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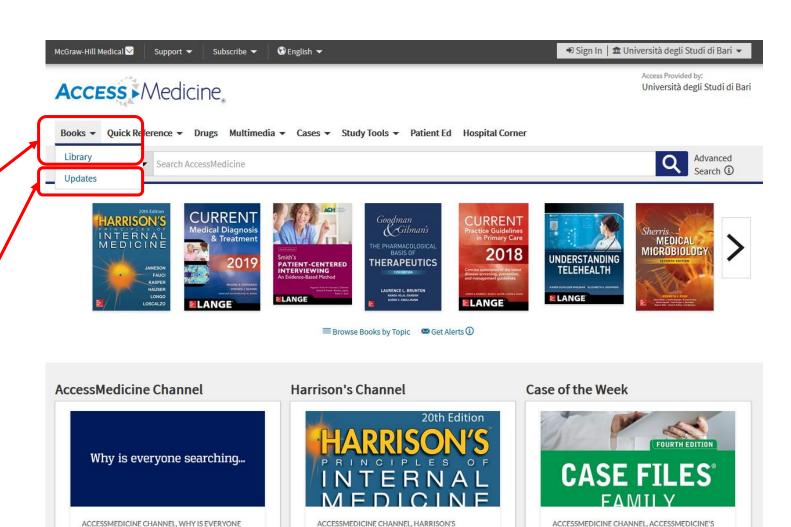
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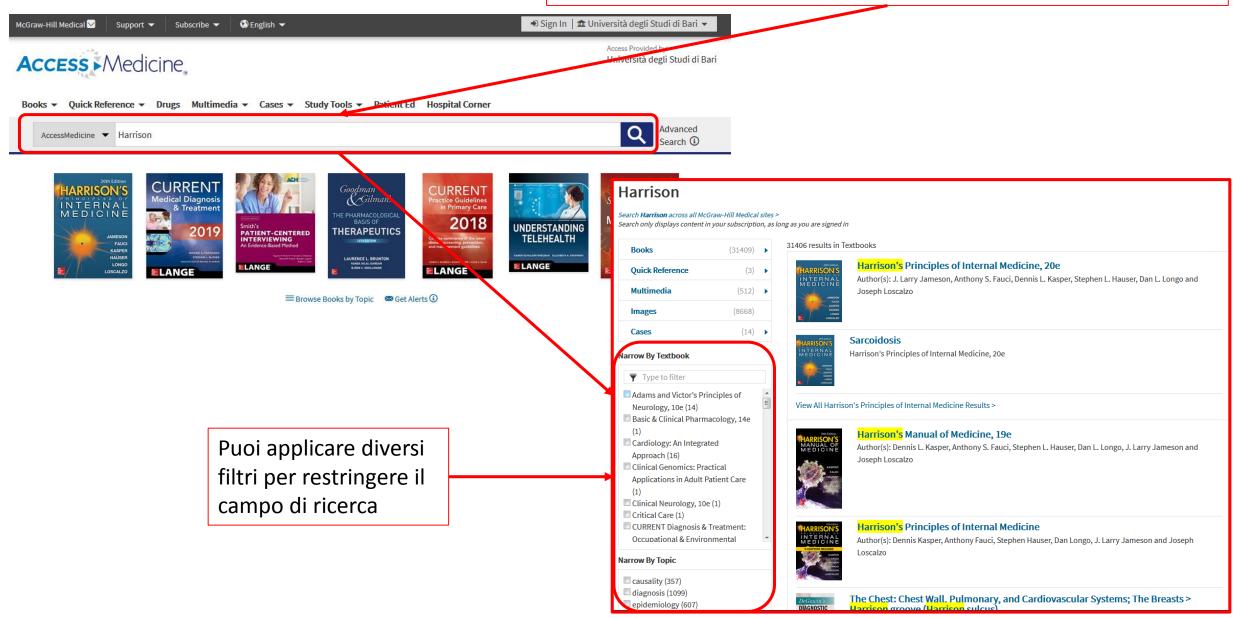


A 44 Year Old Woman with

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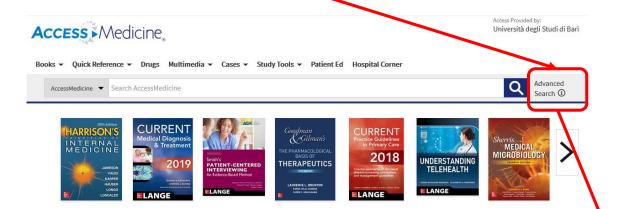
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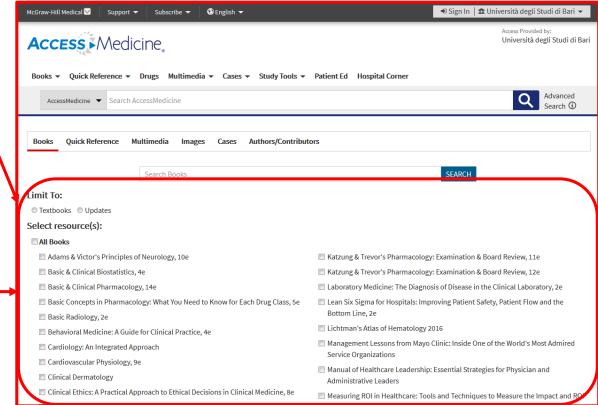


