risk tool and to manage their care through a multidisciplinary approach. Following the establishment of the shadow South Devon and Torbay CCG, it expanded virtual wards across GP practices in neighbouring Torbay in 2012, building upon the existing model of integrated health and social teams, providing care and support to older people in the community and following discharge from hospital.

*Aims and objectives*

Proactive case management and community virtual wards identify people at risk of unnecessary hospital admissions and employ a multidisciplinary approach to address their individual needs across health and social care to prevent crises from occurring. The multidisciplinary team seeks to reduce duplication, improve continuity and the quality of care across providers and ensure that resources in the community are used efficiently by targeting additional services at those most at risk.

*Target population*

Following assessment, the virtual ward 'admits' people from the local community who are deemed to be at high risk of hospitalisation in the next 12 months. The majority of the virtual ward patient population are over 65 and are living with at least one long-term condition although a growing number of patients are in their 40s and 50s with mental health illness alongside drug/alcohol misuse.

*Approach to care co-ordination*

Predictive modelling is used to support proactive case management of patients by risk-stratifying a population and identifying patients who may be suitable for intervention. The Devon Predictive Model (DPM) combines primary and secondary care data to provide each GP practice with a list of its top 0.5 and 5 per cent of patients most at risk of an emergency admission in the next 12 months. This list is reviewed in the practice and by a multidisciplinary team including professionals from health, social care and the voluntary sector, to choose patients deemed suitable for proactive case management on a virtual ward. Those requiring multidisciplinary input are admitted to the 'ward', where patients receive intensive assessment and care co-ordination from staff in the team, led by a case manager, to provide ongoing care and support in their home. Once their condition has stabilised they are discharged from the virtual ward and continue to receive 'usual' care.

## Background

The county of Devon is situated in south-west England with two coastlines, to the north and the south of the county, areas informally referred to as north Devon and south Devon. Devon comprises 10 districts that are administered by four local authorities: Devon County Council; Exeter City Council; Plymouth City Council; and Torbay Council. Although the district of Torbay is located in Devon, it is a unitary authority and Torbay Council is responsible for all local government functions including social care provision.

Traditionally, the commissioning and provision of health and social care services has been split between different parts of the NHS and between the NHS and local authorities. This resulted in a fragmented system, with older people bearing the brunt of the lack of co-ordinated care, particularly those with complex needs requiring health and social care input.

Since 2000, the district of Torbay has been at the forefront of the development of integrated services which bring together health and social care to provide personalised care for older people with complex needs. The story of fictional 85-year-old Mrs Smith was introduced to explore the challenges faced by an older person living alone trying to navigate the system. This narrative enabled

leaders to focus their plans to integrate services in terms of the benefits for 'Mrs Smith' (Thistlethwaite 2011).

In 2002, Torbay Primary Care Trust (PCT) took over managing community services and agreed with the local authority to integrate these with adult social services, introducing integrated health and social care teams based in five areas across Torbay with pooled health and social care budgets. These teams consisted of community staff (nurses, occupational therapists, physiotherapists) working alongside social workers and other social care staff. The teams were later supplemented by the introduction of health and social care co-ordinators acting as a single point of contact for referrals into the teams, and hospital discharge co-ordinators to facilitate patient discharge from hospital back home and into their community.

The NHS Plan, published in July 2000, and subsequent legislation enabled local authorities to delegate responsibilities for delivering certain services to a care trust – a new legal body formalising the partnership between a primary care trust and the local council (Department of Health 2002). Torbay PCT and Torbay Council applied to the Secretary of State for Health to integrate their powers to purchase and deliver health and social care services, forming Torbay Care Trust in 2005 (Thistlewaite 2011). In subsequent years, the care trust invested in integrated health and social care teams, hospital discharge co-ordinators and intermediate care services such as re-ablement beds in the community.

Before 2009, PCTs provided community health services in addition to their central role commissioning health services. This changed with the introduction of the transforming community services (TCS) initiative requiring the compulsory separation of the NHS commissioner and provider functions. Divesting this function weakened Torbay Care Trust as its organisational structure was based on the role Torbay PCT had as both a commissioner and provider of services. This was exacerbated by plans to abolish primary care trusts in the Health and Social Care Bill in 2010, to be replaced by clinical commissioning groups (CCGs) from 2012 onwards (Farnsworth 2012).

In Devon, health and social care services were not formally integrated between Devon County Council and Devon PCT (which covered north and south Devon until April 2012). In comparison with Torbay, with two community hospitals and a range of intermediate care services, neighbouring Devon has many community hospitals providing support for patients on discharge from hospital. A community virtual wards pilot first started in north Devon in 2008 when a local GP introduced the scheme to try and reduce the number of emergency admissions for frail older people in the area. The intervention sought to identify at-risk patients through a predictive risk model and admit them to a virtual ward (as originally developed by Croydon Primary Care Trust (Lewis 2006)) where they would receive multidisciplinary case management to enable them to stay in the community. Following the pilot, the scheme was introduced to all practices in Devon in 2010.

