Macmillan Electronic Risk Assessment Tool
Summary

Dealing with uncertainty: a qualitative evaluation of the usability and acceptability of an electronic risk assessment tool to aid cancer diagnosis in general practice

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The Risk Assessment Tools (RATs) are decision-support tools for GPs that are intended to aid recognition of symptoms of bowel and lung cancers in primary care. These tools have arisen from the CAPER studies (Cancer Prediction in Exeter) (Hamilton, 2009; Hamilton et al, 2005a; Hamilton et al, 2005b) and have been developed for identifying and quantifying the risk of cancer in symptomatic primary care patients. The RATs were piloted in paper format in 2011 by the National Cancer Action Team (NCAT). The evaluation of this pilot (Hamilton et al, 2012) showed that RATs appeared to help GPs in their selection of patients for cancer investigation. Parallel to this NCAT work, a group within Macmillan Cancer Support had meantime developed an electronic version designed to be integrated into GP computer systems. Macmillan Cancer Support commissioned an evaluation of the integration of these electronic Risk Assessment Tools (eRATs): this document is the summary of the final report (Dikomitis et al, 2012).

The purpose of this evaluation was to obtain views from the GPs who are piloting the eRATs regarding their acceptability and functionality and to identify facilitators and barriers to them being rolled out throughout the UK. This qualitative evaluation of the eRATs is based on the analysis of individual semi-structured telephone interviews with 23 GPs. Once interviews had been fully transcribed, a systematic qualitative methodology based on the Framework method of analysis was applied to the data (Ritchie and Spencer 1994).
2 THE ELECTRONIC RISK ASSESSMENT TOOLS (ERATS)

The eRATs utilized software from Informatica Clinical Audit Platform (iCAP), a software programme which some general practices use in addition to their clinical package to assist with tasks such as audit. It is compatible with the various clinical packages used by practices and so this pilot was not confined to users of particular clinical software. There were three electronic Risk Assessment Tools (eRATs) piloted: the eRAT for lung cancer (non-smokers), the eRAT for lung cancer (smokers) and the eRAT for colorectal cancer.

Each tool consists of three components: on-screen prompts, an interactive risk calculator and tables of patients with calculated PVVs.

2.1 Prompts displaying calculated risks

The first component of the eRATs is the prompts that display calculated risks which are flashed up on the screen, which the GP can then choose to use or ignore.
2.2 Interactive risk calculator

The second component of the eRATs is the interactive risk calculator. This can be accessed from a drop-down menu at the top of the prompts box. GPs can use this component to re-calculate risk and enter new symptoms into patients’ clinical records, for example, during consultations.
2.3 Tables of patients with calculated PPVs

The third component is the table of patients for whom risk calculations have been carried out. These can be accessed from the Informatica home page, by double clicking the iCAP icon and then the eRAT icon. This aspect of the tool gives GPs the possibility to review risks of patients across the practice as a whole; so for example a practice can bring up a list of all patients with a risk of either lung or colorectal cancer.
3. RESULTS

The main themes which emerged following the process of data analysis are summarised in this section. They consisted of: user acceptability and usability; changes and influences to practice; suggestions for future development; educational aspects.

3.1 User acceptability and usability

The most significant function of the eRATs, flagged up by the vast majority of GPs, is that the tools raised a constant awareness about potential cancer symptoms and both reminded and alerted GPs to the risk.

**General perceptions:**

‘It’s just electronic highlight, makes you think even if you immediately dismiss it, at least that millisecond you’ve thought about it, and I think that is going to be useful at some point, but for how many people I don’t know.’ (GP/20)

We received a variety of rather conflicting answers to the question of whether the eRATs were compatible with the specific clinical system each practice used. Respondents discussed the ways in which the eRATs sat within an electronic system separate from their clinical system. As a result it is necessary for a GP to open up the software separately from their clinical system, necessitating additional log-on; this in itself was sometimes reported as a barrier. An additional factor in the GPs’ perception of the eRATs’ compatibility with their clinical systems was whether the informatica Clinical Audit Platform (iCAP), or Audit+ (which runs on top of the iCAP) was new to them, which was the case for approximately half of our respondents. It was not always clear from the data whether there were technical glitches with the integration of the eRATs with the
different clinical systems or that some GPs did not use the eRATs in the best way. One of the biggest challenges in the further development of the eRATs is the necessity for the tools to run smoothly with the different clinical systems.

