ENDORAMA
March 22, 2012

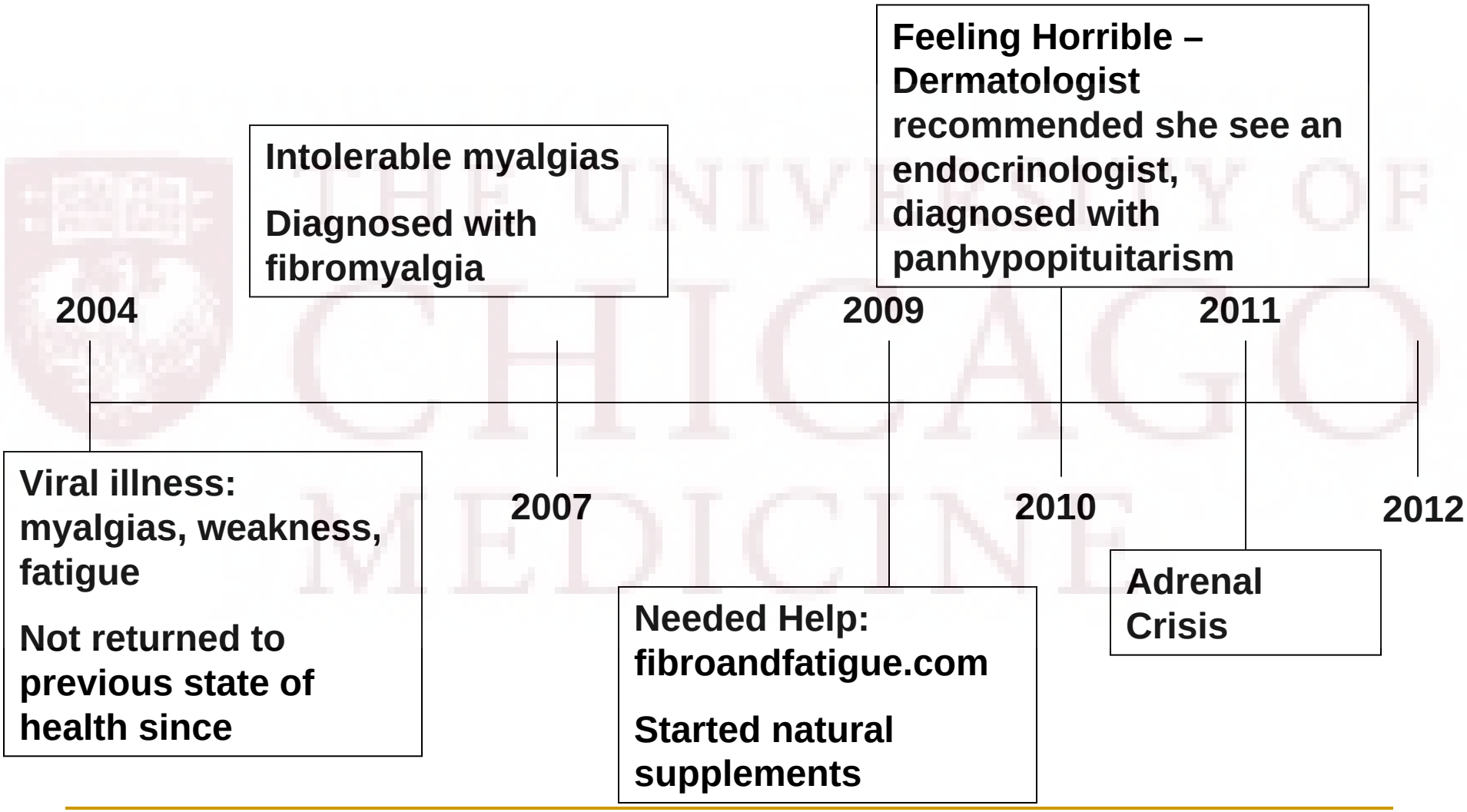
54-year-old woman with adrenal insufficiency