Back in Torbay, the TCS process provided an opportunity for Torbay Care Trust to win the contract to provide community health services in south Devon in 2011. The following year, the Health and Social Care Act brought in CCGs, reasserting the traditional purchaser–provider split, with commissioning responsibilities transferring to the newly formed South Devon and Torbay CCG and Northern, Eastern and Western (NEW) Devon CCG. These reforms led to the withdrawal of care trust organisational status, and the Care Trust became Torbay and Southern Devon Health and Care NHS Trust on 1 April 2012.

From 2012, South Devon and Torbay CCG began working in shadow form with Torbay and Southern Health and Care Trust to standardise the services offered across the area. This process included introducing community virtual wards into Torbay and intermediate care services into south Devon.

An analysis conducted by The King's Fund in 2012 showed that Torbay PCT was in the top 10 PCTs for lowest emergency admissions and lengths of stay between 2006 and 2009/10 for over 65s (Imison *et al* 2012). In addition, they were able to demonstrate a reduction in people requiring residential care and a corresponding increase in the numbers of older people supported to live in the community (Goodwin *et al* forthcoming). Devon PCT was also in the top 10 for low emergency bed use (Imison *et al* 2012).

This study focuses on one element of the model of integrated care pioneered in Torbay; the introduction of community virtual wards using the Devon Predictive Model in south Devon and Torbay. Other elements of Torbay's model of integration are mentioned to add context to this case study. More information on the development of health and social care integration for older people in Torbay is available in *Integrating health and social care in Torbay* (Thistlewaite 2011).

## The patient group

South Devon and Torbay CCG was established in shadow form in April 2012 from the predecessor organisation, Devon PCT and the commissioning arm of Torbay Care Trust. The CCG stretches from the south Devon coastline to Dartmoor, covering 289,000 people registered with 37 GP practices in five neighbourhoods – Torquay, Paignton and Brixham, Newton Abbot, Costal, and Moor to Sea. Southern Devon is a rural area four times the size of Torbay and is populated with small towns; Torbay is more urban with fewer large towns.

As a primary characteristic, the population structure of South Devon and Torbay CCG is dominated by a high proportion of older people with approximately 25 per cent of the population over 65 (South Devon and Torbay Clinical Commissioning Group 2013). The ageing population means that treating age-related illnesses represent a significant proportion of health care expenditure, especially in terms of health and social care services.

Community virtual wards are designed to manage patients with complex needs, including older people with several long-term conditions, eg, those with chronic obstructive pulmonary disease (COPD) and another condition such as dementia.

## Programme history

The concept of developing virtual wards in the community using a predictive risk model was developed by Devon PCT, the commissioning organisation responsible for buying health services across Devon at the time.

Predictive risk tools are designed to identify and target patients who could benefit from case management more effectively than relying on professional knowledge alone. The algorithms combine data from primary and secondary care to risk stratify patients and produce a risk score of the patients most likely to be admitted to hospital within the next 12 months.

Community virtual wards launched within the South Molton and Chulmleigh communities in north Devon in October 2008 and were rolled out to the rest

of north Devon in 2009. In 2010, Devon PCT extended the virtual ward model to the rest of Devon and a primary care quality incentive was developed to encourage practices to introduce the virtual wards. In 2011/12, community teams recruited virtual ward co-ordinators to manage the wards.

In neighbouring Torbay, an integrated model of care was already operating, but they were not using predictive modelling or virtual wards to case-manage high-risk patients. Following health reforms that established clinical commissioning groups (CCGs) in 2012, GP practices located in south Devon and Torbay were brought together under South Devon and Torbay CCG while 12 GP practices moved to NEW Devon CCG. GP practices in Torbay began receiving predictive modelling reports and implementing the virtual ward over the course of the financial year up to April 2013.

**TABLE 1: Timeline of key events**

| **South Devon** | |
| --- | --- |
| 2008 | North Devon pilots the virtual ward concept, along with Wandsworth and Croydon. |
| 2010 | Community virtual ward model introduced across Devon following successful piloting alongside the predictive risk model, the Devon Predictive Model. |
| **Torbay** | |
| 2000–02 | Integration of community health and social care starts from the bottom up with the development of small-scale rapid response intermediate services. |
| 2004 | An integrated community health and social care team is piloted in Brixham. |
| 2006 | Integrated health and social care teams are introduced across Torbay. |
| 2008 | Dedicated care co-ordinators are introduced to support the health and social care teams in Torbay. |
| 2012 | Community virtual wards begin operating in Torbay alongside integrated health and social care teams. |

*Funding*

The initial pilots in north Devon did not involve additional funding, but used existing staff and meetings to host the ward. In 2011/12, community virtual wards were supported by investment of £1.3 million into home-based intermediate care services. This money was provided by Devon PCT under a provision of the 2006 NHS Act, referred to as Section 256 funding. This legislation makes provision for commissioners to use NHS funding to support specified local authority services such as provision of care in the community.