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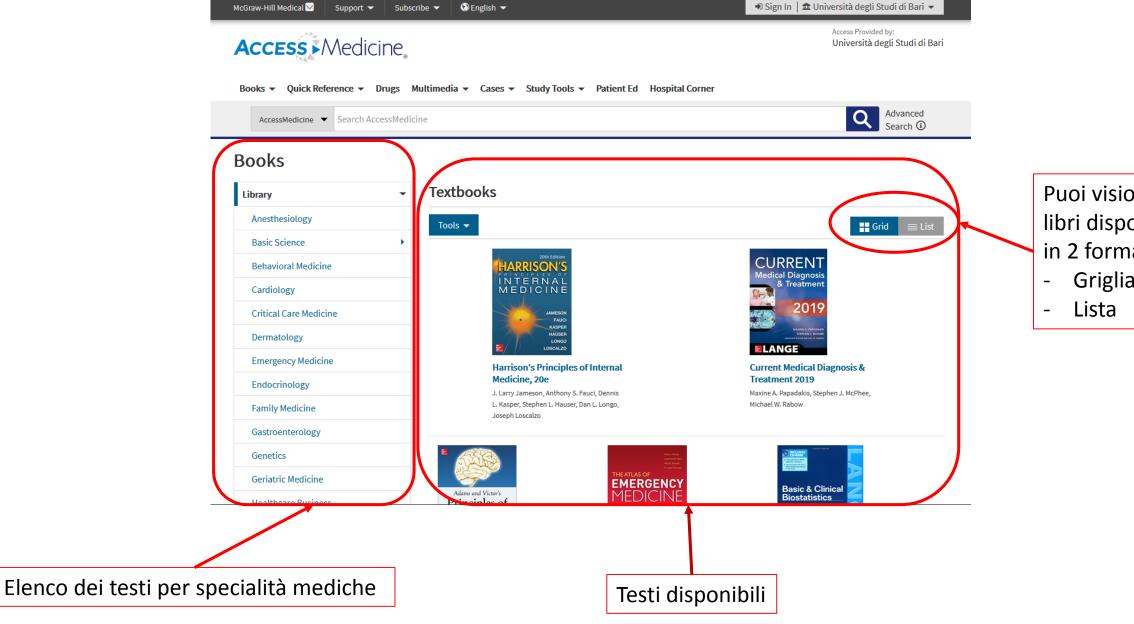
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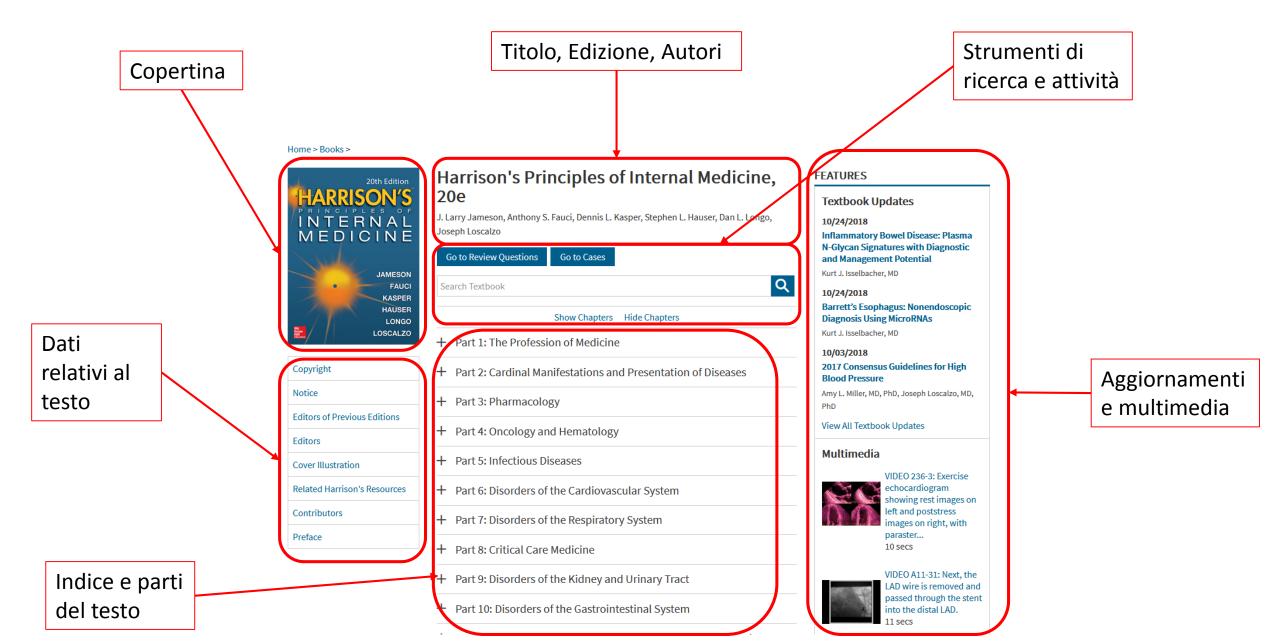
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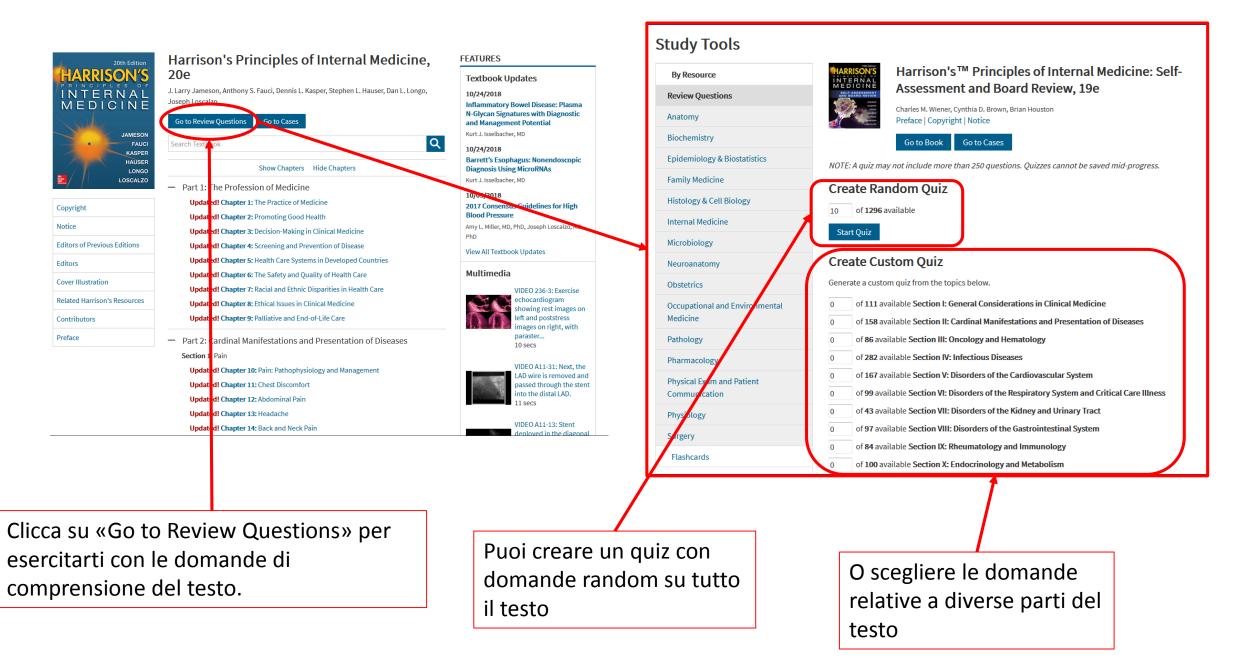
