

CHRONIC PAIN SYNDROME

Aarrggg!!

Controversies of FIBROMYALGIA

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FIBROMYALGIA

John S. Gillick, MD, MPH

Today - STATE OF THE ART

/// What's Next

Is there a simple, effective way to put and keep FM in remission?

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HISTORY ACCEPTED/ KNOWN

CHRONIC PAIN SYNDROME

Widespread musculo-skeletal pain
(neuro-myo-fascial)

Fibrositis
Fibromyalgia

EMPEROR

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FIBROMYALGIA

ACCEPTED:
History Evidence Base

ACCEPTED:
Management

CURRENT ART
TERTIARY CARE REFERRAL

Pain Management

TREATMENT
PRIMARY CARE ART

Treat vs. Manage FM

NEXT →

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HISTORY & DEFINITION ACCEPTED/ KNOWN

WHAT IS FIBROMYALGIA?

Idiopathic -- Chronic pain disorder

Widespread muscle pains
fatigue, sleep dysfunction
multiple systemic symptoms

NOT a specific disease NOT a diagnosis of exclusion

ACQUIRED
CLINICAL SYNDROME
similar physical and constitutional manifestations

The **diagnosis** is confirmed by history and clinical exam alone.
There are no specific blood tests, scans, etc.

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FM's ACCEPTED/ KNOWN

Almost anyone – hard driving - over achievers –

FEMALE >7/1> MALE

World Prevalence: 2% TO 15%

US = 2½%

Female/ Male = 7/1 ratio (seek care/ diagnosis)

Increase with age

Age 18 :: ♀ / ♂ = 3 % / ½ %
Age 70 :: ♀ / ♂ = 23 % / 6 %

Germany = 2%
Mexico, Spain & Australia = 10-15%
Norwegian working women = 10%

NEXT →

*Second most common diagnosis of Rheumatologists:
after OA, more than RA*

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HISTORY ACCEPTED/
KNOWN

HISTORY:

- a. 440 BC Hypocrites - regional and diffuse muscle pain
- b. 1783 Ramazzini - muscle pain and fatigue with repetitive motion
- c. 1816 Balfour - British surgeon → widespread muscle / joint pains
- d. 1841 Vellieux - muscular rheumatism and widespread tender points
- e. 1869 Beard - myelasthenia / neurasthenia
- f. 1904 Glowers - fibrositis / lumbago
"ladies of blameless habits and abstemious clergymen"
- g. 1915 Llewellyn & Jones - Fibrositis, myofibrositis
- h. 1927 Albee - myofasciitis, mimicry of other disorders
- i. 1942 Travell - Myofascial trigger points, idiopathic myalgia
- j. 1977 Smythe and Moldofsky - fibrositis syndrome
- k. 1981 Yunis - fibromyalgia
- l. 1990 American College of Rheumatology - definition (Wolfe, et al)
- m. 1993 World Health Organization - recognition

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HISTORY & DEFINITION ACCEPTED/
KNOWN

DEFINING THE CONDITION

1990 Copenhagen Accord

Wolfe, F., Smythe, H. A., Yunus, M. B., Bennett, R. M., Bombardier, C., Goldenberg, D. L., Tugwell, P., Campbell, S. M., Abeles, M., Clark, P., Fam, A. G., Farber, S. J., Fiechtner, J. J., Franklin, C. M., Gatter, R. A., Hamaty, D., Lessard, J., Lichtbroun, A. S., Masi, A. T., McCain, G. A., Reynolds, W. J., Romano, T. J., Russell, I. J., and Sheon, R. P.: The American College of Rheumatology 1990 criteria for the classification of fibromyalgia: Report of the Multicenter Criteria Committee. Arthritis Rheum. 33:160, 1990.

Fibromyalgia Syndrome

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American College of Rheumatology (ACR) diagnosis requires: ACCEPTED/
KNOWN

1. Chronic widespread myalgia (>3-6 months)
2. Pain in at least 11 of 18 designated tender areas:
(including axial, above and below the waist, right and left sides)
3. Systemic manifestations
 - fatigue, sleep dysfunction
 - worsening with weather, stiffness
 - numbness, tingling
 - irritable bowel / bladder syndrome

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PERCIPITANT EVENTS ACCEPTED/
KNOWN

CAUSE ?