The funding was invested in therapists, short-term care home placements for people requiring respite care, recruiting additional staff to conduct social care assessments, and virtual ward co-ordinators to provide administrative support. This ensured that case managers (providing care co-ordination to patients on the virtual ward) could be confident that services in the community would be able to cope with any additional demand.

Up to March 2013, a primary care locally enhanced service (LES) scheme was used to support proactive case management, providing an annual payment to reflect each GP practice's virtual bed allocation of 0.5 per cent of their practice population (weighted to match the demographic profile of all eligible patients). The LES was funded by a GP incentive Commissioning for Quality and Innovation (CQUIN) scheme, with payment based on average virtual bed occupancy. To qualify for the LES, practices signed a data-sharing agreement to

allow access to anonymised patient data extracted from the practice systems. The LES paid for two elements of the virtual ward; a case manager, and the time required to add a 'special message' on the out-of-hours system flagging patients on the virtual ward, and providing contact details for their named case manager, their crisis management plan or end-of-life directive, and discharge planning details. This could be accessed by out-of-hours clinicians working between 6pm and 8am on weekdays, and at weekends and public holidays.

This has now been replaced by a mixture of funding from NHS England including a Direct Enhanced Service (DES) payment and a small amount from a Quality and Productivity (QP) scheme which funds the monthly practice meetings and the out-of-hours message.

## Organisational structure

The virtual ward comprises two main groups of professionals. Integrated health and social care teams called 'zone' teams include the virtual ward co-ordinator, occupational therapists, physiotherapists, community matrons, district nurses and social workers. The primary care team refers to staff based in the GP practices including GPs, practice nurses and health care assistants/support workers. In addition, mental health nurses, alcohol workers, palliative care staff and representatives from the voluntary sector also attend virtual ward meetings.

## Devon Predictive Model

Community virtual wards initially used a predictive risk model (the Combined Predictive Model) developed by The King's Fund (Wennberg *et al* 2006). The Devon Predictive Model (DPM) was developed by Devon PCT in 2011 and is calibrated to reflect local datasets and variables increasing its accuracy in predicting those at risk (Chenore *et al* 2013).

In April 2012 when commissioning responsibilities transferred from Devon PCT to Northern, Eastern and Western Devon Clinical Commissioning Group (NEW Devon CCG) and South Devon and Torbay CCG, the former retained ownership of the DPM. South Devon and Torbay CCG has continued to use the model for their community virtual wards.

**Variables in the Devon Predictive Model**

The DPM incorporates data from more than 100 inpatient, outpatient and primary care variables. These include the:

- number of emergency admissions in the past 24 months

- presence of at least three distinct inpatient primary diagnoses

- number of outpatient specialty or day surgery episodes in the past 24 months

- number of primary care encounters over the past 12 months

- non-conveyances by the ambulance trust (where an ambulance is called but the patient is not transported to hospital)

- quantity of medications prescribed in any month.

In addition to these variables, the presence of long-term conditions such as diabetes, depression, hypertension, cancer and dementia are factored into the model.

All the GP practices in South Devon and Torbay CCG have signed a data sharing agreement enabling direct extraction of anonymised primary care data, while data from local acute hospitals is obtained from the secondary service user (SUS) dataset.

Once a month, the virtual ward co-ordinator accesses a secure website to obtain the predictive risk report for their practice. This details the practice share of patients with scores in the highest 0.5 and 5 per cent across the county of Devon and highlights patients whose risk score has increased significantly in recent months. This data is used alongside information from patient notes and 'soft' intelligence on the patient's situation from primary care, community staff and social services.

## Primary care and other external care providers

In South Devon and Torbay CCG, community virtual wards are hosted by GP practices. Each practice has a virtual bed allocation equivalent to 0.5 per cent of their weighted practice population. The average number of beds per practice is 39, with a range of between 11 and 70 beds. Each month on average, 80 per cent of the beds must be occupied to qualify for the incentive payment.

Embedding community virtual wards in primary care has facilitated GP engagement, ensuring their input is at the heart of the case management process and information from their records is available to the case manager and the rest of the team. GPs retain ownership of the model with flexibility to base decisions on a variety of factors including the admission of patients who may not have been flagged by the model as having a high-risk score. They also retain overall accountability for their patients with the allocated case manager holding day-to-day responsibility for co-ordinating care. The financial incentive provided by the DES quality payment recognises the additional workload the virtual ward places on primary care and ensures that a special message is placed on the out-of-hours system.