**Compatibility with clinical systems:**

‘I think this issue of the resources is important, really, the computer resources. There has to be consistency in how we use these things, really. To use it one morning and not to use it in the afternoon is very disconcerting, really. It’s got to be something that becomes a regular part of your practice, really. So from that point of view, certainly the IT people ought to sort that side of things out.’ (GP/10)

GPs used the three components of the eRATS to varying degree. How GPs reacted to the on-screen prompts was influenced by different factors: the approach of the doctor, the GP’s clinical experience and undoubtedly time pressures in specific consultations. The most important finding, however, was the danger for prompt overload on the GPs’ screens. The vast majority of the interviewees emphasized that there is already an information overload with frequent pop-ups flashing on their computer screens. This, as several GPs indicated, might lead to ‘prompt fatigue’. It is therefore crucial that the threshold levels of all prompts are valid. Not many respondents commented at length on the second component, which is the interactive risk calculator. Our data suggest that this component of the eRATs was not used as frequently as the other two components. This might be related to limited access to training in the use of the tool which could have resulted in a lack of GP awareness of all the tools’ functions. Some respondents indicated they looked at the third part of the tools, namely the PPV tables, but only a minority actively reviewed these tables to consider patients who appear to be high-risk. Few respondents used the calculated PPVs table in a proactive way. This might relate to the size of practice. Respondents indicated that it was not feasible for large practices to call patients in.
On-screen prompts:

‘There are so many things on it, so many things popping up, so many things prompting you. You have so many things going on on it you don’t probably respond to all the prompts, because there’s a box here, a box there, a box everywhere, and you don’t see everything that goes on on the screen anyway, because there are so many things. It’s such a busy screen you don’t respond to everything, and this doesn’t pop up.’ (GP/3)

Most GPs compared the eRATs to the CVD risk tool, which was often built into the GP’s clinical system. One issue which came up frequently in the comparisons was that the eRATs use data that the software pulls from the patient’s record, rather than the GP entering the data into a risk assessment tool. Some respondents perceived that as an asset of the eRATs, while other interviewees thought that this was a disadvantage and would have preferred to have more input. The GPs respondents referred to other publically available cancer risk assessment tools. Our respondents demonstrated that they were comfortable with risk assessment tools in general, but varied in their views about the degree to which integration of risk tools is useful. Some also highlighted awareness of one of the competitors to the eRATs for cancer diagnosis.

3.2 Changes and influences to practice

Changes to individual GP work varied and these changes were clearer in those practices where one or more GPs consistently used the eRATs during the entire pilot period. Before we discuss the three issues regarding changes and influences to practice we want to draw the attention to an important aspect arisen from the data. The approach of the individual doctor plays an important role, and is a crucial factor in determining to what extent the use of the eRATs could change and influence general practice. Indeed, GPs referred to their age, years in practice and clinical experience. These factors influence GP decisions to a larger extent than the tool. There was also clear consensus that the eRATs would not override
GPs’ clinical judgement and that it was up to the individual GP how to incorporate the tools in his or her practice.

There was a mixed response as to whether the eRATs were useful during consultation. Several respondents considered the inclusion of the eRATs in their consultations time-consuming. The issue of time pressure in 10-minutes consultation slots was identified as one of the biggest challenge to roll out the eRATs. It was not only time pressures that were named as reasons for GPs not using the eRATs on a daily basis. Information overload was another issue which lead to a reluctance to use the tools routinely during consultations. GPs reiterated the necessity of being able to quickly identify useful data amidst all the information they receive whilst remaining patient focused rather than concentrating on the computer screen. A final issue to consider about the usability of the eRATs within consultations is whether GPs would share the tools with their patients. Some respondents felt that the eRATs were appropriate for GP use only and would avoid patient involvement in order to avoid unnecessary fears and suspicions. While a number of GPs were indeed adamant there should not be patient involvement in the eRATs, others saw a potential in using the tool directly in consultation with their patient. In those cases, GPs emphasized the need for a more patient-friendly display if they were to show the calculated risks directly to his patients.