- Individuals with **CFS** (Chronic Fatigue Syndrome)
→ 85% acquire FM
- Individuals with **SLE & RA**
→ 20-35% acquire FM
- Motor vehicle **chronic Whiplash** injury -Israel
→ 22% acquire FM within one year
-- Verses 1% with fractured leg > FM's in a year
- Increased frequency in **OA, Multiple Trauma** injuries and **Chronically Ill** individuals

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Original FM Classifications ACCEPTED/
KNOWN

"BY CAUSATION" (Pre- ACR Definitions & Wolfe; Burkhardt; Clarke); etc.

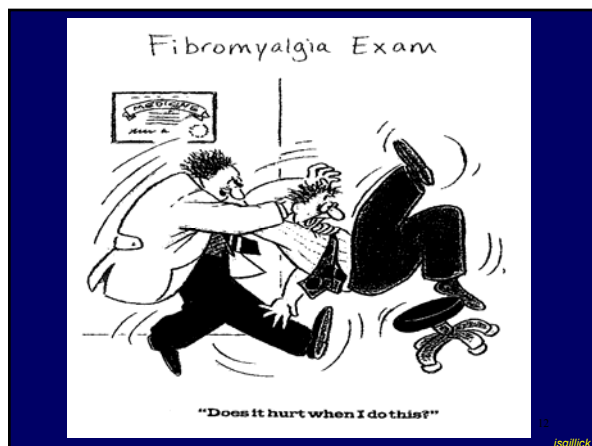
- 1. ****SECONDARY FM ± (1/3)** **CAUSES**
Post traumatic (20%-40%)±
- 2. ***CONCOMITTANT FM ± (1/3)**
Delayed trauma or Disease related (20% to 40%)
- 3. **PRIMARY FM ± (1/3)**
Idiopathic (30-40%)
(Childhood: 15-20%, Gradual adult: 15-20%)

SYMPTOMS AND DISEASE PROGRESSION

ALL → DOES NOT DIFFER AMONG → ? FUEL ?

PRIMARY, SECONDARY & CONCOMITTANT FM

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Diagnosis ACCEPTED/
KNOWN

GENERAL MEDICAL EXAM & SCREENING

CBC, ESR
CRP and CPK
Chemistry Panel
TSH, +/- others

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ACCEPTED/
KNOWN

Physical

Myo-fascial, gentle on the 18 points

Exam of observation and listening
start and finish
patient clothed

Understanding and familiarity
myofascial trigger
NOTE AREAS
1 → 9 : R & L

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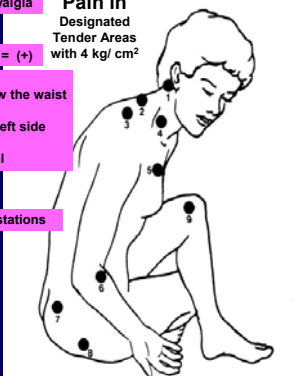
Chronic (>6 mo)
Widespread myalgia
+
11 of 18 points = (+)

Pain in Designated Tender Areas with 4 kg/cm²

A. Above & Below the waist
B. Right and left side
C. Axial
+

Systemic manifestations

ACCEPTED/
KNOWN



- (1) Back of HEAD
- (2) Upper SHOULDER
- (3) Tip of SCAPULA
- (4) Front of NECK
- (5) Top of CHEST
- (6) Mid ARM
- (7) Upper BUTTOCK
- (8) Posterior to HIP
- (9) Inner KNEE

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Diagnosis ACCEPTED/
KNOWN

DIFFERENTIAL DIAGNOSIS

Fibromyalgia Syndrome
VERSUS or CO-EXIST
Somatic Disease

Differentiate from:

*Polymyalgia Rheumatica
Polymyositis
Collagen Vascular Diseases
Endocrinopathy
Carcinomatosis, etc.*