Voluntary sector representatives attend virtual ward meetings and take forward referrals, liaising with a variety of organisations such as the Royal British Legion, Age UK and Devon Carers who can offer patients/carers access to targeted one-to-one support, befriending, community transport, day care services, bereavement support and assistance to access financial/housing benefit checks. Each quarter, their activity is reviewed as part of the zone team report. Across Devon, voluntary sector representatives have begun developing information-sharing mechanisms and a list of the most common support services used for patients on the virtual wards.

Strong links have been established with emergency and out-of-hours services and staff in the virtual ward work closely with hospital discharge co-ordinators to facilitate discharge from hospital and put the appropriate support in place to avoid readmissions.

# 3 The process of care co-ordination

**FIGURE 1: The process of care co-ordination**

Secondary care data from A&E admissions, etc

Primary care data from GP attendances, etc

Devon Predictive Model
Monthly predictive risk report includes:
• existing virtual ward patients
• potential new patients

Additional information from other IT systems, eg, social care, GP records

Shortlisting meeting between GP and virtual ward co-ordinator to discuss predictive risk report and shortlist new patients

Existing virtual ward patients

Shortlist of potential new patients

Virtual ward meeting comprising: GP, occupational therapists, physiotherapists, mental health staff, community matrons, district nurses, social workers, health and social care co-ordinator, social workers, palliative care staff and voluntary sector representatives

Feedback and data

Case manager assigned and patient's status set (red, amber or green)

Patient

Patient assessment and development of care plan

Care plan implemented by case manager, virtual ward team, intermediate care team, care agencies

## Step 1: The predictive risk report

Each month the DPM report is generated. This includes patients who are already being case managed on the virtual ward and those flagged by the DPM as high risk. The ward co-ordinator or practice representative accesses this report from a web portal and the information is shared with relevant practice staff.

## Step 2: Shortlisting patients for the virtual ward meeting

Before each meeting, the GP or practice nurse meets with the virtual ward co-ordinator to discuss the predictive report and shortlist patients who may be suitable for admission to the virtual ward. The co-ordinator obtains any additional background information for each patient on their physical and mental health needs and social care requirements by accessing electronic records in primary care or the social care systems.

## Step 3: Virtual ward meeting

The virtual ward team at each practice meet once a month to review the current status of patients on the virtual ward. Each case is assigned a traffic light (red/amber/green) which is adjusted based on information provided by their case manager on the level of input required

The team also discusses potential admissions identified from the predictive risk report and any other cases identified by staff at the meeting. Approximately 80 per cent of the patients on the ward are identified from the predictive risk report, with the remaining 20 per cent referred in by the MDT directly. New admissions are assigned a case manager, based on their prevailing needs, or to a professional with a pre-existing relationship with them.

## Step 4: Patient assessment

Once the practice and the rest of the virtual ward agrees to admit a new patient, the assigned case manager gets as much information on the patient as they can from other care professionals. If they do not know the patient, the case manager will be introduced to the patient by another professional who is known to them, and they seek their consent to perform an initial assessment.

The case manager assesses the person's physical health, psychological wellbeing, environmental, social, personal and spiritual needs. They identify potential gaps in care, vulnerable areas and issues for review to ascertain whether any measures can be put in place as a 'safety net' to prevent subsequent deterioration which might result in a hospital admission.

> When you're round that table you've only got a finite amount of time …you haven't got time to dig deep in each patient if you flag up lots of issues… so the case manager will go and assess the patient or speak to the GP… there's an awful lot of communication needs to go on outside of [the] meeting.

(Commissioner)

> **Patient assessment checklist**
>
> The initial assessment checklist details a comprehensive list of actions for the case manager including:
>
> - performing an initial assessment using a local management tool
>
> - identifying a baseline for the patient, against which any changes can be measured
>
> - ensuring that the assessment takes into account the patient's needs, occupation, family support, home environment and lifestyle. Setting and agreeing realistic goals with the patient, ensuring these are recorded clearly in a case management plan with timeframes
>
> - communicating the outcome of the assessment and the case management plan with the virtual ward team at meetings
>
> - completing an out-of-hours special patient message on the system (to alert out-of-hours clinician to any special measures or emergency plans put in place by the virtual ward).

## Step 5: Ongoing multidisciplinary, proactive case management

Case management is delivered in a variety of ways according to the specific need of the patient. Some patients are managed through regular telephone calls. Other patients may require daily face-to-face contact with their case manager during a period of crisis. The level of intervention is tailored to the needs of the patient and the complexity of their health and social care requirements. The role of the case manager is to co-ordinate their care plan, which may involve providing direct care as well as liaising with other professionals. They also act as the contact point for the patient and family where possible.