Celeste Thomas, MD
Case 1

Chief Complaint

- **Adrenal crisis in Dec 2011**
  - **I didn't know what was going on**
  - **When I finally reached my doctor she told me a story of one of her patients who has a crisis every time her grandchildren visit**
  - **What do you think?**

History of Present Illness



History

- Past Medical History
  - Raynaud's phenomena diagnosed in 2000
  - Fibromyalgia in 2007
  - Hypopituitarism in 2010
- Allergies
  - Iodinated contrast causes anaphylaxis
  - Hydroxychloroquine causes a rash
- Medications
  - Synthroid 50 mcg daily
  - Hydrocortisone 12.5 mg 8AM, 5 mg at noon, 2.5 mg at 4pm, 2.5 mg at 8pm
  - Omnitrope (recombinant human growth hormone) 0.3 mg subcutaneous daily
  - Clonazepam 0.5 mg 2-3x/night
  - Nexium
  - Calcium
  - Vitamin D
  - Probiotics

History

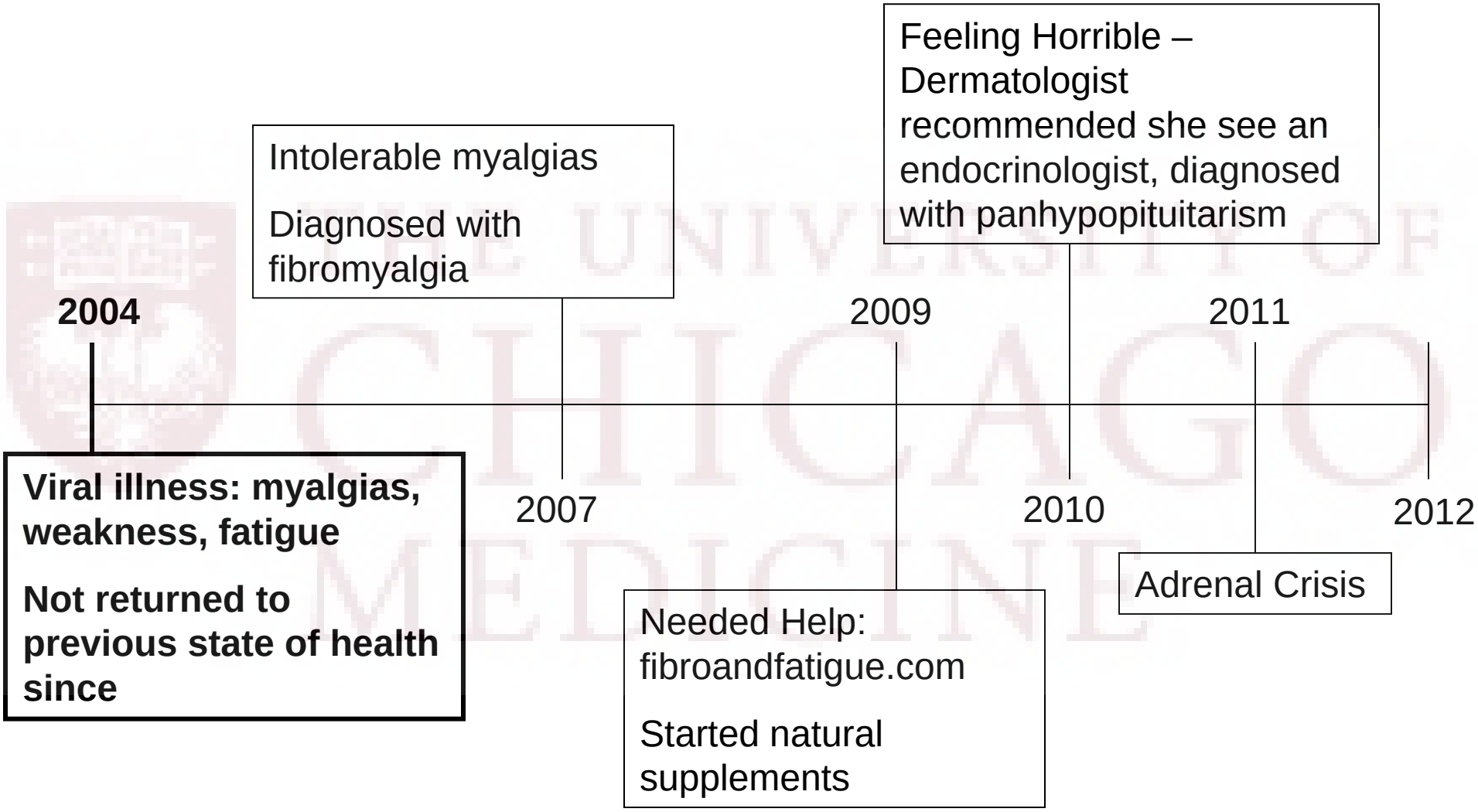
- **Family History**
  - Mother is 80 years old with history of ER+ breast cancer
  - Father is 80 years old with T2DM and obesity
  - 1 sibling, brother who is well
  - 3 children, all are well
- **Social History**
  - Lives with her husband and youngest son
  - Spends her days in pajamas due to fatigue and weakness
  - Smoked cigarettes for two years in college
  - Does not drink alcohol or use illicit drugs