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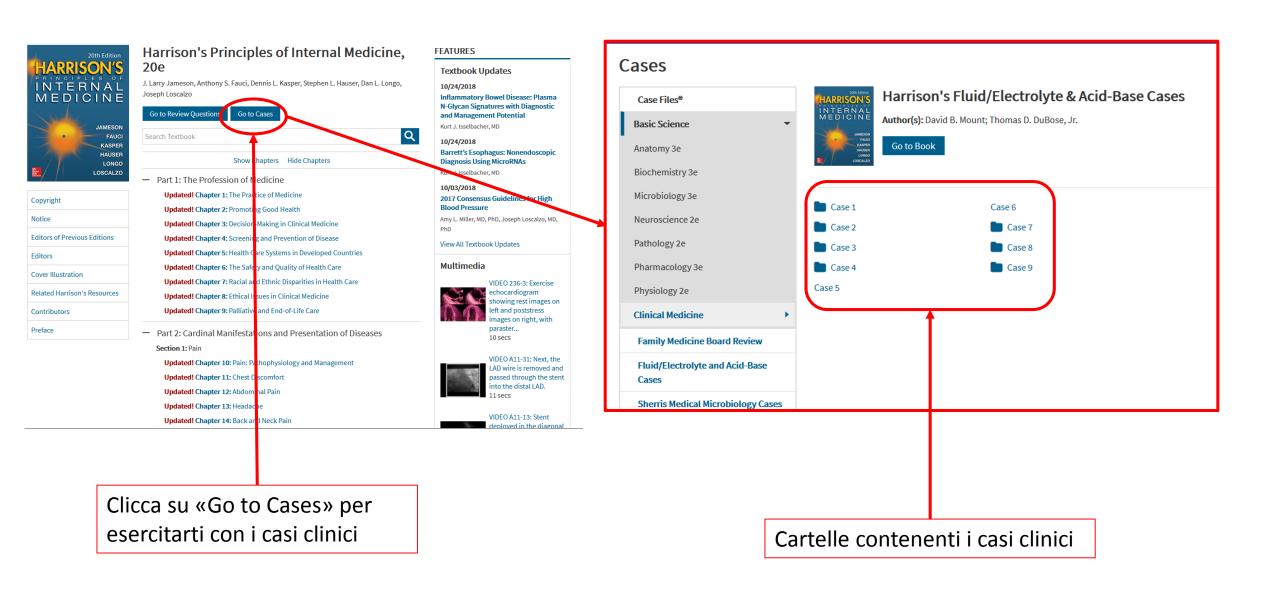
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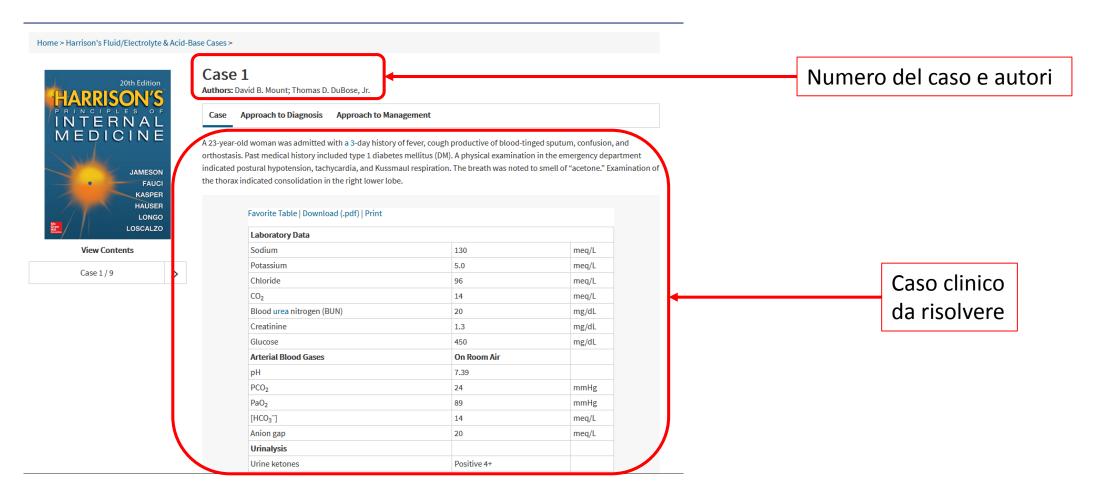
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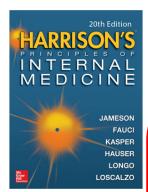
Strumenti di ricerca e attività: Review Questions