The case manager can refer to a checklist of ongoing actions including:

- ensuring the patient is provided with contact details for the case manager and relevant carers/support workers

- ensuring the patient is contacted regularly as determined by their traffic light status and ongoing needs

- monitoring the patient's wellbeing and regularly reviewing their goals, quality of care, access to services and equipment

- documenting all reviews, changes to treatment plans or goals in the appropriate electronic record.

## Step 6: Review and discharge from the virtual ward

Patients on the virtual ward are assigned a status using the red/amber/green flagging system. These are reviewed regularly to determine whether any patients are ready to be discharged. In preparation for discharge, the case manager assesses the patient's readiness to manage in their future environment and ensures that contingency plans are in place in case their health status begins to deteriorate. Each ward has a set capacity and

patients are discharged from the virtual ward when the goals set in their case management plan have been fully met, the virtual ward approach no longer adds value to the patient's situation or the patient no longer wants to participate.

Once discharged, the virtual ward team agrees on a planned 'outpatient review' at regular intervals by the original case manager to provide input if required. Patients can be readmitted to the virtual ward at a later date if their situation requires further multidisciplinary input.

*[When] you get people on board… [they] get that high, intensive input and discussion… [and] the package of care is set up. They might still be appearing on the high risk list but you know they're comfortable and being managed, and gradually their risk score should come down, so you are effectively discharging them… that gives you time to discuss the next patient… there should be a continual cycle'*

(Commissioner)

## Functional integration

Staff working within the community virtual wards in South Devon and Torbay CCG use differing IT systems; the GP system is separate from the integrated community health and social care information system, while the acute sector also has separate IT systems. The model has developed several mechanisms to facilitate information sharing. Each virtual ward co-ordinator has access to the different systems and patients can be identified by their NHS ID number and date of birth. This information is used to inform the discussion about patients at MDT meetings. In addition, GPs complete a message on the out-of-hours system for all virtual ward patients. This message can be accessed by the out-of-hours provider, Devon Doctors, providing them with specific information on the patient when conducting a home visit or requesting an ambulance.

The allocated case manager notes any changes which occur as a result of the case management process in the patient's GP record, and this information is shared with the rest of the multi-disciplinary team at subsequent meetings or over the phone.

## Team culture

The virtual ward approach has been built upon existing relationships between professionals within the zone and primary care teams. In many practices, an existing multidisciplinary meeting was utilised to minimise the burden on staff, and the meeting was divided into slots enabling community staff to attend and report back on their patients, without sitting through all the cases.

*I think [the] willingness… to work together and make it work [has been] a role model for everyone else to say… this is important and we want this model of working. That's what's made it work for us… the GPs will come and our community matron is brilliant. They were all already there, those relationships… [we've] just put some structure around it.*

(Primary care team member)

The case manager leads the discussion of their patient and input from other disciplines is welcomed and encouraged within a supportive and focussed environment. Staff are willing to conduct joint visits to a patient's home if

additional expertise is needed. The virtual ward co-ordinator notes actions, ensuring that a record of the discussion is produced and shared among the team. Staff are clear about their roles and where these overlap with other professionals.

Engagement of community staff, particularly in Torbay, has varied due to their general workload increasing as more care is delivered in the community. Unlike GPs, there is a requirement for community staff to attend multidisciplinary meetings as part of their existing roles and they do not receive incentive payments. Community staff attend several virtual ward meetings each month as they cover all the GP practices in their area. In a small number of practices attendance by community staff has declined due to a perceived disparity in GP attendance.

## 4 Impact

This co-ordinated care approach has sought to reduce emergency admissions and lengths of stay for patients receiving case management by focusing resources on patients at high risk of hospital admission. South Devon and Torbay CCG has collated data on hospital admissions for the top 5 per cent and 0.5 per cent of patients in Devon and compared these to admission rates for the general population.

In Devon, available data covers a rolling 12 months of emergency admissions activity for the first 3 months of each year between 2009 and 2011 (*see* Table 2). In the first two years (2010 and 2011), the community virtual ward model appeared to reduce emergency admission rates and length of stay for the top two at risk cohorts (0.5 and 5 per cent) for patients admitted to South Devon Healthcare Foundation Trust (the main acute hospital for patients in south Devon). However, less than half of these patients were on the virtual ward so it is not possible to definitively attribute the reduction to any specific intervention.