Although not specifically asked about in the interviews, several respondents discussed issues concerned with the legal implications of using eRATs, which highlighted this as an area of concern for them, especially around the medico-legal implications, for example, of not referring a patient who had been brought to their attention via a prompt.
Use of the eRATs during consultation:

‘Time limits for GPs, you know, what’s in it for them, if it’s actually going to make life easier and is it going to be, is it going to improve care for the patient? Or is it just another layer of, you know, of time really spent in filling up pro formas? ’ (GP/8)

‘There’s a dichotomy between the very useful information that’s on the computer, and actually, you know, sort of, looking at the patients, and giving them, you know, proper attention, as they perceive it, you know.’ (GP/15)

‘Quite a few partners were worried about any medical legal implications with that. I think the one criticism was having the list of patient with PPVs. No one really liked that. That was worrying. And also, I suppose, they were worried about.... If you know we’re worried about if patients knew that you had a list of them with the risk and you hadn’t acted on it, what would be the implications? That was probably a point that put people off, really.’ (GP/17)

The eRATs affected to varying degrees GPs’ referral thresholds and in turn, their decision making. Many respondents expressed the contradictory pressures on GPs. On the one hand, there is pressure on a GP not to refer people, but on the other hand a GP would want to refer as early as possible. The eRATs were, in that sense, also perceived as a ‘back up’ tool which legitimized early referrals. Some GPs indicated that the eRATs might not have greatly influenced their referral rates, but rather that through using the tool they reflected more often on symptom presentations, or looked back in a patient’s file. For some respondents the use of the eRATs encouraged a lower threshold for referrals. Although respondents certainly felt that the eRATs assisted with making decisions about referrals, most were apprehensive about the reactions from their colleagues in secondary care. A large majority of the interviewed GPs expressed the wish that colleagues in secondary care would be informed about the use of the eRATs and the likelihood of more referrals. There was also concern whether secondary care could deal with more investigations.
Respondents felt that the eRATs fitted into other initiatives to achieve early cancer diagnosis. There was agreement that the eRATs were compatible with cancer guidelines and that the tools added to these.

Finally, data certainly highlighted that GPs might decide to refer on the basis of a holistic approach and, as many respondents emphasized, the approach of the individual GP and his/her level of clinical experience also plays a crucial part in the decision making process.

**Influences on referral thresholds:**

“Yes, I mean, I suppose a lot of us as GPs we do feel we’ve got a bit of a nose for a problem, you know, and what we want it ... you know, I don’t send everybody with these symptoms up but I’m sending this one up because I’ve just got this gut feeling that this doesn’t feel right, you know. And you want that respect in a sense. And it might not fit in with your grid of symptoms [laughs].’ (GP/23)

“The biggest challenge [for a general roll-out of the eRATs] is of course the extra pressure, I think, on secondary care (...) I think you would have to liaise with secondary care, and maybe, there may well be implications for the workload, particularly for secondary care, in this case, yes’. (GP/15)
3.3 Suggestions for future development

There was a clear consensus among all respondents that the threshold level of the prompts should be modified before the eRATs could be incorporated into routine general practice and used by GPs on a daily basis. Interviewees emphasized the danger of prompt overload, which could be avoided when the threshold levels of the prompts are adequately set. Many respondents perceived the on-screen prompts ‘annoying’—a phrasing frequently used—and confirmed that they started ignoring prompts in particular when the calculated risk was rather low. Respondents also commented specifically on the lung eRAT where particular clinical groups, for instance the patient cohort with COPD, should have specific prompts thresholds as these patients already have some of the symptoms. There was also consensus that other non-clinical factors, such as age and BMI, could be taken into account to calculate risks.

Threshold levels of the on-screen prompts:

‘My main concern at the moment, and I’ve had it really from probably even before we started the pilot, but just seeing from the volume on my own computer, is have we got the validity of the prompts right? And the answer to that is no, we haven’t. And we’re already seeking to change those (...) I think people responding to the validity of those prompts, there’s initial nervousness about, surely we don’t need to do 2-week wait for all these people, it doesn’t quite fit? So lots of reassurance needed initially and also that we’re not saying this is the done deal.’ (GP Advisor)

Our data suggest that user acceptability and usability would have been better had the training been more comprehensive, accessible and appropriate. Different approaches were employed to reach GPs with information and training: a WebEx, an online discussion forum and the possibility to discuss problems with a GP Adviser on the phone or via email. Despite these kinds of support being in place, many respondents reported receiving little to no training. This had consequences for the use and understanding of the tools.
GPs who received training, generally only mentioned the WebEx. This is an online training video (30 minutes) which had been developed to support the training aspects of the pilot project. Many GPs were unfamiliar with WebEx training tools.