Identify Co-Morbidities

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SYMPTOMS



THE EMPEROR'S MANY COSTUMES

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ACCEPTED/
KNOWN

FM's

SYMPTOMS – primary MANIFESTATIONS

- **Pain, musculoskeletal (100%)**
 - Flare with exertion, any stress, injury, wax and wane
 - Especially morning stiffness
- **Disordered sleep (95+%)**
 - Awaken tired, despite adequate sleep time
 - Frequently exhibit alpha-delta EEG pattern
- **Fatigue (90+%)**
 - Physical, lack of endurance, easy fatigability
 - Mental exertion and psychological debilitating fatigue
 - Frequent co-morbid: Chronic Fatigue Syndrome

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FM's **SYMPTOMS** ACCEPTED/ KNOWN
 MANIFESTATIONS

Checked off symptoms from **560 patients** with Fibromyalgia
 -- Dennis C. Turk, PhD -- Professor of Anesthesiology and Pain Research at the University of Washington

• Fatigue 97%	• Depression 70%
• Muscle tenderness 95%	• Tension headaches 66%
• Sleep disturbance 90%	• Cold Intolerance 64%
• Widespread muscle pain 88%	• Night sweats 54%
• Joint pain/tenderness 85%	• Changing bowel habits 54%
• Morning stiffness 80%	• Dry/ itchy eyes 53%
• Paresthesias 76%	• Jaw pain 53%
• Nervous/ irritable 74%	• Migraine headache 53%

1- Neck-shoulder-arm pain
 2- Hip-leg pain (w pelvic)
 3- Perennial rhinitis-sinusitis

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FM's **SYMPTOMS** ACCEPTED/ KNOWN
 MANIFESTATIONS

Checked off symptoms from **560 patients** with Fibromyalgia
 -- Dennis C. Turk, PhD -- Professor of Anesthesiology and Pain Research at the University of Washington

• Chest pain/ tightness 48%	• Jaw sounds click/ crack 37%
• Feeling swollen joints 47%	• Swollen ankles 37%
• Abdominal cramps 46%	• Menstrual problems 37%
• Stomach pain 45%	• Crawling sensation 34%
• Legs jerk at night 45%	• Sore throat/ frequent 32%
• Teeth grind at night 45%	• Constipation 32%
• Breathing prob w/exercise 40%	• Frequent urination 31%
• Skin rashes 40%	• Hands turn white/ cold 27%

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FM's **IMPAIRMENT** ACCEPTED/ KNOWN
 Loss of function.

versus

DISABILITY
 Loss or perceived loss of the ability to perform the necessary functions of occupational (social, etc.) life.

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Fibromyalgic's View ACCEPTED/ KNOWN
 When active or hyper-active

- Hurt all over
- All the time, without relief 24 / 7
- Afraid to talk about it
- No decent sleep, have diarrhea
- Social recluse
- Snowed by pain meds, that don't work
- Basic tasks require great concentration
- Mask their feelings
- Wonder if they are crazy

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FM's **IMPAIRMENT → DISABILITY** ACCEPTED/ KNOWN

- **70% Consider themselves Impaired** (?- Disabled -?)
 - Difficulty remaining competitive in the workforce
 - Everyday activities take longer, slow start
 - Difficulty with repetitive sustained motor tasks
 - Prolonged activity difficult, esp. in cold/ wet
- **HOWEVER: 70% are Productive** (Impaired, not Disabled)
 - 42% employed + 28% homemakers
- **26% Receive Occupational Disability** "Identity" "Career Path"
- **16% Receive SSD (Social security) (vs. 2% of pop.)**
 - » 25 - 50% of the SSD Population -- ELABORATE

"Impaired" & "Independent" → "Disabled" & "Dependent"

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FM's **IMPAIRMENT** ACCEPTED/ KNOWN

FEAR

NEED

DEPENDENCE

MOTIVATION

"IMPAIRED" YET EMPLOYED **IDENTITY** "DISABLED" ERGO UNEMPLOYED

"FUNCTIONAL DISABILITY"


