Identifying distinguishing features of the MDC model within the five ACE projects

Context:

The ACE Programme (Wave 2) has been working with five projects across England to trial and evaluate the concept of Multidisciplinary Diagnostic Centres (MDC) as an approach to improving outcomes for patients presenting with non-specific but concerning symptoms. Each project incorporated a range of locally determined variations to assess how MDC-based pathways could be configured to meet local need and healthcare priorities, and to understand the model’s potential flexibility.

This article considers the shared approaches undertaken across the five projects during the period of evaluation, draws out the distinguishing features of the MDC model, and identifies where distinctions have added value to the overall design of the pathway. It builds upon information in the previously released ACE resource, Emerging MDC Models and Principles, and the Realist Evaluation of the Implementation of the ACE Programme (MDC) conducted by the DHSC’s Policy Research Unit, both of which are available on the ACE webpages.

The article also provides a descriptive overview of project approaches to the MDC model and acts as a point of reference for further evaluative assessment of the ACE Programme. To provide structure to the discussion, the paper mirrors the MDC pathway process:

As this article is based on MDC activity during a specific evaluation period, it is important to acknowledge that pilot sites are continuing to evolve; therefore, future approaches may emerge as pathways develop further.

Pre-MDC activity:

Symptoms-based referral

In contrast to existing suspected cancer referral (two-week wait) pathways, which focus on suspicion of tumour-specific disease, the MDC concept is a symptom-based approach to patient referral.

The ACE MDC projects include a core set of referral criteria, including weight loss, nausea and/or appetite loss, fatigue, and abdominal/atypical pain, with all projects also including GP clinical suspicion (or ‘gut feel’), as part of their agreed referral criteria:

<table>
<thead>
<tr>
<th>Referral criteria</th>
<th>Airedale</th>
<th>Greater Manchester</th>
<th>Leeds</th>
<th>London</th>
<th>Oxford</th>
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<tbody>
<tr>
<td>Abdominal pain</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>Weight loss</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>Nausea / appetite loss</td>
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<td>Fatigue</td>
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<td>GP clinical suspicion</td>
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Individual projects have also included additional criteria to reflect local clinical priorities and existing healthcare arrangements. For example, Leeds have omitted respiratory symptoms from their pathway due to established direct access to chest x-ray whereas, by contrast, London included painless jaundice as a criterion to meet an identified local gap in provision for patients presenting with this symptom, and to build upon local service improvement undertaken in ACE Wave 1. In addition to symptoms-based criteria, the Oxford pathway applied an age-based threshold of 40 years and over. Instead of including a specified range of symptoms, Airedale have included the broad descriptor ‘non-specific but concerning symptoms with a high risk of cancer’ as a valid reason for referral. A complete list of referral criteria for each of the five projects is included within the Realist Evaluation report.

All five projects are characterised by their adherence to two mutual principles regarding referral:

1. that the patient must be considered as being of clinical concern, with non-specific symptoms potentially indicative of cancer (or other serious disease); and
2. that their presenting symptoms are not sufficiently clear to indicate an appropriate tumour-specific urgent referral pathway.

In this context, symptoms of relevance to the MDC are both serious in nature and potentially caused by a range of conditions, some of which may be cancer. In some instances, these symptoms may be high risk, but not specific enough in their presentation to indicate a single appropriate diagnostic pathway (for example, weight loss or change in bowel habit).

By considering these central guiding principles, projects have been able to apply different locally appropriate criteria whilst retaining fidelity to the overall purpose of the model. This is perhaps best illustrated by the inclusion of ‘GP clinical suspicion’, which provides the flexibility to address complex cases of clinical concern but whilst operating within strict MDC processes to ensure referral activity into the MDC remains appropriate.

A rapid, general diagnostic pathway for primary care

In line with the pathway’s primary care focus, most referrals come from the GP, although some projects have included emergency routes and acute medicine. Referral based on non-specific symptoms provides a broad diagnostic framework for clinically complex patients who are clearly unwell and allows the referring agency to address patient need in a planned and rapid manner.

To ensure that diagnostic activity remains focused on patients with serious, persistent and unexplained symptoms, the MDC approach includes an initial filter function to identify cases with more obvious explanations and to direct them onto more appropriate care pathways. As with the referral criteria, the selection of which battery of tests to include as standard has been taken by local clinicians, although a range of tests are common across all projects:

<table>
<thead>
<tr>
<th>Standard filter function tests</th>
<th>Beta hCG</th>
<th>BNP</th>
<th>Carcinoembryonic</th>
<th>CEA</th>
<th>CRP</th>
<th>eGFR</th>
<th>FBC</th>
<th>Ferritin</th>
<th>FTA</th>
<th>GC</th>
<th>GFR &amp; UK 1.0</th>
<th>AST</th>
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<th>LDH</th>
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<th>TSH</th>
<th>T4</th>
<th>U&amp;E</th>
<th>UN D &amp; Urea</th>
<th>Urine Dipstick</th>
<th>CA125</th>
<th>iron / iron-binding</th>
<th>INR</th>
<th>iCa</th>
<th>PPD</th>
<th>Chest X-ray</th>
<th>Low-dose CT</th>
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It is also important to note that additional optional tests are available as part of the filter function stage, with further information on this provided within the ACE Resource Pack.