Review of Systems

- **Constitutional: weight gain of 5 pounds in last two months, hair thinning**
- **ENT: hoarse voice, tires easily**
- **GI: indigestion**
- **Neurologic: occasional numbness in left leg**

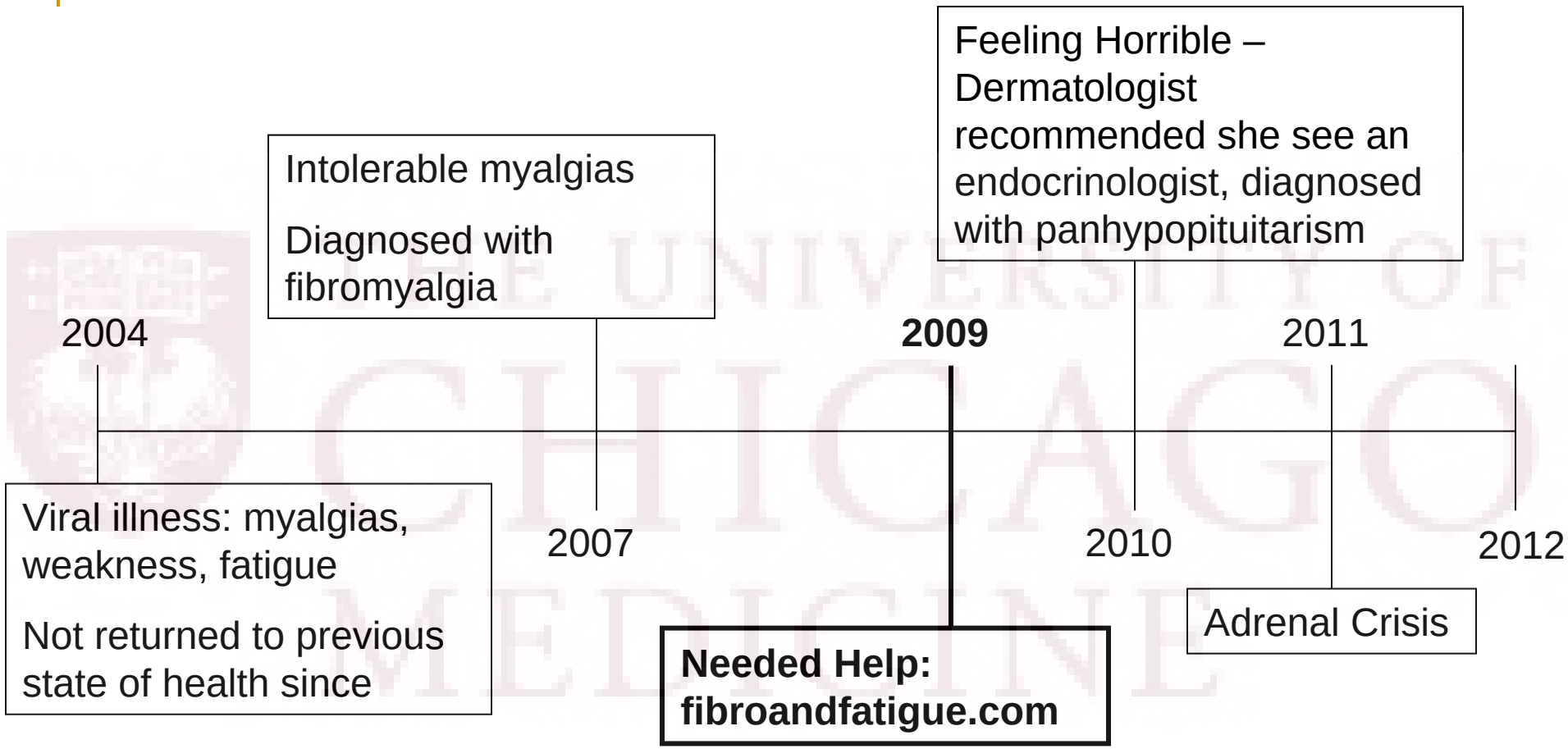
Physical exam

- **Vital signs are stable**
- **Weight: 101 lb (46.2 kg), height not recorded**
- **Gen: well-nourished, well-appearing thin white female, not Cushingoid**
- **Eyes: pupils are equal and reactive to light**
- **ENT: oropharynx clear**
- **Neck: thin, no acanthosis nigricans, normal size and texture of thyroid**
- **Respiratory: CTAB**
- **CV: regular rate with no extra heart sounds**
- **Abdomen: bowel sounds present, soft, non-tender, not distended**
- **Musculoskeletal: normal gait, good range of motion, normal digits and nails, no sclerodactyly**
- **Skin: warm and moist, some telangiectasias on her face**
- **Neurologic: CN II-XII intact, reflexes 2-3+ in biceps, brachioradialis, and patellar, sensation intact to light touch, no tremor**


Feeling Horrible – Dermatologist recommended she see an endocrinologist, diagnosed with panhypopituitarism
Intolerable myalgias
Diagnosed with fibromyalgia
2004
2009
2011
Viral illness: myalgias, weakness, fatigue
Not returned to previous state of health since
2007
2010
2012
Adrenal Crisis
Needed Help: fibroandfatigue.com
Started natural supplements