DISABILITY

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Work Comp Disability

IMPAIRMENT ± >
"FUNCTIONAL DISABILITY"

Work Comp
73 FM's with CTD's
All on Disability



Non - WC
165 FM's
2/3 Employed

DIFFERENCES

Identity
MOTIVATIONAL ISSUES

Give-up vs. Self-sufficiency

DISABILITY vs. NECESSITY

[Helfenstein, & Feldman, -(Sao Palo, Brazil)- JOEM, 42:2 2002] jsgillick

Work Comp Disability

IMPAIRMENTS 73 FM's with CTD's

Symptoms	FM, non-WC (#165)	FM, WC (#73/103)
Fatigue	93	92
Sleep disturbance	96	81
Morning stiffness	99	97
Paresthesias	86	96
Subjective swelling	70	86
Palpitation	72	53
Thoracic pain	70	63
Chronic headache	77	81
Dizziness	73	63
Nausea	82	45
Irritable Bowel Syndrome	64	66
Reynaud's phenomenon	43	49
Difficulty concentrating	65	60
Memory impairment	78	70

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Pathophysiology ACCEPTED/
KNOWN

Clinical Presentation:

HYPERALGESIA & ALLODYNIA

Clinician's Question:

Psychiatric versus Somatic

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Pathophysiology ACCEPTED/
KNOWN

Factitious disorder

-Malingering-
Voluntary
Psychiatric behavior

.?.
LIE or
PSYCH

Somatoform

Non-intentional mimic of general medical condition
Presumed psychiatric

.?.
Neurosis
PSYCH

Somatic

General medical condition
Physiological

★
Hyper-
but REAL

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Pathophysiology ACCEPTED/
KNOWN

of the SOMATIC Aspects

→ PEER REVIEW EVIDENCE ←

- Central processing of pain = Disordered
(Lautenbacher-Clin J. Pain, 1997); (Sorensen - Scandinavian Journal of Rheumatology, 1998); (Bendtsen- Arthritis Rheum, 1997); (Kosek- Pain,1996)
- Nociceptive stimuli = Altered processing
Arroyo -J Rheumatol, 1993); (Magerl- Pain, 1998)
- Thalamic blood flow = Altered
(Iadarola- Pain, 1995) (Mountz - Arthritis Rheum,1995)
- Pain stimuli = Altered peripheral/ central response
(Gibson- Pain,1994); (Lorenz-Encephalog.Clin.Neurophys.,1996)
- Neural-active substances (i.e Substance P) = Altered
(Coderre - Pain,1993); (Tsigo- Cl.Sci.,1993); (Vaeroy- Pain,1988); (Russell- Arthritis Rheum, 1994)

ACQUIRED
CNS
DYSFUNCTION

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Pathophysiology ACCEPTED/
KNOWN

EVIDENCE BASE - 1

Human Studies **Normal vs. FM**

- **Qualitative differences in pain response**
 - Electronic dolorimetry (Bendtsen- Arthritis Rheum, 1997)
 - Response: Normal is logarithmic; FM's exhibit analogue (Kosek- Pain,1996)
- **Deficient down-regulation pain modulation** (Lautenbacher-Clin J. Pain, 1997)
 - FM's lose ability to down-regulate pain threshold to repeated stimuli
 - Normal's re-set pain threshold with repeated stimulation; FM's can't reset threshold
- **CNS hyper-response to somatosensory input** (laser- cutaneous)
 - EMG sensory spikes in FM's have higher amplitude (Gibson- Pain,1994)
 - FM's response is in both hemispheres; normal only in one side (Lorenz-Encephalog.Clin.Neurophys.,1996- Pain,1994)

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Pathophysiology **EVIDENCE BASE - 2** ACCEPTED/ KNOWN