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Case 1 / 9

Case 1

Authors: David B. Mount; Thomas D. DuBose, Jr.

Case Approach to Diagnosis Approach to Management

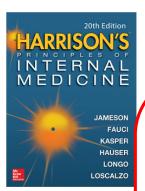
e diagnosis of the acid-base disorder should proceed in a stepwise fashion as emphasized in the text (see Chap. 51).

- 1. The normal anion gap (AG) is 8-12 (10 meq/L is a reasonable approximation for calculation purposes), but in this case, the AG is clearly elevated (20 meg/L). Therefore, the change in AG (Δ AG) = 10 meg/L.
- 2. Compare the $\triangle AG$ and the $\triangle [HCO_3^-]$. In this case, the $\triangle AG$ is 10 and the $\triangle [HCO_3^-]$ (25–14) is 11. Therefore, the increment in the AG is approximately equal to the decrement in bicarbonate (\triangle AG = \triangle [HCO₃⁻]).
- 3. Estimate the respiratory compensatory response. In this case, the predicted PaCO₂ for the patient's [HCO₃⁻] of 14, should be ~29 mmHg. This value is obtained by adding 15 to the measured [HCO_3] (15 + 14 = 29) or by calculating the predicted $PaCO_2$ from the Winter equation: 1.5 × [HCO₃⁻] + 8 (±3). In either case, the predicted value for PaCO₂ of 29 is significantly higher than the measured value of 24. Demonstrating that the prevailing PaCO₂ is lower than predicted for compensation alone, and indicates the coexistence of a superimposed respiratory alkalosis.
- 4. In summary, this patient has a mixed acid-base disturbance of two components: (a) high AG acidosis secondary to ketoacidosis and (b) respiratory alkalosis (which was secondary to community-acquired pneumonia in this case). The latter resulted in an additional component of hyperventilation that exceeded the compensatory response driven by metabolic acidosis alone, explaining the normal pH, and emphasizes the concept that physiologic compensation does not return the pH to normal. The finding of respiratory alkalosis in the setting of a high-gap acidosis indicates another cause of the respiratory component. Respiratory alkalosis frequently accompanies community-acquired pneumonia.

Taken together, the clinical features of this case include hyperglycemia, hypovolemia, ketoacidosis, central nervous system (CNS) signs of confusion, and superimposed pneumonia. This clinical scenario is consistent with diabetic ketoacidosis (DKA) developing in a patient with known type 1 DM, when an infection is acquired. Infections are common precipitating factors in the development of ketoacidosis in patients with DM.