In many cases respondents confirmed that only one GP or practice manager had watched the WebEx and often cascaded down the information to the other eRATs-users in the practice. It was quite exceptional that all the eRATs-users at a practice had seen the WebEx. Some respondents found the WebEx session too long, while others were not aware that the WebEx remained available online. A minority of respondents who watched the WebEx were generally happy with it. The most important point of critique, confirmed by a number of respondents, was that the session was too long and that the critical information, an overview of how to use the three components of the tools, was at the very end of the session.

Approaching users via email was seemingly not effective. Our respondents confirmed that they received emails about the eRATs and the online forum early on in the pilot project. Interviewees indicated, however, that they have little time to engage in email conversations or to engage in online discussions as only a minority of interviewees confirmed that they checked the online discussion group.

Training:

‘It was really long and drawn out is the honest answer; I think it was half an hour or an hour, I can’t remember. Yes, but actually there was a good eight minute slot that was brilliant that just explained it all, so I would be tempted ... but the eight minutes were from like minute 20 to minute 28. So I would be tempted to move that to the beginning because the first bit is all a bit wishy washy about bowel cancer and the risk of lung cancer and all those things. And I think ... I appreciate that you’re giving the background of the study, but if you told me there’s a ten minute thing on the computer to watch and it makes this huge difference as to explaining the tool I would go for it. If you told me half an hour you kind of have to find a time period in your day to slot it in, and I think from watching that thing it made a big ... it was really useful.’ (GP/6)
The effective use of the eRATs depends very much on the accuracy and level of Read coding. Many respondents expressed concern that a lot of the usefulness of the eRATs relied on the Read codes. Several respondents indicated that the accuracy and level of Read coding depends on the individual GP’s consulting style. This has indeed become evident throughout our data: some respondents indicated they code everything, others just use Read Codes to consult whereas some GPs do not often use codes at all. Some doctors confirmed that they rarely Read code symptoms as they discard symptoms in their heads during a consultation. There is no consensus in how to use Read codes and very much depends on the consultation style of the individual GP. Some GPs, for instance, will only add a Read code after the patient has left the room.

**Importance of Read codes:**

‘I can’t see it unless I’ve Read coded, and the problem with Read is that it’s got so many ways of Read coding the same thing, and the problem is, like with some of my locum doctors who come in, the only Read code they use is, had a chat with patient, and then they put through the text for the stuff that went on. And they sometimes bundle six different problems into one chat, so some of those things, you know, like a haemoptysis, might not show in such a patient.’ (GP/11)

‘Now, to do that you have to have a consistent way of recording Read codes. As far as I know there is no agreement on how to record Read codes and the symptoms are not that much recorded, but then there is great variance in the people who record it.’ (GP/5)

Like any new innovation, users highlighted limitations to the eRATs. These limitations, discussed above, related to technical issues, consultation relations issues and wider issues. Potential solutions to these limitations include:

- Changing the risk levels of some of the prompts
- Having agreement within practice (and perhaps more widely) about consistent use of Read codes
• Improved training in use of the eRATs, for example, different training modules related to each of the three components, training directed at experienced iCAP uses and novice iCAP uses
• Exploration of potential of eRATs to be truly integrated into clinical systems

3.4 Educational aspects

A factor that emerged from these qualitative data is the need for understanding the research underpinning the three tools. Some GPs referred to the original research and questioned its robustness (it was interesting that they had still chosen to take part in the pilot). At times, it was questioned why the eRATs only store data for one year back and one respondent referred to the original research which was based on two years. It was evident in the data that some GPs were keen to understand the scientific and theoretical development of the tool. Some respondents did engage with the evidence underpinning the tool. It would seem evident that questions regarding the robustness of the tool can only be truly addressed by a large study of whether use of these tools reduces time to diagnosis for cancer patients.