Human Studies **Normal vs. FM's**

- **Secondary hyperalgesia to electrocutaneous stimulation** (Mageri- Pain, 1998)
 - Electrical stimulation of uninjured tissue FM's – dysthetic (Arroyo – J Rheumatol, 1993)
 - Dysthesia propagated distal and proximal to electrodes
 - Dysthesia persisted 15 to 20 minutes past stimulation
- **Abnormalities in SPEC imaging (Functional Imaging studies)**
 - Normal's = thalamic blood flow: acute pain = increases; chronic pain = decreases (Mountz - Arthritis Rheum, 1995)
 - FM's have decreased thalamic and caudate blood flow (Iadarola- Pain, 1995)
- **Elevated level of Substance P in the CSF – 3 fold increase**
 - Substance P: SP lowers the threshold of synaptic excitability
 - Unmasks silent interspinal synapses.
 - Sensitizes second order spinal neurons
 - **Increased in FM's**; Animal studies related to hyperalgesia and allodynia (Coderre – Pain, 1993) ; (Tsigos- *CL.Sci.*, 1993) ; (Vacroy- Pain, 1988) ; (Russell- Arthritis Rheum, 1994)

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Pathophysiology **EVIDENCE BASE - 3** ACCEPTED/ KNOWN

Human Studies **Normal vs. FM's**

- **Beneficial response to NMDA receptor agonist**
 - N-Methyl-D-Aspartic acid receptors / non-nociceptive pain
 - Ketamine is an NMDS receptor antagonist (10 mg/ 0.3/kg)
 - 7 days attenuate hyperalgesia – Δ's sensory processing (Sorensen – Scandinavian Journal of Rheumatology, 1995) ; (Sorensen – Scandinavian Journal of Rheumatology, 1997)
- **Experimentally induced central hyper-excitability**
 - Peripheral injected IM saline (anterior tibialis) – pain response
 - Normal's = short duration pain, small area
 - FM's = Longer time, large area, decreased area pain threshold (Sorensen – Scandinavian Journal of Rheumatology, 1998)

ANIMAL EXPERIMENTATION

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Pathophysiology **EVIDENCE BASE - 4** ACCEPTED/ KNOWN

Non - Human Studies

ANIMAL EXPERIMENTATION

- **Experimentally induced CNS anatomical and sensory changes**
 - Experimental electrical chronic pain induction in cats and rats
 - Months → induce clinical hyperalgesia, allodynia & CRPS-like response
 - Electron microscopy of Spinal cord: SNS sprouting, plasticity

(Dickerson, et al. Anesthesia Biological Foundations. Lippincott. 611-25. 1997)
(Yaksh & Chapman. Anesthesia Clinics N America: Pain. 335-52. 1997)

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FM's **Evidence-Based** **CURRENT ART**

MANAGEMENT
→ CURRENT ART ←

Management of Fibromyalgia Syndrome
JAMA 2004; 292: 2388-95 – Clinical Review
Don Goldberg, Carol Burkhardt, Leslie Crofford

CAUSE
IDIOPATHIC **Non-Focused**

PROGNOSIS

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Management **Evidence Based Medicine** **CURRENT ART**

MEDICINES (Efficacy) **Non-Focused**

STRONG EVIDENCE:
amitriptyline; cyclobenzapine – 20%

MODEST EVIDENCE:
Tramadol; SSRIs: sertraline, venlafaxine
Anticonvulsants: pregabalin, gabapentin

WEAK EVIDENCE:
Growth hormone; serotonin
S-adenosyl-methionine (SAM-E)

NO-EVIDENCE:
NSAIDS; benzodiazepines; corticosteroids;
Guaiifenesin; thyroid, melatonin

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Management **Evidence Based Medicine** **CURRENT ART**

NON - MEDICAL THERAPY (Efficacy) **Non-Focused**

STRONG EVIDENCE:
Patient Education: group format, written, etc.
Cardiovascular Exercise – 17%: must sustain
Cognitive Behavior Therapy (CBT) – 28%: sustains for months

MODERATE EVIDENCE:
Strength training; acupuncture; hypnotherapy
biofeedback; balneotherapy

Balneotherapy (the use of baths in the treatment of various maladies) is one of the oldest of medical procedures, well known and widely regarded throughout Europe & Asia, where people have historically flocked to luxury spas for recreation and treatment.