The diagnosis of DKA is usually not challenging, but should be considered in all patients with an elevated AG and metabolic acidosis with a history of DM. Hyperglycemia and ketonemia (positive acetoacetate at a dilution of 1:8 or greater) are sufficient criteria for diagnosis in patients with DM. The $\Delta[HCO_3^-]$ should approximate the increase in the plasma anion gap (ΔAG), but this Approccio alla Diagnosi

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Authors: David B. Mount; Thomas D. DuBose, Jr.

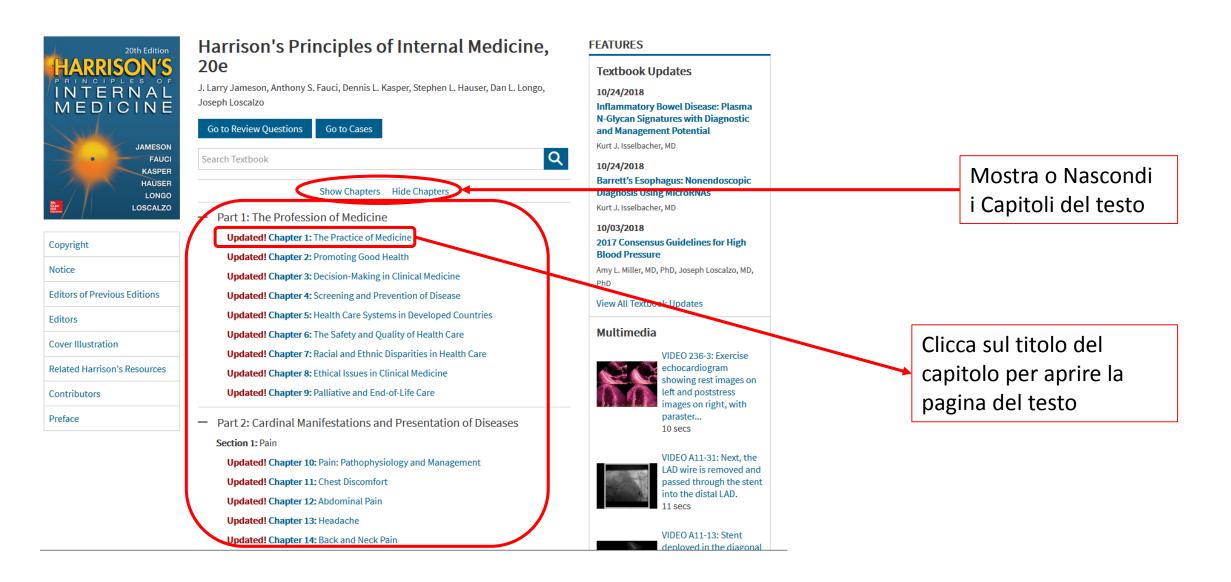
Case Approach to Diagnosis Approach to Management

Patients with DKA often have a sustained and significant deficit of sodium, potassium, water, bicarbonate, and phosphate. The general approach to treatment requires attention to all of these abnormalities. Successful treatment of DKA involves a stepwise approach, as follows:

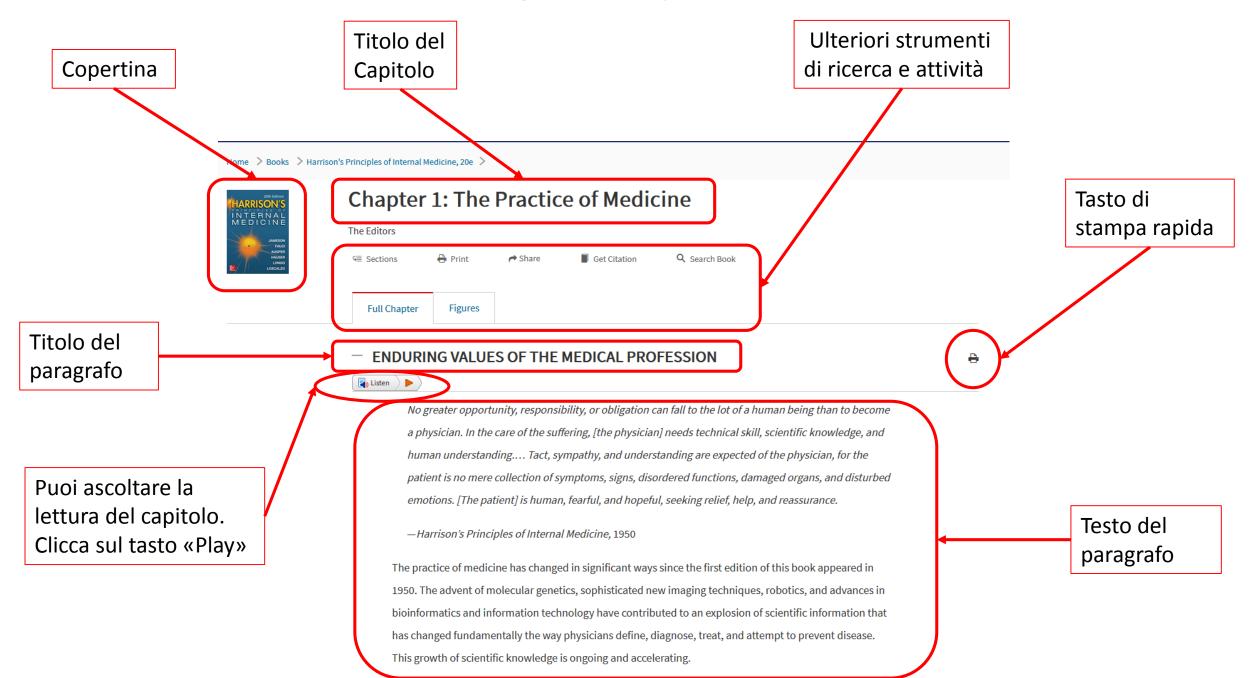
- 1. Replace ECF volume deficits. Since most patients present with actual or relative hypotension and, at times, impending shock, the initial fluid administered should be 0.9% NaCl and should be infused until the systolic blood pressure is >100 mmHg or until 2-3 L cumulatively have been administered. During the initial 2-3 h of infusion of replacement fluids, the decline in blood glucose can be accounted for by dilution and increased renal excretion. Glucose should be added to the infusion as D₅ normal saline (NS) or D₅ 0.45% NS once the plasma glucose declines to ≤230 mg/dL.
- 2. Abate the production of ketoacids. Regular insulin is required during DKA as an initial bolus of 0.1 U/kg body weight (BW) IV. followed immediately by a continuous infusion of 0.1 U regular insulin/kg BW per h in NS. The effectiveness of IV insulin (not subcutaneous) can be tracked by observing the decline in plasma ketones, or more conveniently, the narrowing of the AG and its return to the normal value. This relationship holds because the increment in the AG above the normal value of 10 meq/L represents accumulated ketoacids in DKA. The subsequent disappearance of ketoacid anions with insulin and IV fluid therapy is reflected by the narrowing, and eventual correction of the AG. Typically, the plasma AG returns to normal within 8-12 h.
- 3. Replace potassium deficits. Although patients with DKA often have hyperkalemia due to insulin deficiency and hyperosmolality, they are usually severely K+ depleted. KCl (20 meg/L) should be added to each liter of IV fluids only when urine output has been established, and after insulin has been administered.
- 4. Correct the metabolic acidosis. The plasma bicarbonate concentration will usually not increase for several hours because of dilution from administered IV fluids. The plasma [HCO-] approaches 18 meq/L once ketoacidosis disappears. Sodium bicarbonate therapy is often not recommended or necessary and is contraindicated for children. Bicarbonate is administered to adults with DKA for extreme acidemia (pH <7.1); for elderly patients (>70 years.), a threshold pH of 7.20 is recommended. Sodium bicarbonate, if administered, should only be given in small amounts. A reasonable therapeutic goal is to increase the [HCO₃⁻] to a value of 10 meq/L, or pH to 7.23; but certainly not to the normal values. Since ketoacids are metabolized in response to insulin therapy, bicarbonate will be added to the ECF as ketoacid metabolism is restored. Overshoot alkalosis ma