**TABLE 2: Emergency admission growth 2009–11 averaged Jan/Feb/ Mar cohorts**

| Provider | Year | All EM admissions | Increase (%) | No of top 5% EM admissions | Increase (%) | No of top 0.5% EM admissions | % change |
|---|---|---|---|---|---|---|---|
| **ALL Devon** | 2009 | 63,435 | | 19,104 | | 4,816 | |
| | 2010 | 65,728 | 3.61 | 19,841 | 3.86 | 4,929 | 2.35 |
| | 2011 | 65,413 | −0.48 | 19,435 | −2.05 | 4,690 | −4.85 |
| **Plymouth Hospital Trust** | 2009 | 7,096 | | 1,741 | | 337 | |
| | 2010 | 6,966 | −1.83 | 1,891 | 8.62 | 435 | 29.08 |
| | 2011 | 6,639 | −4.69 | 1,583 | −16.29 | 267 | −38.62 |
| **South Devon Healthcare Foundation Trust** | **2009** | **10,529** | | **3,573** | | **907** | |
| | **2010** | **10,921** | **3.72** | **3,627** | **1.51** | **862** | **−4.96** |
| | **2011** | **10,702** | **−2.01** | **3,016** | **−16.85** | **640** | **−25.75** |
| **North Devon Hospital Trust** | 2009 | 12,083 | | 4,166 | | 1,219 | |
| | 2010 | 12,403 | 2.65 | 4,168 | 0.05 | 1,112 | −8.78 |
| | 2011 | 13,072 | 5.39 | 4,177 | 0.22 | 1,021 | −8.18 |
| **Royal Devon & Exeter** | 2009 | 28,483 | | 8,000 | | 1,984 | |
| | 2010 | 30,263 | 6.25 | 8,696 | 8.70 | 2,143 | 8.01 |
| | 2011 | 30,044 | −0.72 | 9,323 | 7.21 | 2,488 | 16.10 |

Source: Admission patterns for high-risk patients August 2012, NHS Devon

In Torbay, community virtual wards were implemented half way through 2012/13 so there is less data available for analysis. Torbay Hospital, the main acute hospital in the area, saw a drop in emergency admissions for the top 0.5 and 5 per cent of at-risk patients in 2010 and 2011 (before the implementation of virtual wards), however early indications suggest there has been an increase in admissions for the 5 per cent cohort in 2012. This data is incomplete due to data extraction issues with the Torbay practices and has not been reproduced here.

It is difficult to attribute these fluctuations in admission and length of stay data to the community virtual wards model. A comparison of hospital admissions of high risk patients in the virtual wards with high risk patients who have not received proactive case management did not reveal significant differences: patients on the virtual wards had on average 1.64 admissions in 2012/13 and non-case-managed patients had 1.07 admissions. The slightly higher admission rates for case-managed patients could be due to a number of factors, as the most complex cases are likely to have been admitted to the virtual ward. It is also difficult to determine if patients were in a virtual ward at the time of their hospital admission, as patients can be discharged and readmitted to the wards without these dates being accurately recorded and transmitted for comparison with hospital admission dates. The initial data extraction issue with Torbay practices also means that this data is incomplete.

Another complicating factor in the evaluation of impact has been the establishment of the shadow South Devon and Torbay CCG in 2012. GP practices in Torbay joined the CCG while 12 practices in south Devon moved to neighbouring NEW Devon CCG. As a result, any subsequent data comparisons cannot be made on a like-for-like basis due to these changes in the baseline.

More recently, following the publication of the updated review of information governance in April 2013 (Caldicott 2013) current Section 251 restrictions now prohibit the flow of data from GP surgeries to CCGs for risk stratification unless anonymised. Section 251 of the NHS Act 2006, allows specified organisations to use confidential patient information without consent in specific circumstances where anonymised information is not sufficient such as auditing and monitoring the delivery of patient care or understanding local health needs. These restrictions have stopped the production of predictive modelling reports across South Devon and Torbay CCG or the use of patient data for detailed analysis, with practices relying on local intelligence to identify patients (National Information Governance Board for Health and Social Care 2013, NHS Health Research Authority 2013, Thompson *et al* 2013).

South Devon and Torbay CCG, along with NEW Devon CCG, are planning to commission a robustly matched propensity score control study to fully understand the impact of the virtual ward case management on individual patients and have been in contact with the Nuffield Trust to undertake this, but current Section 251 restrictions on data are preventing this from taking place.

## Patient and carer experiences

South Devon and Torbay CCG is in the process of developing a questionnaire for the virtual wards. At the time of writing, no quantitative evidence had been collected, but feedback from a pilot shows that patients and carers are have welcomed the case management approach and the improvements in co-ordination and continuity of care.