WEAK EVIDENCE: Chiropractic; manual and massage therapy; electrotherapy; ultrasound

NO-EVIDENCE: Trigger (tender) point injection; flexibility exercise

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Management **MANAGEMENT STEPS** CURRENT ART
 **Evidence Based Medicine **
Non-Focused **STEP - 1**
DIAGNOSIS & EDUCATION **

- A. Diagnosis - explain to patient **
- B. Look for other condition **
- C. Somatic conditions - identify**
 - Control co-morbid conditions (arthritis, arthropathy, cancer, thyroid, sleep, bowel, psych)**
 - Sleep conditions

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Management **MANAGEMENT STEPS** CURRENT ART
 ** Evidence Based Medicine **
Non-Focused **STEP - 2**
• PAIN MANAGEMENT ** [Non-Focused]



Pain Management

Medications:
 (20% improvement after placebo = 20% decreased pain)
Some effect:
 Tricyclics* ; Anticonvulsants* ; Tramadol ; SSRI's
Poor/ No effect:
 NSAIDs, narcotics, guaifenesin, herbs, vitamins

– Cognitive Behavior Therapies (28% decreased pain) **

- Meditation, relaxation, stress management
- Refer out – takes multiple weeks to months (6 weeks to 6 months)
- Last – multiple months (6 to 18 months)

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Management **MANAGEMENT STEPS** CURRENT ART
 **Evidence Based Medicine **
Non-Focused **STEP - 3**
Cardiovascular exercise (17% decreased pain) **

- A major key to control, little success without this **
- Start slowly, work up, never stop **
- Stretching, not the same – not effective as exercise
- Yoga (depends upon the type)

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Management **MANAGEMENT STEPS** CURRENT ART
 **Evidence Based Medicine **
Non-Focused **STEP - 4**

- **SPECIALTY CONSULTATIONS ****
- **MEDICATION TRIALS:**
 - SELECTIVE SEROTONIN reuptake inhibitors
 Second line, vefaxine **
 - ANTI-CONVULSANTS (Neurontin not studied, Pregabalin ?)
 - Combination medicines/

NEXT →

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MANAGE CURRENT ART
 **Evidence Based Medicine **
PROGNOSIS
 CURRENT ART

SHORT TERM (6 mo) →
 60%: understand/ accept/ live with FM/ & follow some program;
Short Term: 15% to 40%: decrease pain and sx. – rare remissions.

LONG TERM (14 yr & 8 yr) →
Studies in large referral settings → no improvement in symptoms
 FM patients followed for 14 years: 2/3 working, no Sx. improvement.
 (Goldberg: Arch Int Med. 1999)
 Combined referral center with 528 no improvement at 8 years
 (Wolf: Arthritis Rheum. 1997)
 One private study showed 35% resolved in 2 years
 (Solomon: Arthritis Rheum. 1997)

NEXT →

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SUMMARY FMS ACCEPTED/ KNOWN CURRENT ART

- **History:** – 2500 years
- **Definable Syndrome:** → Somatic disorder
- **Population:** -- ♀ +↑ with age > 60
- **Acquired:** Non-infectious; non-inflammatory; not-immune mediated
- **Precipitants:** OA; RA; SLE; CFS; Whiplash; Multiple Trauma; CT; RSI; RSD (CRPS)
- **CNS changes → Pain reception & management**

ACQUIRED CNS DYSFUNCTION

Cause → **IDIOPATHIC** → Rx = Non-Focused
MANAGEMENT → Poor Prognosis for Long-Term Symptom Relief

NEXT →

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EXAMPLE -1 CURRENT ART Non-Focused

“Mina” - MLC 59 years old WF MANAGE

ONSET: 1990-45yo DX: FM 1991/2-47yo 1

SX (7): 1-Foot-ankle pain; 2-Hip-leg pain; 3-Neck-shoulder-arm pain; 4-Dysfunctional Sleep/ Fatigue; 5-IBS; 6-Chest pain; 7-Allergic rhinitis-sinusitis

