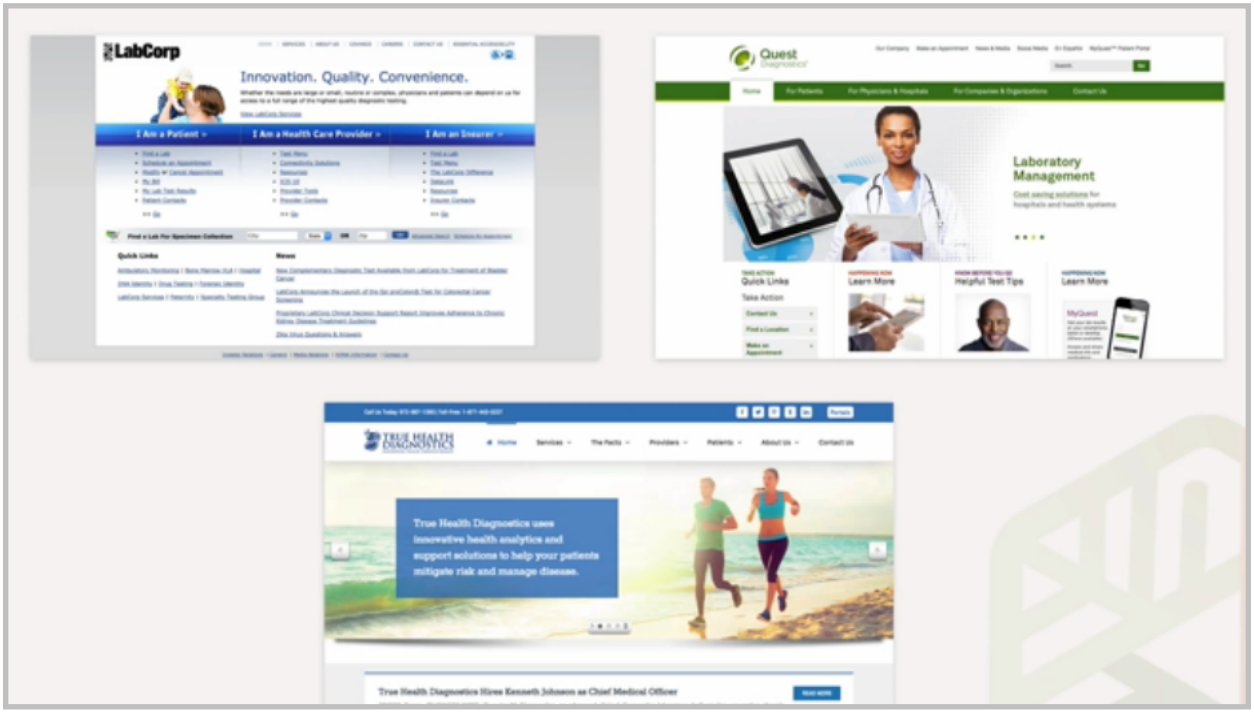
Blood Chemistry Basics - Part 3

There are several options for obtaining these markers for your patients, and what you do really depends on whether your patients are paying cash, using insurance, or some combination of both. When I first started my practice, many of my patients didn't have insurance, or they had very high-deductible plans, so I wanted to be able to offer them an affordable option. I got an account with a company called Professional Co-op.

This is a cooperative of clinicians who have joined together to get deep-discount, volume pricing with LabCorp. If you have an individual account with LabCorp, the pricing you're getting is going to be terrible. You just don't really have any leverage, but if you join a group like Professional Co-op that has thousands of clinicians, because of the volume of testing it orders, it is able to get very deep discounts on lab pricing.

For example, the retail price of my case review blood panel, if you just set up an account with LabCorp by yourself, and the patient paid out of pocket for it, it would be about $1,700. Through Professional Co-op, patients pay less than $300, so that is a very significant difference, a sixfold difference. It's a phenomenal deal for a blood panel that is that comprehensive. It's free to join Professional Co-op. Once you have, you can just order the Kresser Case Review Panel to get the same markers that I'm using, and you'll be sure to continue to get the same markers that I'm using because whenever I make a change to the case review panel, we update Professional Co-op, and they update the panel.



