isabel
the diagnosis checklist

Diagnosis Decision Support Systems:

Top Ten Tips for Successful Adoption

Introduction

In July 2005 Mark Graber et al published an article entitled "Diagnostic Error in Internal Medicine," which found that cognitive factors contributed to diagnostic error in 74% of cases studied. Cognitive problems involved faulty synthesis and the single most common cause of misdiagnosis was premature closure: the failure to continue considering reasonable alternatives after an initial diagnosis was reached.

In an environment where misdiagnosis accounts for 30-40% of all malpractice claims, accounting for 35.2% of payments based on a "25-Year summary of US malpractice claims for diagnostic errors (1986–2010): an analysis from the National Practitioner Data Bank", diagnostic error is on the national policy agenda.
They are the most harmful, deadly and costly of all medical errors, a fact that has prompted the Institute of Medicine (IOM) to publish a report in September 2015 on "Improving Diagnosis in Healthcare," which stated that "most people will experience a diagnosis related error in their lifetime, sometimes with devastating consequences". Diagnostic errors are considered to represent high risk for providers and health systems both financially and for their reputations, despite most cases being considered avoidable, especially given the advent of robust Diagnosis Decision Support Systems (DDSS) such as Isabel; one study cites that 96% of physicians believed diagnostic errors were avoidable.

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As we all become increasingly aware of the power of decision support and the need within diagnosis, how do we take the next step: successfully introducing and implementing a DDSS tool across an institution? At Isabel Healthcare, we have worked with many types of institutions over the years to help with the adoption of diagnosis decision support so that it is engrained as part of daily routine care. In this eBook we have distilled our experience down to our top ten tips for successful tool adoption. Much of this will be applicable to other types of clinical decision support tools, so it's worth a read regardless of the tool your institution is attempting to adopt.

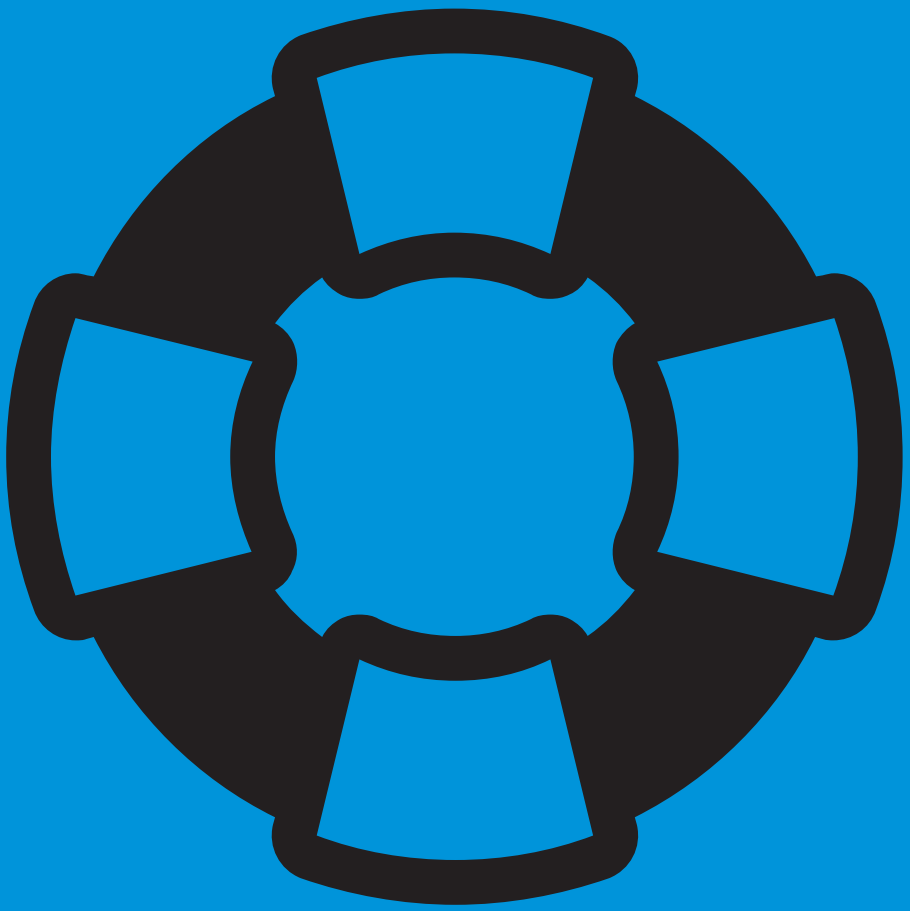
The Ten Tips

Finding Support

Driving Adoption

Making it Stick

Finding Support



1. Leadership Support

Support, both within the institution and from the leadership, is vital from the outset. The organization and its leaders need to be behind the idea and purpose of improving diagnosis decision making across the entire institution.