Approccio alla Gestione del caso

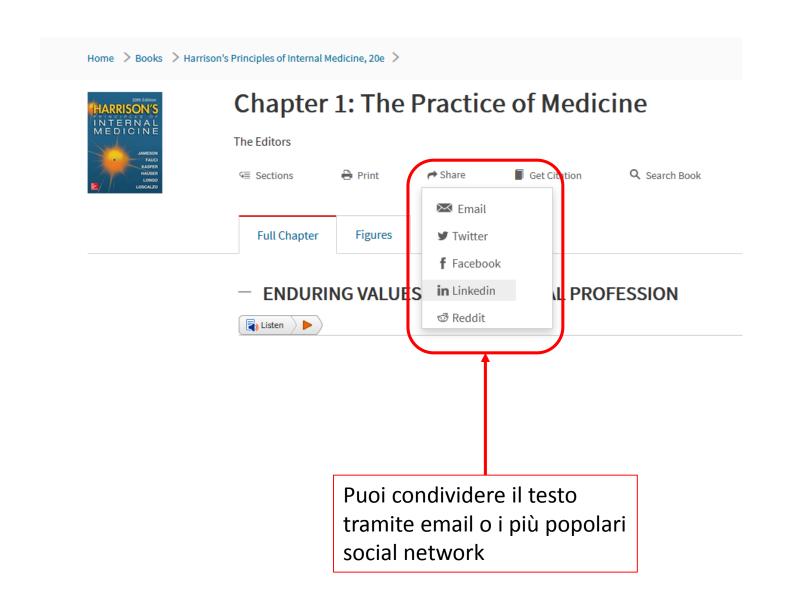
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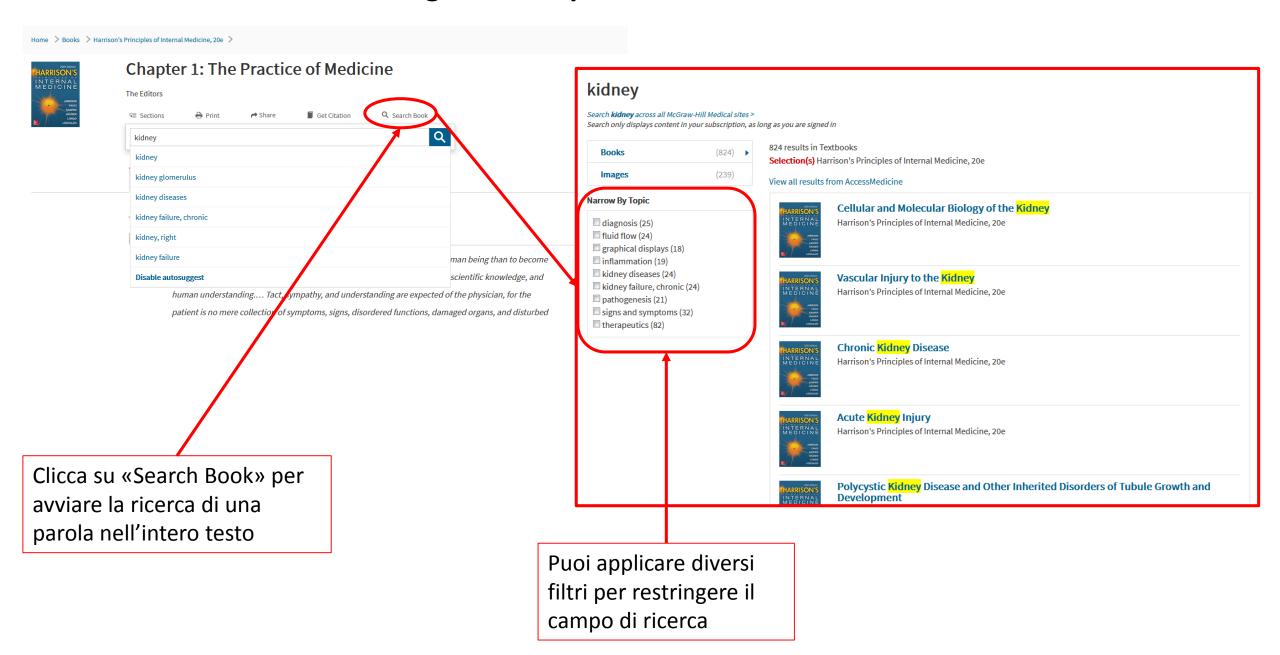
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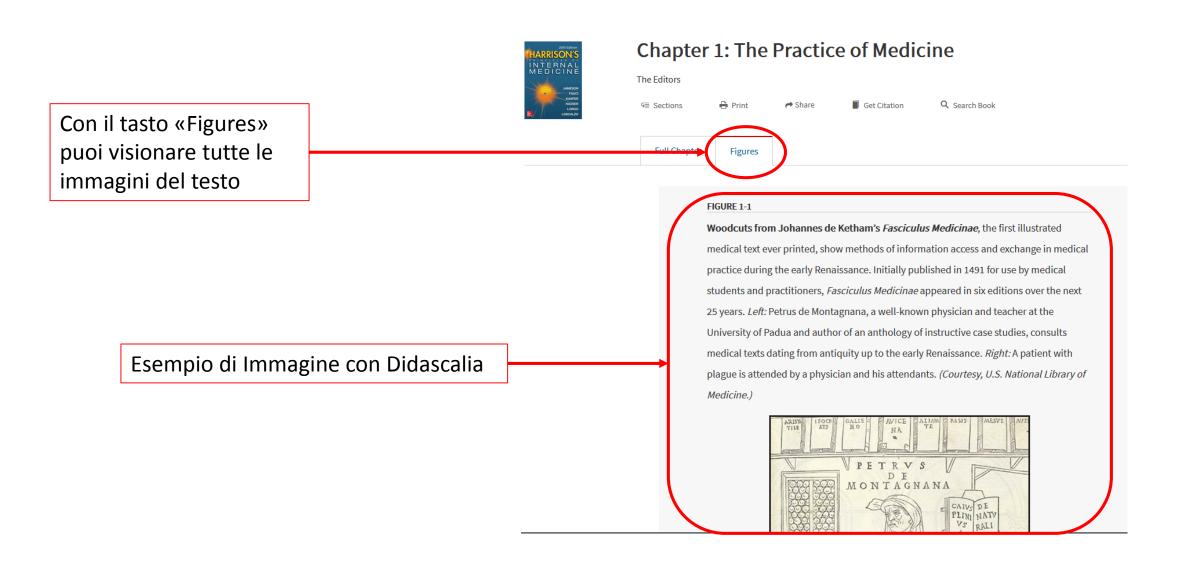
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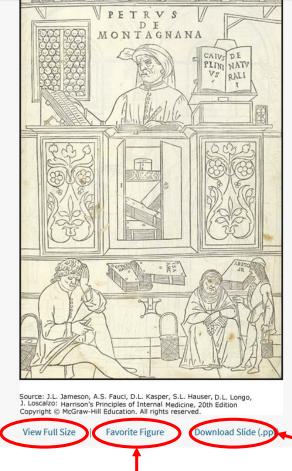