If patients are using insurance, you have more options. You can order directly through LabCorp or Quest the markers that you want. The problem is that not all insurance plans will cover all markers, and the negotiated rate may even be higher than the Professional Co-op price. Another option is a lab called True Health Diagnostics*, or THD. This was formerly known as Health Diagnostics Laboratory. It bills insurance, and if the patient has a PPO, and it's a lower deductible plan—and they've already met their deductible—often the patient doesn't pay anything at all. It's zero dollars for a very comprehensive blood panel.

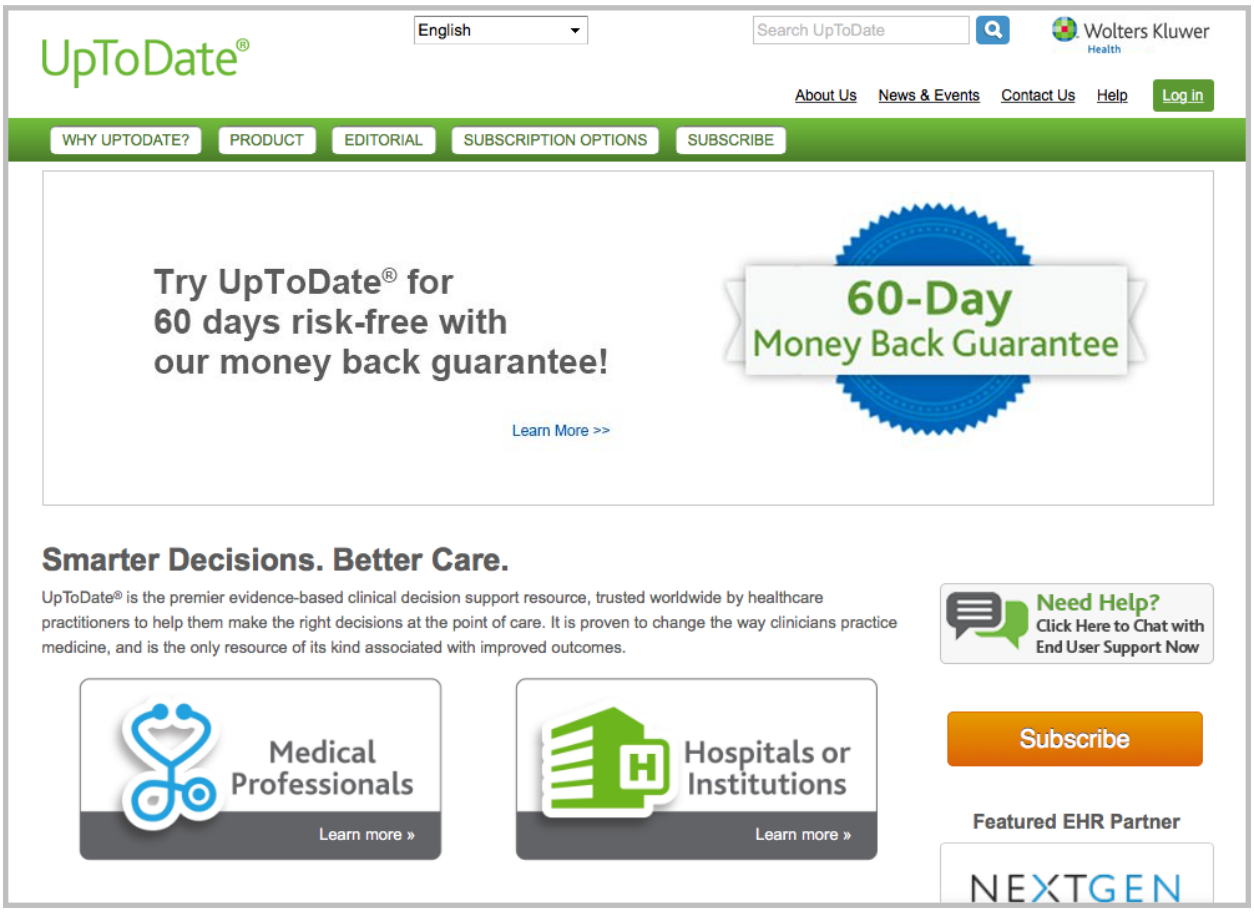
At the time of this recording, True Health Diagnostics doesn't offer all of the markers that I have in my case review panel, so we're not currently using that as an option, although we do for some patients if they have really good insurance, and they know they can get coverage through THD. We might do that and then add on a few of the additional markers.