Laboratory Studies

	7/15/1998	5/27/2004
TSH	1.33	1.16
Free T4	1.2	
ANA Screen		Positive
ANA Pattern		Centromere
ANA Ab Titer		1:640
Rheumatoid Factor		<10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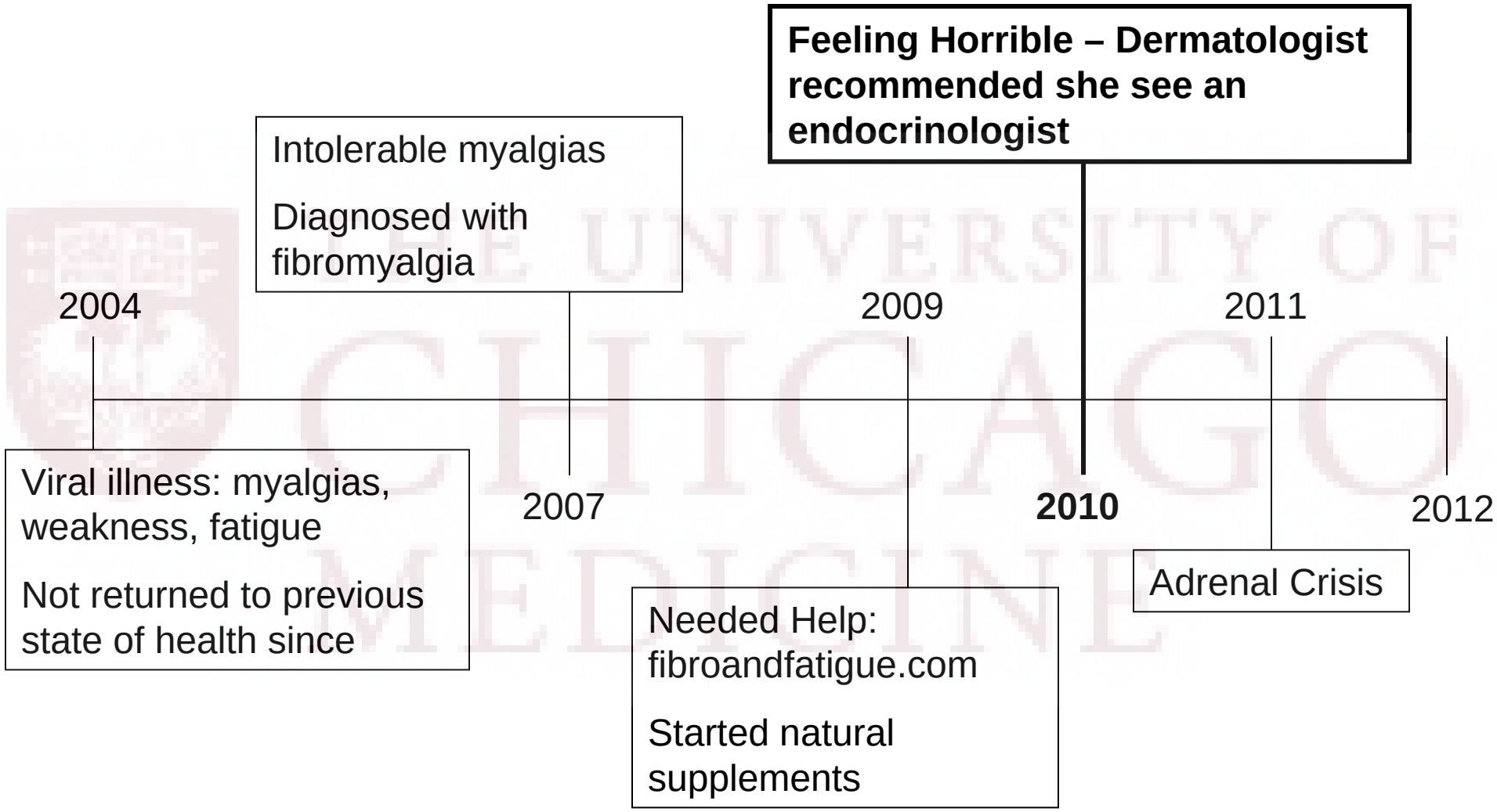
Fibro and Fatigue - 2009

TSH	0.4-5.5 mIU/L	0.93
Free T4	0.8-1.7 ng/dL	1.1
Free T3	230-420 pg/dL	375
Reverse T3	100-260 pg/mL	230
TG Ab	<20 IU/mL	<20
TPO Ab	<10 IU/mL	<10
Cortisol	4.6-20.6 mcg/dL	8.8
Free cortisol	0.07-0.93 pg/mL	0.17
ACTH	10-46 pg/mL	16
IGF-1	92-190 ng/mL	95
Estradiol	<27 = menopausal	25
FSH		42.5
LH		16.6
DHEA Sulfate	15-170 mcg/dL	76
Total testosterone	2-45 ng/mL	34
Free testosterone	0.1-6.4 pg/mL	2.3
Pregnenolone	13-111 ng/dL	72