**Theoretical basis for the eRATs:**

‘You wouldn't really use it without knowing what or how it was developed, why it was developed, and what it was for.’ (GP/20)

‘Some people will want to know the detail of it very much so. Other people will just want to know that that numerical risk that they’re given is accurate. And if anybody ended up using two and finding they got completely risks for the same patient, it will all fail, because people won’t have confidence in the system.’ (GP/22)

In their systematic review of interventions to reduce primary care delay in cancer referral Mansell *et al* (2011) observed that ‘good clinical outcomes may be achieved
through improving knowledge’. This can be drawn from our data regarding cancer symptoms. For instance, several respondents pointed out the educational elements of the eRATs. Some GPs suggested that if the eRATs were disseminated to GPs UK-wide, this should be alongside an educational package that provided the background of the tool.

**Personal development:**

‘Other colleagues have said as well we’re far more aware of thrombocytosis and increased platelets. We weren’t aware that tended to increase the score for increased cancer risk.’ (GP/10)

‘Particularly for the lung cancer or the risk of lung cancer patients, I found it useful; I would say not so much for the bowel ones because it was based on the symptoms we’d already thought of as potentially risky.’ (GP/6)

‘I don’t think any GP wants to make a delayed diagnosis because you feel really guilty, and that you’ve done a bad job. I mean I certainly think that the way that it’s been developed and the educational things that came with it is the way to do it.’ (GP/20)
4 DISCUSSION

The analysis of the data presented in this report has demonstrated the challenge of developing and integrating new decision aids into practice. This finding is not new (May 2006; May et al. 2007) and should not therefore be surprising. However, this is the first time that an attempt has been made to incorporate decision aids for cancer diagnosis into GP electronic systems and useful lessons regarding cancer diagnosis, engaging with practices and the usefulness of the eRAT as a tool have emerged.

Firstly, GPs reported learning about new aspects of cancer presentation as a result of using these tools, and so the decision aid in itself was educational. Secondly, although great efforts were reported by the GP Advisers to engage with the recruited practices, the challenge of the dissemination of training in use of the tool to all practitioners was clear. It has emerged from both this work and the previous NCAT evaluation that the RAT/eRAT does need to be accompanied with training/guidance regarding its use. Although training tools can be sent to practices, ensuring that practitioners access them is challenging. Thirdly, while there is general support for the RATs, there is a lot of criticism of the glitches present in the eRAT at the time of our interviews, so further development of these tools is required to make them fit for purpose.

Like many innovative projects of this type, it is likely that the GPs who took part on the project, were ‘keen’ or at least interested in cancer diagnosis. However we did not end up exclusively with enthusiasts, which is reassuring in terms of trying to access and present a cross section of opinion.

On a practical level, it is difficult to assess how many GPs in the 53 practices used the eRATs. Further, the majority of GP practices recruited to the pilot were located in Wales (38/53) and this was also reflected in the number (15/20) of interviewees from Wales. This may have relevance for our findings as there appear to be differences between how GPs in Wales, England and Scotland make use of the iCAP system. It is therefore a limitation of this evaluation that the views we are able to present are predominantly those of GPs from Wales.

Furthermore, if we consider the process of integration of new technologies into practice in general, we were interviewing GPs fairly early on in the process of using the eRAT, and we can postulate that differences in opinion we obtained
relate more to the difference between early and late adopters, as opposed to any deep seated difference in their views/understanding of eRATs per se.

5 CONCLUSION

In summary, the eRATs are presented by the participants in this study as useful tools, currently with flaws, but which could be improved in order to make them more acceptable. It would seem premature to roll out the eRATs or include other cancers until these issues are dealt with. Indeed a further evaluation to include more practices in England (and Scotland) may also be of value.

The greatest benefit of the RATs/eRATS appears to be their use as one of the interventions which have increased the awareness of GPs to the importance of early cancer diagnosis in practice, and help them deal with the uncertainty which is the daily experience of general practice.

‘...It’s all about the uncertainty principle in general practice, dealing with uncertainty. It’s the thing that we try and get students to get used to. And it’s ... you know, at the end of the day it’s why we do what we do, and we’re in that position of responsibility. It’s the ability to deal with uncertainty.’ (GP/9)
REFERENCES


