

Maria Fareri Children's Hospital (MFCH) is a major teaching facility associated with Westchester Medical Center, an academic health affiliate of New York Medical College. With a dedicated staff of more than 150 pediatric specialists involved in research, developing tomorrow's treatments and in training the children's health care providers of tomorrow, MFCH is leading the way in incorporating innovation into their programs. MFCH provides a state-of-the-art environment for clinical, educational, and research activities. MFCH is a full-service children's hospital with complete pediatric subspecialty representation. Family-centered care is at the core of their mission and all Children's Hospital students, residents in the pediatric residency program at New York Medical College at Westchester Medical Center and other trainees learn that the active involvement of families in the healing process — whatever the illness — is an important part of helping children recover and stay well

Enhancing Diagnostic Skills

The ability to access, appraise, and use information is critical in contemporary medicine. At MFCH the pediatric residents are honing their diagnosing skills under the guidance of the chiefs and program directors. A key element is the ability to create a differential diagnosis list, especially for those patients that are less than routine. Diagnostic reasoning is complex, requiring the clinician to distinguish between subtle differences in presentation of diseases and pattern recognition. A common pitfall in diagnosis is premature closure, a phenomenon where a physician considers a patient's symptoms to be evidence of one specific diagnosis and then stops considering other reasonable possibilities, leading in practice to possible delayed or mis-diagnosis. Providing tools and support to enhance those critical thinking skills can be a valuable component in their development and allowing them to consider other possibilities.

"Isabel allows one to expand the list of possibilities and provides access to information to pursue alternatives in a data driven manner. It is also a powerful recall tool as it reignites information that one has learned at one time but cannot access in one's brain. The ability to review possible alternative disease provides a platform for Residents to learn and hone their diagnosis skills."



*Matthew J. Kapklein, MD, MPH
Program Director, Pediatric Residency Program at New York Medical College
at Westchester Medical Center and in Maria Fareri Children's Hospital*

Benefits of Isabel at MFCH

In those cases where the patient is not responding to treatment or things are not adding up, Isabel provides a platform for the residents to consider alternative possibilities and quickly research them and consult with peers and specialists. Isabel also provides a framework during case presentations for broadening the differential and discussion about why or why not some suggestions should be added to the differential list, another great learning opportunity for residents.

MFCH Patient Case Example

Dr. Matthew Kapklein, Program Director of the Pediatric Residency Program at MFCH describes a case where Isabel played a key role in expanding the differential. He was starting his on-call rotation in the PICU and one of the patients, a 2 month old with a diagnosis of ARDS caused him some concern as the baby had a history of multiple intubations. He was uncomfortable with the baby's presentation as a bit "off" and felt further consideration was needed. He entered the clinical features ARDS and hypertriglyceridemia into Isabel and two diseases appeared that had not been considered. After careful review, he was able to rule out one of them and so one remained for investigation - Hemophagocytic Lymphohistiocytosis. He consulted hematologists and they felt that Hemophagocytic Lymphohistiocytosis was unlikely, but he decided to not rule it out and ordered a bone marrow aspirate and biopsy. The result of this biopsy provided the needed data to confirm Hemophagocytic Lymphohistiocytosis as the final diagnosis and they began appropriate treatment accordingly.

The screenshot displays the Isabel Healthcare web application interface. At the top, there are navigation tabs: "Enter Clinical Features" (active), "Administration Menu", "Support", and "Training Tools".

The main interface is divided into three sections:

- Clinical Features:** This section on the left allows for patient information entry. It includes fields for Age (set to "infant 29d-1yr"), Gender (radio buttons for Female and Male), and Travel History (set to "North America"). Below these is a section for "Enter Abnormal Clinical Features" with the instruction "NO negatives and NO numbers:". Two features are entered: "ards" and "hypertriglyceridemia". There are "Get Checklist" and "Clear Search" buttons at the bottom of this section.
- Ranked Diagnoses:** This central section displays a list of potential diagnoses. It has tabs for "Show 10" (selected), "Show all", and "Red Flags". The list includes:
 - Neuroacanthocytosis (Neuro)
 - Hemophagocytic Lymphohistiocytosis (Neopl)
 - Familial Chylomicronemia Syndrome (Metab)
 - ARDS (Resp)
 - Liver Neoplasms (Neopl)
 - Lipodystrophy (Derm)
 - Alstrom Syndrome (Gene)
 - Thrombotic Thrombocytopenic Purpura (Hemat)
 - Herpes Simplex Virus Infection (Infec)
 - Influenza (Infec)
- Drugs:** This section is currently empty.

At the bottom right, there are "Update EMR" and "Feedback" buttons.

Conclusion

In an era where medical information is readily available to residents, providing them with trusted resources that can positively affect their ability to construct critical pieces like a differential is paramount. Isabel can impact both the quality and timeliness of differential diagnosis generation in clinical learners

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