Compounding & Natural Wellness Pharmacy

- **February 2009**
  - **Triiiodo-L-thyronine – 50 mcg daily**
  - **Cortisol natural – 5 mg daily**
  - **Estradiol/Estriol – 1mg/1mg daily**
  - **Progesterone - 200 mg oil capsule daily**
- **June 2009**
  - **Increased T3 to 62.5 mcg daily**
  - **Increased cortisol to 10 mg daily**
  - **Increased estrogen and progesterone**
- **October 2009**
  - **Started testosterone at 2.5 mg dialy**
- **November 2009**
  - **Decreased T3 to 50 mcg daily**
  - **Increased cortisol to 12.5 mg daily**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Loyola Endocrinology – May/June 2010

	Reference Range	Value (June 2, 2010)
TSH	0.4-4.6 mIU/L	0.1
Free T4	0.8-1.7 ng/dL	0.2
Free T3	230-420 pg/dL	321
Cortisol	4.6-20.6 mcg/dL	12.9
ACTH	10-46 pg/mL	23
IGF-1	92-190 ng/mL	140
Prolactin		8

Bone Mineral Density: Lumbar T-Score = 0.0, Femoral Neck T-Score = -0.8

Insulin Tolerance Test – July 8, 2010

Time	Time Point	Glucose (mg/dL)	ACTH (pg/mL)	GH (ng/mL)
8:30	baseline	85	32	0.3
9:18	0	81		
9:50	30	31	16	0.6
10:05	45	112	16	0.3
10:35	75	54	14	0.1
11:05	105	56	11	0.1
11:35	135	64	13	0.7

Patient took 10 mg of hydrocortisone prior to the test reporting that she would not have been able to get out of bed without it.

MR Pituitary – July 2010

- **Pituitary gland is within normal limits in size, shape, signal intensity, and enhancement**

Follow-up

- Started on recombinant human growth hormone - Omnitrope
- Continued on Levothyroxine 125 mcg daily
- Continued on hydrocortisone 10/5

- September 2010
  - Hair falling out, TSH <0.03 mIU/L, fT4 2.4, fT3 428, Synthroid reduced to 88
- January 2011, TSH 0.26 mIU/L, Synthroid reduced to 75 mcg alternating to 50 mcg
- July 2011, TSH 0.56 mIU/L, Synthroid reduced to 50 mcg
- November 2011, TSH 1.65, not feeling well, increased growth hormone
- December 2011: lightheaded with position change, nausea, vomiting diagnosed with adrenal insufficiency after discussed with endocrinologist

Adult Growth Hormone Deficiency

- **Three categories**
  - **Prior childhood GHD**
  - **Acquired secondary to structural lesions or trauma**
  - **Idiopathic GHD**
- **Insulin Tolerance Test as gold standard**
  - **Response should be greater than 5.1 ug/L with 96% sensitivity and 91% specificity**

Recent Follow-up

- **We decreased Synthroid from 50 mcg to 25 mcg on February 2, 2012**

- **Repeat Studies 3/15**

  TSH = 0.55 mcU/mL (ref range 0.4-4.0)

  fT4 = 1.53 ng/dL (ref range 0.9-1.7)

Take Home Points

- **Awareness of companies and pharmacies using sustained release cortisol and T3 formulations**
- **Appropriate response to ITT for assessment of AGHD is 5.1 ug/L**

References

- Molitch M, Clemmons D et al. Clinical Practice Guidelines: Evaluation and Treament of Adult Growth Hormone Deficiency: An Endocrine Society Clinical Practice Guideline. JCEM (2006)
- Hazem A, Elamin M et al. The accuracy of diagnostic tests for GH deficiency in adults: a systematic review and meta-analysis. European Journal of Endocrinology (2011) 165:847-849