The final option is for a patient to order his own blood work through Directlabs.com or AccesaLabs.com, which are these new third-party intermediaries that allow consumers to order their own blood testing. There is no reason really to do that. If you're a clinician and you have accounts with Professional Co-op or any of these labs, they're absolutely going to be able to get better pricing through you than they will be able to by just ordering these tests through these providers because these providers make money by offering these tests, whereas as a clinician, you just pass the pricing that you get on to your patients. It's going to be much lower than through DirectLabs or a similar provider.

* **Note:** True Health Diagnostics is no longer in business. See **this post** for the latest updates.

Now, we could easily spend two years or more just covering functional blood chemistry and all of the particular markers that we're going to talk about. For example, we're going to touch on thyroid dysfunction, and I could probably do a six-month course on that alone. Obviously, since functional blood chemistry is only three or four months' worth of content in this course, we can't do that with every marker or group of markers that we're going to talk about. The focus in ADAPT Level One is on using functional blood chemistry as a screening tool, so I'm teaching you how to use it to identify potential issues and then point you in the direction of where to look for—how to do additional testing, to get more information on those issues, and then some basics on how to treat the abnormalities that you'll discover in a functional blood chemistry screen. Later on in ADAPT, we'll be offering more in-depth training on particular conditions or aspects of blood chemistry such as lipidology and thyroid dysfunction, for example.

Having said that, knowing how to use functional blood chemistry as a screening tool is going to put you light years ahead of most clinicians who are using blood chemistry. The fact is, the majority of clinicians out there, even in the functional world, don't have a good grasp on blood chemistry. They don't have a good grasp on what the evidence-based functional ranges are for these various markers. They don't necessarily have a good grasp on what kind of follow-up testing should be ordered if markers are out of the functional or reference range. They don't have access to or haven't developed diagnostic or treatment algorithms based on the functional ranges, so you're going to get a lot out of this. We're always going to point you in the direction of where to learn more in cases where we're not going to go into a huge amount of depth.



As I'm sure you're aware, there are resources online where you can get more information. **UpToDate** is a fantastic resource for clinicians. You can look up lab markers and health conditions, and there is tons of info. It is certainly a conventional paradigm-based resource, but it can still be really useful for the nuts and bolts.

Lab Tests Online is another resource that has basic information on markers and how to interpret high and low values. Then you have resources such as **Epocrates**, which has a fantastic mobile app. These aren't free, but they're not super expensive. UpToDate, for example, is I think about $500 a year, or $45 a month. I think that that is totally justifiable even if you're just starting out to have access to that kind of information.

We've created a comprehensive online blood chemistry manual. It lists all markers on my case review panel and provides basic descriptions, functional and conventional ranges, and information on significance and interpretation. It's designed to be used as a reference. We made it an online manual rather than a printed binder because I often update the markers and ranges. This ensures that you'll always have the most current version.