They must believe diagnosis error is an issue that needs attention, and is worth investing the institution's resources to improve quality and reduce risk and costs related to diagnosis error. If the leadership think that they do not have a problem, or are simply too busy investing their resources in other efforts, then tools like Isabel and other DDSS' will never be successfully adopted and integrated into the workplace.

The Isabel DDSS is designed to help clinicians build and broaden their differential diagnosis. This is a highly effective way of encouraging clinicians to consider other diagnostic possibilities, a proven method of reducing the potential for mis- or delayed diagnoses. Its use and adoption should never be regarded as an end in itself but simply a means to achieve goals of better diagnosis decision making routinely and repeatedly across the institution. Do your research, get some good figures, and ensure your leadership team really see the benefit of even attempting to adopt a DDSS.

2. Stakeholder Buy-in

Institutional commitment to improving diagnosis quality is the first step, the next is getting buy-in from the clinical leadership. Once the leadership team understands the impact and can see the advantage, it should be easier to get full support and engagement financially and in regards to patient care. To help illustrate this impact, you could run past cases from the risk department into the DDSS, or introduce the tool into M&M conference sessions. Clinicians' own experiences will show that the issue needs to be addressed to fully engage in Accountable Care and to continue to deliver high quality, affordable care.

3. Find a Champion

You've now secured the leadership's commitment and buy in, the final step before implementation is to choose someone to lead the process internally. One member of your leadership team, typically someone clinical like the CMO, CMIO, or Chief Quality Officer, can lead and encourage adoption, delivering the message peer-to-peer. It's important that the champion you choose is also genuinely enthusiastic about DDSS adoption; there is little point in having someone promoting a tool they don't believe in themselves 100%. Once the leadership framework is in place you can begin implementation.

Driving Adoption

4. Communicate Early

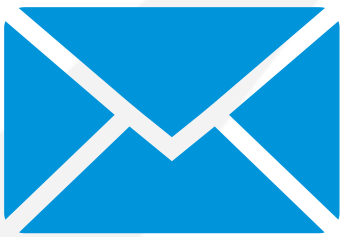
Once you have the support and a champion, start an awareness campaign. The components of this should encompass:

- ✓ **Introduce** the DDSS
- ✓ Explain **Why** the organization is focusing on a DDSS
- ✓ Identify **Who** should use it
- ✓ Give examples of **How** it can make a difference
- ✓ Emphasize **When** to access the DDSS
- ✓ Show people **Where** to access the DDSS
- ✓ Tell everyone about **Training**

It's of the upmost importance that this introduction and initial communication is done right, and done early. Don't leave people struggling with the tool before you've even told them why they're getting it. Even it means you don't implement the tool for another 2 weeks, it's better than having a false start and a lot of confusion around the adoption of your DDSS. Plan to train your clinicians in regularly scheduled meetings, make a web tutorial available, provide reminders via lanyard cards and posters in physician lounges, or incorporate it into EMR training.

5. Plan a Launch Event

Once initial communication is made and everyone is on board with the new implementation, planning an event for the launch prevents confusion about when clinicians are supposed to begin using the tool, and also creates more excitement around its adoption. People are more likely to remember to use this new tool over others when they can remember its beginnings. What's more, it adds a sense of community to the whole process, and this inclusivity helps people feel able to ask questions where otherwise they may have just given up. Make sure everyone at the launch knows who your Champion is, as they will be the first port of call for questions and queries.