> *Our case manager is marvellous, caring, kind and helpful. She is knowledgeable and I am able to talk to her about any concerns. If I didn't have [the care co-ordinator] I would have no one else to turn to.*

(Patient)

*My mother's case manager is good at co-ordinating things and has helped to arrange respite. Without [the care co-ordinator] I would not have been able to get together and access all the services my mother needs.*

(Carer)

*Our case manager was able to get things done quickly and had access to my consultant. When I was in hospital it was [the care co-ordinator] that my family turned to and she was able to help with my discharge plans.*

(Patient)

*I was working with the GP but we couldn't get my mother to agree to access services. Through the case manager, we were able to get a benefits check… voluntary sector services involved and a care package in place. Dealing with one person increased my mother's confidence and she finally agreed to have essential medical tests.*

(Carer)

*Without our case manager my partner would not have been able to stay at home. [The care co-ordinator] helped us sort out GP input, district nurses, OT and physio. We were helped to get some funding for a care package and also some carers take-a-break funding.*

(Carer)

*Our case manager was a really good point of contact for everyone. She acted as a go-between for services. We were able to ask her questions and she would find out the answers.*

(Patient)

Further positive feedback comes from the involvement of the volunteer sector representatives at virtual wards.

For example, when a patient's mobility prevented them from washing themselves unaided, and the landlord refused to install a wet room, a voluntary sector representative intervened on the patient's behalf. The landlord then agreed to the installation and funded the building alteration, enabling the patient to carry out her own personal care. Voluntary groups can tend to carers' needs by offering them respite through befriending services and help with household chores. In other instances, they have been successful in establishing contact with patients and carers who have refused support from health and social care services.

Overall it is too early to tell whether the virtual wards improve clinical outcomes; further evaluation once the wards have been running across south Devon and Torbay for several years is needed.

Perhaps not so evident from the impact data is the extent to which patients themselves are empowered to manage their own care and the degree to which they, or their carers, are expected or able to play a full part in care planning. Despite the evidence collected on impact, there appears to have been a lack of emphasis on gaining feedback from patients about their experiences, though they have otherwise been proactive in engaging local people in the development of the model of care itself. In absence of clinical outcome data, sites should focus on gathering qualitative and quantitative data on user experience to demonstrate added value.

**Case study**

*Mr K*

Mr K has severe chronic obstructive pulmonary disease (COPD), and was new to case management after an admission for an exacerbation of COPD. He had previously been very independent but with the presence of community matron he had access to a trusted health professional. When his condition deteriorated this was detected by the community matron at an early stage. He was able to start his emergency treatment and was monitored daily through telephone calls or home visits until his symptoms improved. This prevented him being admitted to Torbay Hospital.

# 5 Challenges

## *Systematic challenges*

The ageing population across South Devon and Torbay CCG poses a particular challenge to the community virtual ward model. Growing numbers of older people with multiple long-term conditions will require proactive case management in the future and the virtual wards may need to develop a multi-layered approach to ensure the approach remains an efficient use of resources. Another cohort of younger people with substance abuse problems are being identified up by the DPM as being at high risk of emergency admissions. In response to this, a second tier of intervention has been developed, the frequent user review panel. This is a wider multi-agency meeting involving health, social care, mental health, and the ambulance, fire and police services. This group reviews the top 20 users of accident and emergency (A&E) services across South Devon and Torbay CCG each month and develops a response more tailored to younger patients with complex social needs.

South Devon is a rural location which raises challenges in identifying complex cases proactively and the ability of patients to access services such as personal care. The voluntary sector places a key role in bridging the gap between statutory services provided by health and social care, providing transport to hospital appointments or helping patients/carers with practical tasks such as shopping.

Although information sharing is possible across the different IT systems using the NHS ID number, there is still little integration between GP, social care and hospital electronic patient records. The systems also collect different information: GP practices record data based on clinical care, whereas the community system records process measures, such as the number of visits. Granting virtual ward co-ordinators access rights to other IT systems has partly reduced this barrier to sharing information effectively with other professionals.

> *If I want to know what care package [a patient has], I either have to ask the person and that may be difficult because they may be a bit confused …or a member of the family, or I have to ring up social services and… that's really time- consuming.*
>
> (GP)

## *Organisational challenges*

Allowing flexibility in the patients admitted to the virtual ward has been a challenge the model has sought to overcome. During the pilots in south Devon, the commissioner specified that 85 per cent of patients on virtual wards should appear on the predictive risk report. Staff in the multidisciplinary team felt this restricted their ability to use their professional judgement to identify other patients who would benefit from intensive case management. Others were sceptical about the value of the predictive risk model as it did not include data on usage of community or social care services and risk scores would occasionally flag up patients recovering from a crisis, as well as those at risk of hospital admission. Following the pilot this stipulation was relaxed. Some interviewees also felt it had been challenging to shift from the reactive model

of primary care to a proactive model targeted at patients before they develop significant care needs.

Convincing the local authority that continued investment in social care is needed when local authority budgets are shrinking has proved a challenge for commissioners. In south Devon, investment by Devon County Council in intermediate care facilities via section 256 funds has helped to alleviate some of this pressure.