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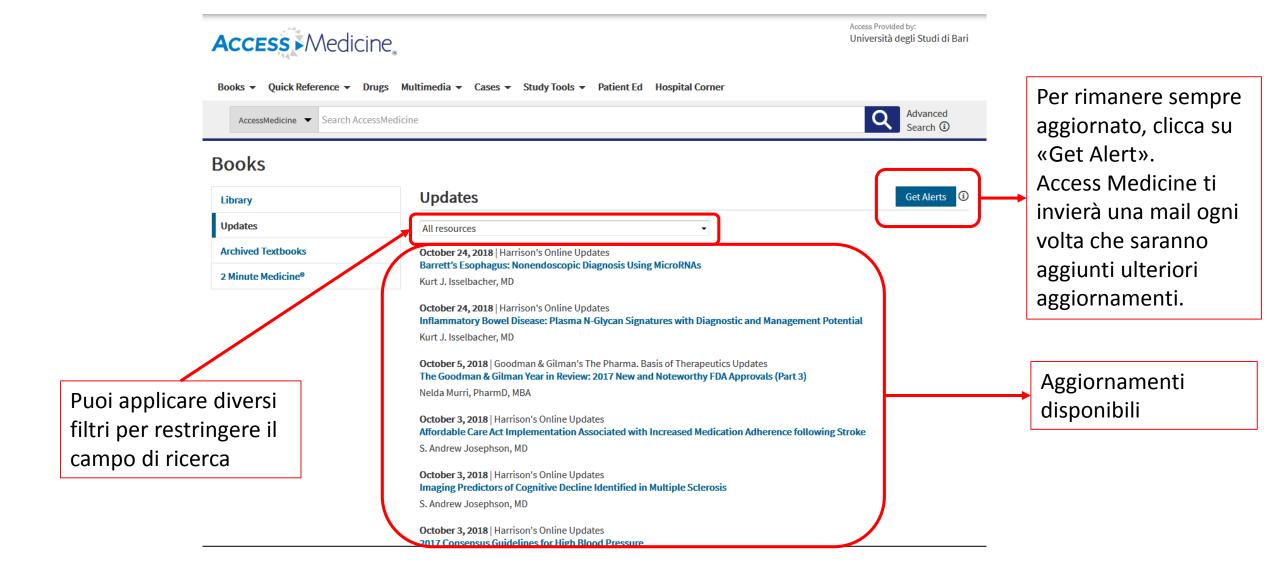




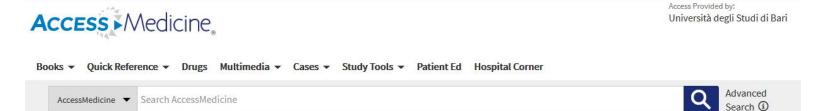
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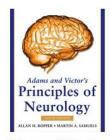
Updates – Archived Textbooks



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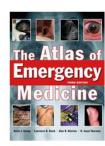


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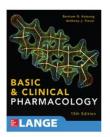
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Allan H. Ropper, Martin A. Samuels



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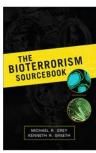
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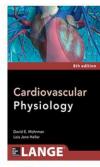
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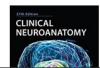


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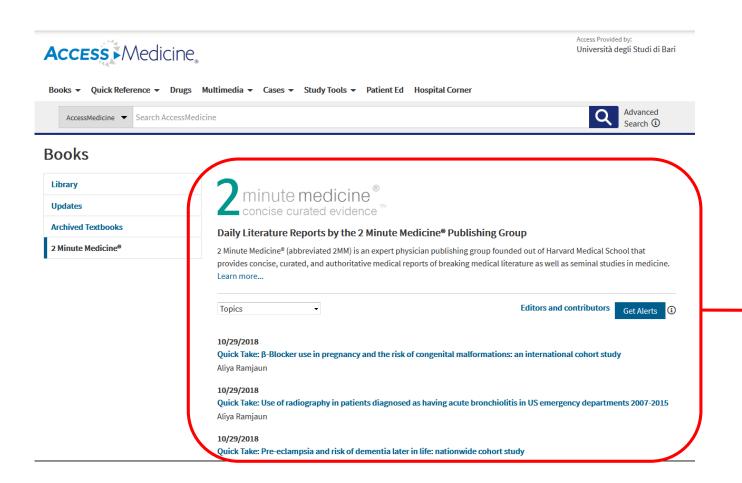








Updates – 2 Minute Medicine



In più, nella sezione Updates, c'è «2 Minute Medicine», gli aggiornamenti della letteratura medica scelti dalla Harvard Medical School.