6. Ensure Ease of Access

Easy and multiple access points of the DDSS are the key to success; this point cannot be emphasized enough. It makes it virtually impossible to build adoption for any tool if it's not easily accessible. From the very beginning, try making the tool available from appropriate places that clinicians visit frequently or, even better, make it accessible during and from within their workflow. Providing access where and when a user wants or needs it can help make your tool go from another experiment that year, to an integrated part of the institution, making people wonder what on earth they did before. Below are some examples of places you can provide access. In all cases, use auto-login capabilities (requiring a clinician to re-login is a deal killer) and, where available, make the connection contextual; carry forward known info like age, gender and clinical features into the tool to minimize additional keystrokes.

Direct Access

Access directly to the tool can be done in the following ways:

- In the institutional library
- On the intranet resource pages
- Through a link on the physician or clinical portal
- On smartphone and tablet apps, visible from the home screen

EMR Access

Electronic Medical Record access can put the tool directly into the clinical workflow, making it available at the point in time during which the clinician is making the diagnosis decision. Integration within the EMR can be done in a number of ways, including:

Links from areas such as Tools, Links, Dashboards – add the link to the same place a clinician may go to get evidence based reference content.

Links within clinical workflow screens - HPI documentation, Impression and plan, problem list, chief complaint, clinical summary page, templates, etc. These links can simply launch the DDSS separately, or they can be content specific, bringing over the patient's age, gender and clinical features seamlessly and automatically.

7. Focus on the Right Audience

Experience has shown us that if you target the specialists first, adoption is not as successful. They will generally be less receptive since they will not see the need. The right areas for your Champions to begin attracting followers from are clinical groups such as family practice, hospitalists, internists, pediatrics, residents and nurses. These are the clinicians who will benefit most from the addition of this tool into their daily routines, and it's your Champion's role to show how your DDSS can help them in providing care. Once the more general areas of the institution are on board, you can begin proving to the specialists and others that the tool useful, with solid evidence from within the workplace.

Making It Stick

8. Keep it Top of Mind

Once launched, implemented, and easy to find, the next step is to ensure users remember to use it. Keep the tool top of mind with clinicians by providing information in physician newsletters, via email campaigns to clinicians, etc. More importantly, physicians need to be absolutely sure when they should be using the DDSS in order to remember it at the appropriate time. Isabel, like many DDSS tools, is not used or needed on every patient. Although it may seem obvious that a diagnosis decision support tool should be used when a clinician has diagnostic doubt, we have found that, initially, many clinicians struggle with when it should be used. This may be related to the fact it is a change in normal routine, so bear in mind that when introducing a new step, you should not underestimate the range of responses from those who will see it as obvious, to those who can't visualize when and how they would use the tool.

From our experience the least successful implementations are those where the leadership gives no guidance and simply introduces the tool to see whether it gets used. As almost all clinicians are very short of time and already struggling to get to grips with other new tools, it is unlikely that another tool will simply get adopted of its own accord. At the very least we recommend that the clinical leadership gives active guidance and states clearly when Isabel should be used which is:

- With diagnostic dilemma
- Where multiple symptoms are not fitting one diagnosis
- When a patient is not responding to treatment

Isabel and other CDSS tools are most likely to get used regularly if triggers can be implemented for their use. This means that the use of the tool will start to become part of the routine and remain at the top of people's minds, rather than something new that clinicians have to remember.

Put triggers in place

These are some of the triggers that institutions using Isabel have introduced:

When to Use

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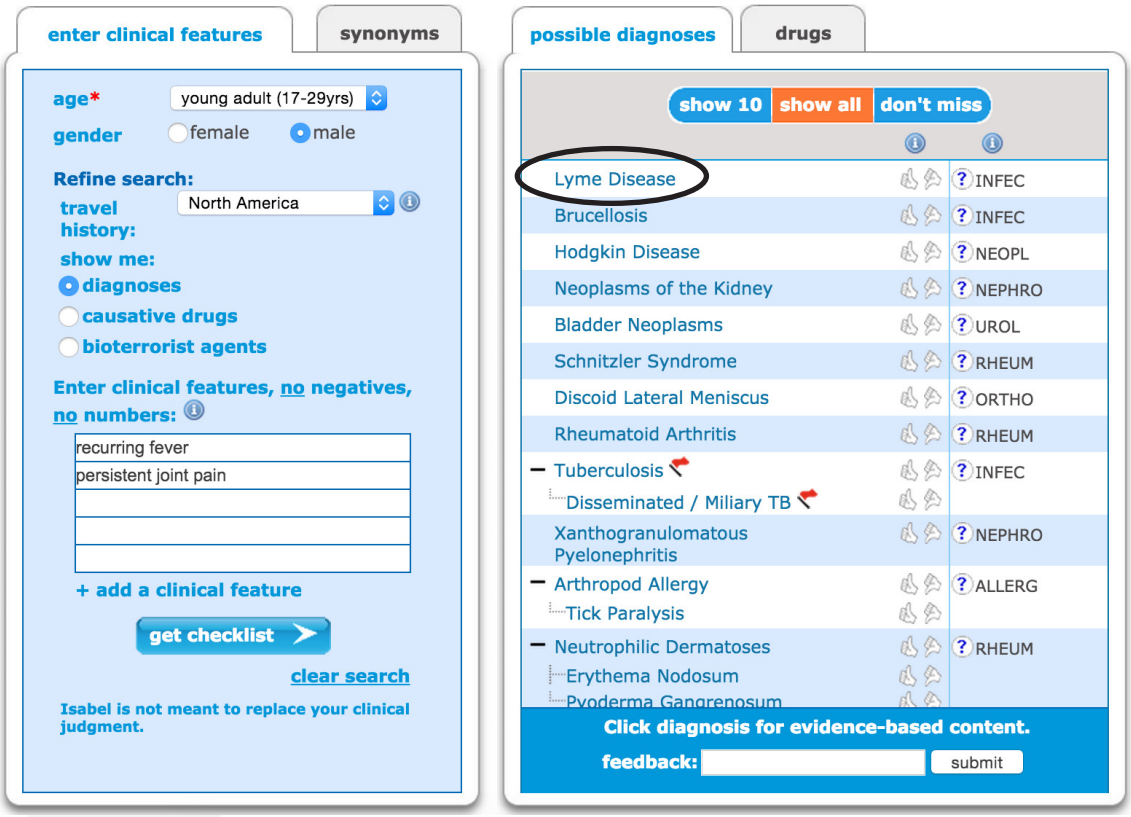
- On patients who have **returned** with the same issues both in ED and any ambulatory setting
- For patients who have been **admitted** more than 24 hours previously and still have no diagnosis or have a nonspecific diagnosis.
- When you are about to **refer** a patient, to ensure the proper referral is suggested
- When you feel you need your colleague's **advice** instead of waiting at their door to speak to them between patients
- When you are **training** a student, as a learning tool
- When your patient has done **research** on their own and diagnosed themselves, to allay their fears and demonstrate the process you have gone through to determine their actual diagnosis.