The positioning of filter tests within the referral process differs amongst the projects to reflect both the adopted pathway design and the wider local healthcare environment; for example:

- Airedale and London: filter tests are conducted and reviewed in primary care before a referral is triggered. Leeds are moving towards the adoption of this approach as their pathway is extended across the city, having originally given GPs the option to review filter tests before referral or referring straight onto the ACE pathway;
- Greater Manchester: filter tests are conducted and reviewed before referral, but with the option to trigger the referral in parallel to the filter tests (to be cancelled if filter tests are conclusive/sufficient);
- Oxford: fewer tests are required in primary care prior to referral, with Creatinine and Thyroid function conducted (and a FIT kit provided) to prepare patients for a subsequent enhanced triage process consisting of a low-dose CT scan and FIT test. However, the GP retains clinical responsibility for the patient until they are referred into the MDC itself.

Therefore, the referral mechanisms developed within the projects have been influenced by their surrounding environment, but with a common emphasis on ensuring that patient need is addressed swiftly, that referrals are appropriate, and that pathway requirements can be achieved within their local setting.

**MDC activity:**

**Triage and assessment**

Following referral into the MDC, all patients undergo a detailed assessment as part of clinical triage. In Airedale, Greater Manchester (Royal Oldham), Leeds and London, this assessment is conducted by a clinical nurse specialist (CNS), either via an initial telephone assessment or during a face-to-face appointment. In Wythenshawe (Greater Manchester), this is addressed via an initial consultant assessment. In Oxford, where this pathway stage is substantially different, patients are assessed by a pathway Navigator; a specialist role that takes bloods, performs a low-dose CT scan and collects a completed FIT test. The Navigator then reviews this information as part of the patient assessment.

In all five projects, this process is conducted at pace, with MDCs in Airedale, London and Oxford setting an expectation for a detailed nursing assessment to be conducted within seven days of referral. In Leeds, a similarly rapid timeframe is expected, but with a longer wait possible if patients request a change of location for the assessment (patients are offered a choice, with MDC clinics held across three hospital and two primary care settings). Greater Manchester have an operational standard of 7 days from referral, but a maximum wait of 14 days, as their operating model of the MDC as a same-day service includes the assessment at the start of that appointment. However, referrals in Greater Manchester can be initiated at same time as the filter tests to mitigate against any potential delay.

Information gathered during this nursing assessment is used alongside the battery of filter test results to inform MDC discussion regarding the next course of action; this is either an onward referral to a site-specific cancer pathway or non-cancer clinic, the scheduling of further diagnostic tests, or discharge back to primary care. Leeds MDC has included an additional option of a period of patient observation, during which time, the patient is closely monitored and reviewed within the MDC. This process is underpinned by a robust risk-assessment at triage, which allows the MDC to safely ensure
that patients only undergo potentially invasive diagnostic tests when necessary, with lower-risk cases placed under time-limited clinical surveillance.

In all instances, patients continuing to present with unexplained and serious symptoms are scheduled for further tests within the MDC:

Where further tests are required, the knowledge gained from the filter tests and patient assessment directly informs the selection of the appropriate diagnostic test, or sequence of tests, for the individual in question. As such, the MDC approach is patient-driven, rather than process-driven, with every patient’s care pathway configured to address their presenting need.

Projects have shown how triage and assessment arrangements can be configured in different ways to fit within their overall pathway designs, whilst still conforming to two core aspects within the MDC model:

1. That triage and detailed patient assessment occur in rapid succession to referral
2. That subsequent diagnostic investigations are determined by an assessment of individual patient need, as opposed to a standardised pathway process

**CNS / Navigator roles**

The CNS and Navigator roles provide a vital function at the heart of all five projects, with these posts combining a range of clinical skills and responsibilities that are unique to the MDC. Navigator posts exist in two of the MDC projects, although the nature of these positions varies from a broad role complementing the work of the CNS in Greater Manchester, to two more clinically focused posts in Oxford (Radiographers). In both projects, the Navigator position includes a strong focus on patient support and pathway co-ordination, including active liaison between primary and secondary care clinicians.

In Oxford, the Navigator (Radiographer) conducts the initial patient assessment, as part of their enhanced triage. In the other projects, the CNS role acts in a similar capacity and conducts the initial nursing assessment, in addition to providing co-ordination, tracking and support throughout the MDC process. A detailed appraisal of these MDC-specific roles is included within the PRU’s *Realist Evaluation*, and it is clear from this document that both CNS and Navigator positions are crucial to the operational success of the pathway.

Although differences in approach are evident, all CNS and Navigator roles within the MDC are characterised by the provision of active and consistent support for the patient themselves. In all cases, these posts represent the first point of patient contact with the MDC and, from the point of referral onwards, they support the patient through to any subsequent diagnosis or eventual discharge from the pathway. This provides an enhanced level of support and continuity of care for the patient and is notably different from existing suspected cancer referral (two-week-wait) arrangements, which
generally sees the allocation of a CNS at the point of diagnosis. Evidence from the 2018 MDC patient experience survey indicates that this feature of the pathway has been positively received by patients themselves and is highly valued.