Marker	Value	Functional Range	Lab Range
Glucose	93	75 – 90	65 - 99
Hemoglobin A1c	5.4	4.4 – 5.4	4.8 - 5.6
Uric Acid	3.6	3.2 - 5.5	2.5 - 7.1
BUN	16	13 – 18	6 - 24
Creatinine	1.04	0.85 – 1.1	0.57 - 1
Sodium	139	135 – 140	134 - 144
Potassium	5.3	4.0 – 4.5	3.5 - 5.2
Chloride	101	100 – 106	97 - 108
C02	25	25 – 30	18 - 28
Calcium	8.9	9.2 – 10.1	8.7 - 10.2
Phosphorus	4.0	3.5 – 4.0	2.5 - 4.5
Magnesium	1.8	2.0 – 2.6	1.6 - 2.6
Protein, total	6.5	6.9 – 7.4	6.0 - 8.5
Albumin	4.5	4.0 – 5.0	3.5 - 5.5
Globulin	2.0	2.4 – 2.8	1.5 - 4.5
A/G ratio	2.3	1.5 – 2.0	1.1 - 2.5
Bilirubin, total	0.6	0.1 – 1.2	0.0 - 1.2
Alkaline Phosphatase	52	42 – 107	39 - 117
LDH	168	140 - 180	119 - 226
AST	33	10 - 30	0 - 40
ALT	18	10 - 22	0 - 32
GGT	19	0 - 28	0 - 60
TIBC	266	250 – 350	250 - 450
UIBC	138	150 - 375	150 - 375
Iron	128	85 – 135	35 - 155
Iron saturation	48	15 – 40	15 - 55
Ferritin	55	15 - 120	15 - 150
Cholesterol, total	174	150 – 250	100 - 199
Triglycerides	41	50 – 100	0 - 149
HDL	72	55 – 85	> 39
LDL	94	0 – 175	0 - 99
T. Chol / HDL Ratio	2.4	< 3	0 4.4
Triglycerides / HDL Ratio	0.57	< 2	< 3.8
TSH	2.610	0.5 – 2.5	0.45 - 4.50
T4, total	8.4	6.0 – 12	4.5 - 12
T3 Uptake	32	28 - 35	24 - 39
T3, Total	78	100 – 180	71 - 180
Vitamin D, 25-hydroxy	28.7	35 - 60	30.0 - 100.0

Marker	Value	Functional Range	Lab Range
WBC	5.8	5.0 – 8.0	3.4 - 10.8
RBC	4.63	4.4 – 4.9	3.77 - 5.28
Hemoglobin	14.8	13.5 - 14.5	11.1 - 15.9
Hematocrit	45	37 - 44	34.0 - 46.6
MCV	97	85 – 92	79 - 97
MCH	32.0	27.7 – 32.0	26.6 - 33.0
MCHC	32.9	32 – 35	31.5 - 35.7
RDW	13.4	11.5 – 15.0	12.3 - 15.4
Platelets	288	150 – 415	150 - 379
Neutrophils	50	40 – 60	
Lymphocytes	41	25 – 40	
Monocytes	6	4.0 – 7.0	
Eosinophils	2	0.0 – 3.0	
Basophils	1	0.0 – 3.0	

Additional Tests:			
T3, Free	2.4	2.5 - 4.0	2 - 4.4
T4, Free	1.66	1 - 1.5	0.82 - 1.77
CRP-hs	0.49	< 1.0	0.00 - 3.00
Homocysteine	6.8	< 9.0	0.0 - 15.0
Vitamin B-12	1022	450 – 2000	211 - 946
Copper	101		72 - 166
Zinc	72		56 - 134
Zinc / Copper Ratio	0.71	> 0.85	

We've also created a handout that lists the markers that are a part of my recommended case review panel and the name of the panel at Professional Co-op, if you want to order it from them. We've provided a blood chemistry template that we use to work up the results, which you can see here on this slide. We've provided that to you as an Excel file and a printable PDF. This can be really helpful for you as a clinician to give you a quick visual of what's going on, and it can also be helpful to present to patients.

Ok, that's it for this video. Next, we're going to dive into the specific blood chemistry patterns. See you then!