9. Promote Successes

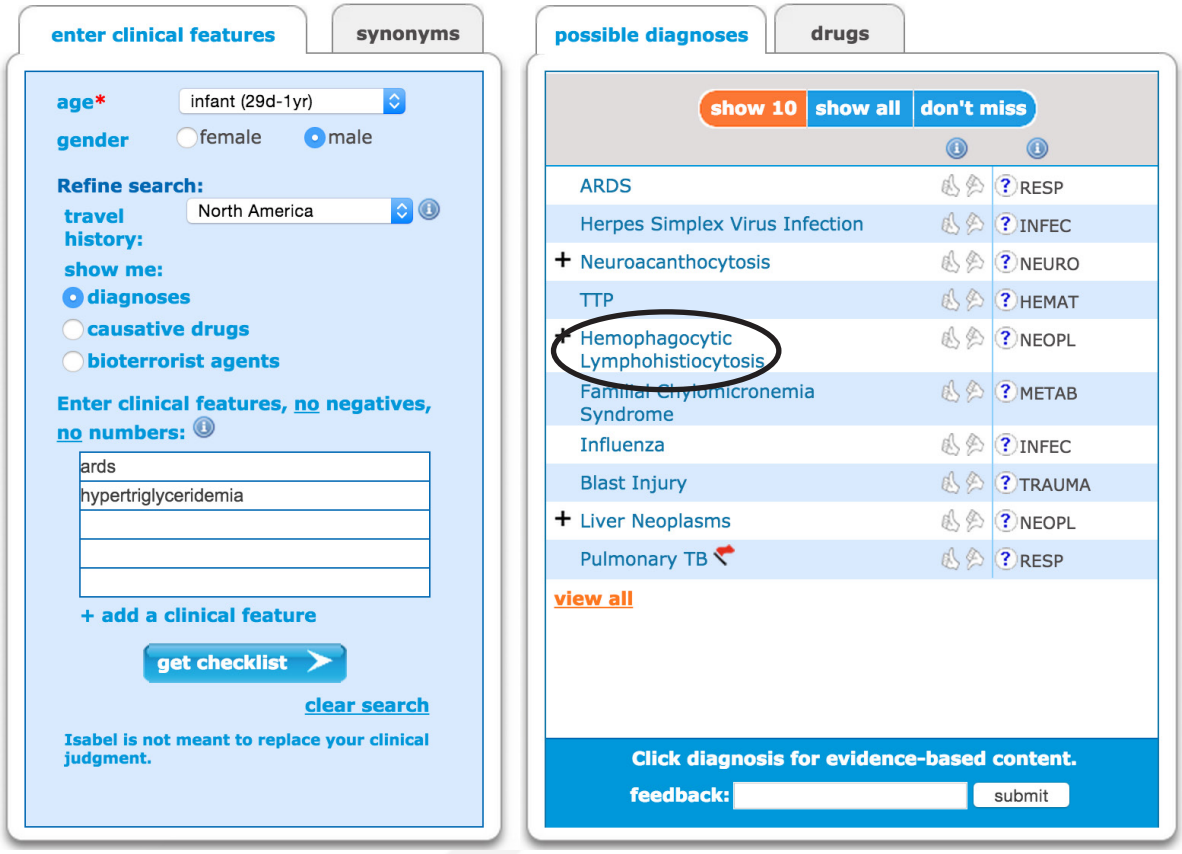
One of the key ways of generating interest in Isabel and other DDSS is to share stories of how it has helped. Utilize any success stories you can glean from clinicians where Isabel helped them in getting to the correct diagnosis quicker for promotion to the clinicians at large. Below we share some examples of successful cases that Isabel users have shared with us and their colleagues.

One of Isabel's users reported having treated a 14 year old boy with a 4 year history of recurring fever and persistent joint pain and was diagnosed with ankylosing spondylitis. When the patient returned to the primary care provider and had not been responding to treatment, the boy's physicians input his symptoms into Isabel for validation purposes.