Increased workload in general practice and the community has not been matched by a increase in staffing levels and it has been challenging for commissioners to convince staff that the virtual wards would not create additional work. In order to meet the demand and identify the most suitable patients for case management, a meeting between the GP/practice nurse and the co-ordinator was introduced to shortlist potential patients. The teams have also tried to focus on maintaining a constant flow of patients through the virtual ward, discharging patients as soon as their care needs have been addressed. Ensuring sufficient capacity is available within the community teams to attend up to eight virtual ward meetings in a month has also proved difficult; in response the CCG is currently reviewing the skill mix within these teams.

## Facilitators

The drive towards health and social care integration, focused on providing person-centred care for older people over the past decade together with the presence of a strong commissioner has enabled the development and expansion of the community virtual ward model across south Devon and later Torbay. Devon PCT piloted the approach and South Devon and Torbay CCG have continued to lead and support integrated models of care. GP engagement with new models of commissioning and provision enabled the model to thrive within primary care.

Investing in intermediate care also helped the virtual ward approach as it provided another source of services and equipment in the community. Without this funding, case managers may have encountered difficulties securing care packages and other services to support patients at home.

> …we have the virtual ward and we have intermediate care across the patch so that makes life easier from that point of view and more likely that … we have put in place a system which helps us to make it possible to keep people at home.

> (GP)

# 6 Key lessons

The south Devon and Torbay area has benefitted from a long history of partnership working in Torbay between health authorities (commissioners and providers) and the local authority to integrate services for patients. There has also been consistent leadership (the chief executives of the main acute trust and PCT were in post for more than 15 years) in spite of several organisational changes (Farnsworth 2012). In Devon, the PCT and local authority utilised a culture of active GP engagement to pioneer the virtual ward approach in GP practices (Lewis 2011).

Early evidence on the effectiveness of the virtual ward approach is scarce and as yet there is little evidence that using a risk predictive model to identify and case manage patients at high risk of hospital admissions is effective in reducing rates of emergency bed use or length of stay. The difficulties measuring impact referred to earlier are compounded as up to two years data is required to detect whether changes in admission rates are statistically significant (Lewis 2010).

A Commonwealth Fund paper published in 2010 indicated that the intervention had led to a reduction in PCT expenditure on acute admissions in Croydon, although this could not be directly attributed to the virtual wards (Lewis 2010). A major evaluation by the Nuffield Trust assessing the extent to which virtual wards can reduce emergency hospital admissions, including the Devon virtual wards as a case study, is due to report shortly (National Institute for Health Research Evaluations, Trials and Studies Coordinating Centre 2013). A randomised control trial of virtual wards in Toronto is also underway (St. Michael's Hospital, Toronto 2013).

The experience of South Devon and Torbay CCG in developing integrated care suggests that several years are needed to allow the model to mature. Furthermore, investing in a number of intermediate care initiatives has complicated the evaluation process and could have contributed to early positive results.

The model has been refined and improved since the pilots began in 2008. The introduction of the DPM attempted to address early concerns raised by professionals about the accuracy of the risk scores using the predictive model. The parameters of the virtual ward have also evolved, removing limits on patients identified through the predictive risk report and pre-selecting patients for discussion with the virtual ward team.

Several other key lessons of the community virtual wards approach are of relevance to other settings.

## Predictive risk modelling and risk stratification

Using a risk predictive model to stratify the patient population utilises data from primary and secondary care to identify those at risk of the hospital admission more accurately, targeting the intervention at patients who would benefit most from proactive case management.

## Locality working

The virtual wards are hosted by GP practices and in many cases were initiated using an existing multidisciplinary meeting of professionals from health and social care. This approach has strengthened their focus on the local population, with the GP practice team and virtual ward co-ordinator ensuring that information from their records are combined with data held in other systems. The virtual wards have benefited from existing good working relationships between care professionals across health, social care and voluntary sector and their knowledge of locally available services.

## Holistic care assessment and a personalised case management plan

Conducting a single holistic assessment reduces duplication and ensures the case manager has a detailed understanding of the patient's needs. Developing a personal case management plan ensures that all members of the virtual team are kept aware any developments and can provide cover for the case manager if needed.

## Dedicated care co-ordination

The case manager holds accountability for co-ordinating care, helping the patient to make decisions and self-manage as well as liaising with other professionals where needed. Often this role is filled by a community matron, who may have pre-existing knowledge of the patient, but the role can be filled by other members of the virtual ward team. This role provides personal continuity of care for the patient and a point of contact for other members of the virtual ward or out-of-hours care.

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# Appendix 1: Methodology

The research team used a mixed-methods approach which involved:

- 15 semi-structured interviews with staff from the virtual ward teams in GP practices located South Devon and Torbay CCG, managers, local commissioning managers and GPs

- observational analysis of a virtual ward meeting

- content analysis of key documents, presentations and impact data provided by the South Devon and Torbay CCG and Todd Chenore at NEW Devon CCG.