**MDC decision-making**

The frequency of MDC clinics differs between the five projects, with decisions regarding service configuration taken locally to reflect pathway design, capacity and anticipated demand for the service. However, all MDCs operate weekly clinics in support of a faster diagnostic pathway for patients with non-specific symptoms.

In Leeds, London and Oxford, these clinics are supported by weekly MDC MDT meetings (twice-weekly in Leeds) whereas, in Airedale, diagnostic decision-making and case management are addressed as part of the MDC clinic itself. The pathway in Greater Manchester is distinct from the other projects in that it operates on a same-day clinic basis; the patient is assessed in the morning, with subsequent investigative tests, reporting and review occurring throughout the day whenever possible.

<table>
<thead>
<tr>
<th>MDC clinic</th>
<th>Greater Manchester</th>
<th>Leeds</th>
<th>London</th>
<th>Oxford</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airedale</td>
<td>1 clinic per week</td>
<td>3 clinics per week (across two sites)</td>
<td>Daily across 5 sites (9 clinics per week)</td>
<td>Daily nurse-led clinics</td>
</tr>
<tr>
<td>MDC Lead</td>
<td>Respiratory Specialist &amp; CNS</td>
<td>Gastroenterologist &amp; CNS</td>
<td>Consultant Gastroenterologist; Consultant Geriatrician</td>
<td>Gastroenterologist &amp; CNS</td>
</tr>
<tr>
<td>MDC meeting (MDT)</td>
<td>MDC discussions held during clinics (as required), with wider access to oncology &amp; radiology advice</td>
<td>MDC discussions held during clinics with Gastroenterology; CNS and Navigator</td>
<td>CNS; Oncologist; Acute Medicine; Gastroenterology; Elderly medicine; Haematology</td>
<td>Gastroenterology; CNS; Oncology; Geriatrician; Respiratory</td>
</tr>
</tbody>
</table>

Over the course of the evaluation, the position of MDC lead has been held by a range of clinical specialisms across the five projects. Whilst it has evolved to its current configuration (above), a number of projects have suggested that a generalist specialist would be best suited to the role, perhaps in reflection of the broad range of cancer and non-cancer conditions being diagnosed via the pathway.

Further detailed information on the description and assessment of these differing approaches forms part of the PRU’s Realist Evaluation and is available to view on the ACE webpage. Areas interested in developing similar symptom-based referral pathways will also need to consider these factors and the Realist Evaluation will be a valuable resource in support of this process.

**Diagnostic resolution**

The MDC model is being trialled as an approach to improving outcomes for patients presenting with non-specific but concerning symptoms. However, as these symptoms can be potentially caused by a range of cancer and non-cancer conditions, it is necessary to consider the point at which MDC clinical responsibility for the patient stops.

The extent to which this clinical responsibility is retained within the MDC is influenced by the overall philosophy regarding the nature of the pathway itself. Early findings from the ACE evaluation suggest the MDC has value for diagnosing cancer and non-cancer conditions within this group of patients.
Consequently, the projects are concerned with providing an explanation for the patient’s symptoms, with cancer being diagnosed in some, but not all, cases. However, there is also a recognition that, once serious disease has been ruled out, the most appropriate route for onward patient management and investigation may be back with the referring GP.

The projects share this overall diagnostic ambition, but their adopted approaches are understandably influenced by their perspectives on the MDC concept. For example, in Leeds, the MDC is seen as a broad diagnostic framework for addressing the needs of complex patients presenting with non-specific symptoms, irrespective of the disease type, with patients discharged with a diagnosis and accompanying management plan. Similarly, in London, a guiding principle is to ‘rule in’ a diagnosis or management plan for the patient, and not only to ‘rule out’ cancer; therefore, the patient is discharged from the MDC at the point that a diagnosis or management plan has been reached and the patient can be safely discharged to primary care or arrangements made for further secondary or tertiary care. Others, such as Greater Manchester, view the MDC’s primary function as a cancer diagnostic pathway, with activities co-ordinated to detect or rule out cancer as a priority, but with further diagnostic activities resumed for the patient after this point if necessary. Again, the overarching diagnostic objectives of the MDC remain the same, but the adopted methodology within the projects differ according to local interpretation.

**Distinguishing features of the MDC**

In summary, learning from the five ACE projects has helped to identify a number of unique, distinguishing features of the MDC model for non-specific but concerning symptoms. The MDC is:

**Symptom-based:**
- Criteria locally determined but conforming to central principles of seriousness of condition and non-specificity of symptoms
- Broad primary care diagnostic pathway for addressing complex, unwell patients

**Patient-centred:**
- Dedicated support and continuity of care for patients throughout pathway, from point of referral to diagnosis / discharge
- Clinical decision-making based on individual patient need, not standardised approaches

**Rapid & multidisciplinary:**
- Referral, triage and diagnostic investigation occur within quick succession
- Patient management and decision-making informed by rapid diagnostic reporting and supported by broad range of specialisms.
- Diagnostic resolution provided for patients within the MDC or serious disease ruled out

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