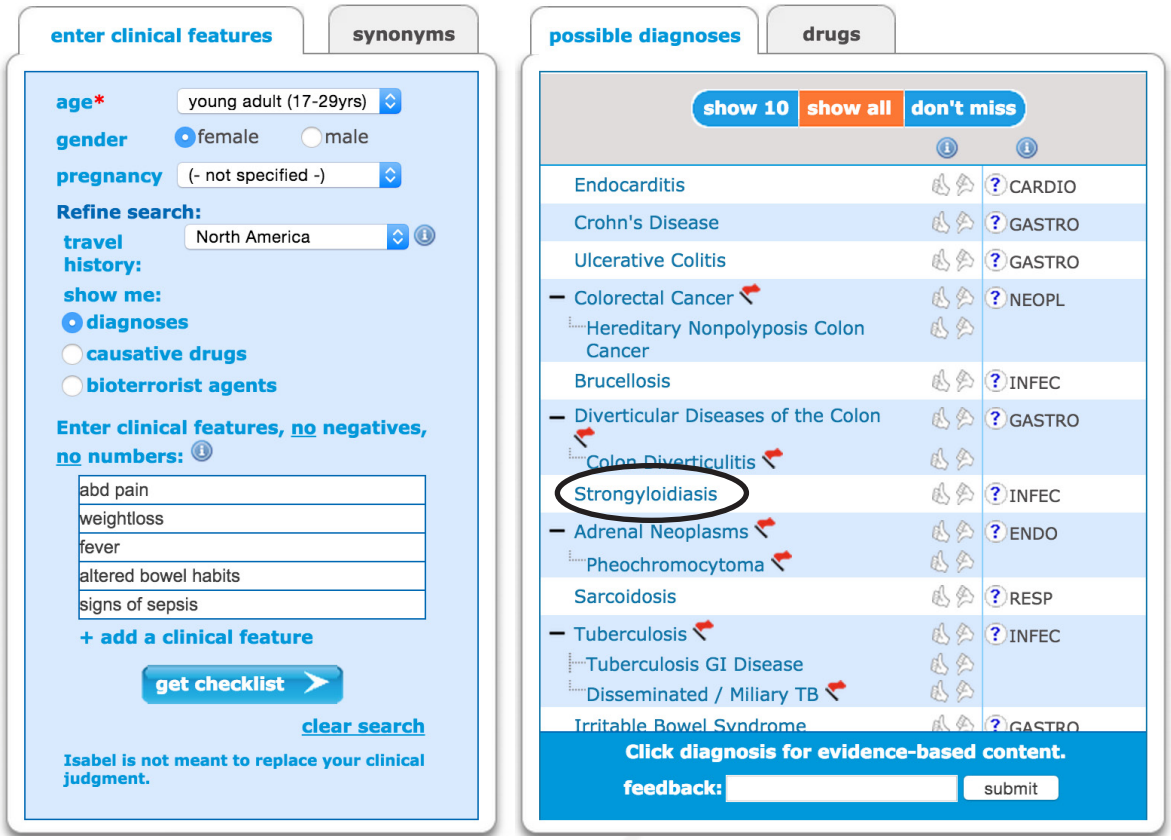
Lyme Disease was among the top 10 possible causes for the boy's condition generated by Isabel. Given it was not previously a consideration (as he was not from a region of North America where this was prevalent) the patient's physicians ordered the necessary tests. The final diagnosis was, in fact, Lyme Disease and the patient was treated successfully. After 4 weeks the patient reported being able to participate in physical activities that he previously could not.

Another Isabel user tells the story of a case he encountered when he was starting his on call rotation in the ICU. One of the patients was 2 months old with a diagnosis of ARDS, and caused him some concern as the baby had a history of multiple intubations. He felt this baby's presentation was "off". He placed ARDS and hypertriglyceridemia into the clinical features of the Isabel tool.



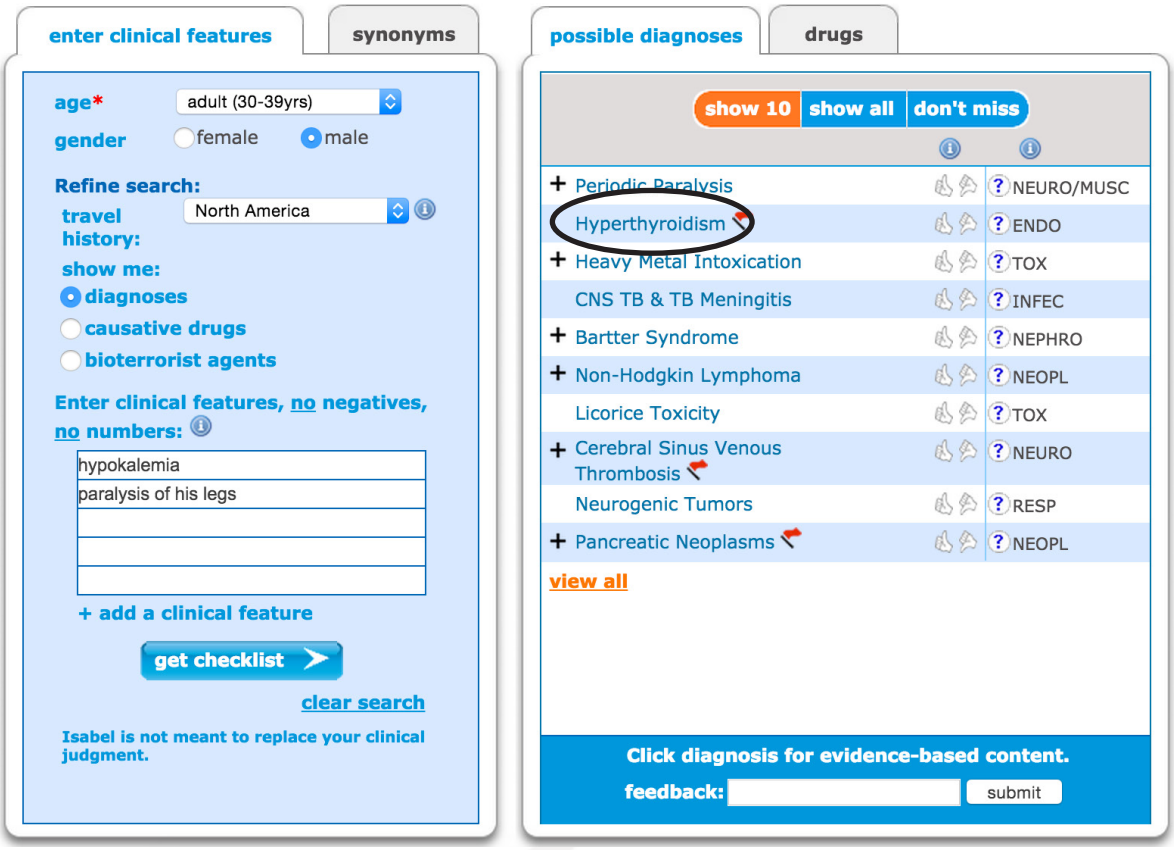
One diagnosis stood out: Hemophagocytic Lymphohistiocytosis. Although hematologists felt that Hemophagocytic Lymphohistiocytosis was unlikely he ordered a bone marrow aspirate and biopsy. The result of this biopsy provided the needed data for this final diagnosis.

A third case presents with a 28 year old patient who had seen multiple practitioners without resolution. When she visited her OBGYN and told him the story, the clinician decided to pass the case though Isabel.



With the clinical features entered, abdominal pain, weight loss, fever, altered bowel habits and signs of sepsis, a rare diagnosis came up that captured the attention of the provider. Based on the Isabel checklist, the clinician asked more questions and was able to determine that his patient had travelled to a region of the United States, 10 years earlier, where she was most likely exposed to the parasite responsible for a rare disease which lays dormant for 10 years in the liver. Tests were done and the diagnosis of Strongyloidiasis was made. This is another good example of broadening a differential and providing a direction for more pointed questions in order to determine the correct diagnosis.

One last case describes a 38 year old male is admitted with headache, chills, diarrhea, vomiting, myalgia and paralysis of his legs. The initial working diagnosis was Guillain-Barre Syndrome. Once lab results returned they saw hypokalemia in the patient's blood work. With this clinical feature added they used DDSS to see "what else it could be."



The clinicians saw Hyperthyroidism as a possible disease, which broadened their differential. Although there were no clinical signs of hyperthyroidism on physical exam, they decided to test him for this disease. Lab results showed a hyperthyroid issue and this patient was actually suffering from a Thyroid Storm. He received the proper treatment and walked out of the hospital 48 hours later.

10. Measure Impact

Finally, over time try and measure the impact that the tool is having. Examining changes in referral figures, test orders, patient satisfaction scores and readmissions can be a way in to measure success of your adoption. On top of that, don't forget the huge resource at your fingertips: the clinicians using the tool in the first place. Conducting surveys, or holding review meetings can really help you get that all important feedback. After that, you can begin to tweak and alter the ways you use your DDSS in your institution, so that everyone is getting the best experience of your successfully adopted system.

Summary

Adoption of a DDSS has become easier with time as we all become much more aware of the impact and significance of misdiagnosis but more work needs to be done on this front. The ability to access, appraise and use information is critical in modern medicine. A key element is the ability to create a differential diagnosis list, especially for those patients that are not routine.

Diagnostic reasoning is complex, requiring the clinician to distinguish between subtle differences in the presentation of diseases and pattern recognition. A common pitfall in diagnosis is premature closure, a phenomenon where a clinician considers a patient's symptoms to be evidence of one specific diagnosis and then stops considering other reasonable possibilities, leading to possible delayed or mis-diagnosis. In order to enhance those critical thinking skills you can provide DDSS tools, make it easy to access them, endorse them, provide real case examples of usefulness, and finally, fully incorporate them into workflow. Following our steps as outlined is a great base to begin successful implementation of systems like Isabel into your institution.

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