EVENTS (Precipitants): Endocarditis-89; Work-stress disgruntled employee-suit-90; Rhinitis-sinusitis, Foot-ankle-hip pain; Neck-shoulder-arm

- Aggravated: (1) son- MV death '94-49yo; (2)Meds-hyper sens (Drs → narses)/(3) Ankle surgery for chronic tendonitis → tear → surg /w infection and RSD '99

MANAGE: ('90→'99) hyper-sens to meds; NSAIDS, Narcotics; intolerant elavil; ASA; meds → all ineffective -- still full-time work; MD's suggest disability and narcotics around the clock -**SX WORSE 1999**

Sx: Unimproved '90→'98, Worsened '98-9 - Full time employed (except surgery - RSD recovery- 4 mo in 99)

AGENDA: Get Better - no -meds, full-work jsgillick

EXAMPLE -2 CURRENT ART Non-Focused

“Ellie” - EMK 54 years old WF MANAGE

ONSET: 1985 -34 yo DX: FM 1992 -42 yo 1

SYMPTOMS (7): 1-Neck-shoulder-arm pain; 2-Dysfunctional Sleep; 3-Right-side body pain; 4-Hip-leg pain; 5-IBS; 6-Rhinitis-sinusitis; 7-Fatigue

EVENTS (Precipitating): Pancreatitis /w Whipple: Post Surg

MANAGE: ('85→'03): Flexeril; Elavil; SSRI's; Serotonin inhibitors; NSAIDS; Darvoset → A little help - Function C/D.

Sx: unimproved '85→'03 - Employed full-time office manager

AGENDA: Get Better - no meds, full-work jsgillick

EXAMPLE -3 CURRENT ART Non-Focused

“Gwen” - GWC 54 years old WF MANAGE

ONSET: 1992-4 -41yo DX: FM 1996 -45 yo 1

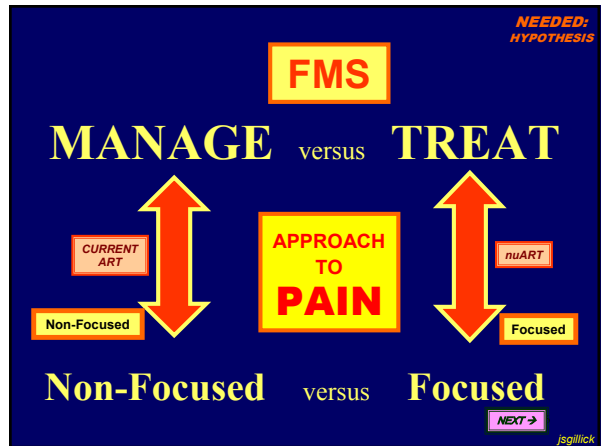
SYMPTOMS (7): 1-Neck-shoulder-arm pain; 2-Headache; 3-Dysfunctional sleep; 4-Hip-leg Pain; 5-IBS; 6-Arm-hand neuralgia; 7-Rhinitis-sinusitis

CAUSE (Precipitants): OccErgoDesk - WorkComp-CTD 92-4; Whiplash-loose - MVA (1st 79) 85+94; Bilat, CTS-epicondylitis, post-trauma -94

MANAGE: (92→99): Flexeril; Elavil; Nortryptiline, NSAIDS, Actifed; Vicodan, Tramadol, Baclofen; Chiro from 1979

Sx: unimproved '92→'99 - Employed full-time public relations, sales

AGENDA: Get Better - no -meds, full-work jsgillick



NEEDED: HYPOTHESIS

HYPOTHESIS

CAUSATION

TREAT nuART

1 - Attack the **Cause (s)**

2 - Stop the **Fuel (s)**

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NEEDED: HYPOTHESIS

Original FM Classical Classifications

“Secondary” FM (30%+)
specific macro-trauma = TRIGGER
Rapid onset (3-6 mo)

“Delayed-secondary” & Concomitant: (20-30%)
six months to several years after
traumatic episode or disease onset (macro-trauma)
= TRIGGER

“Primary” FM (30% +/-) “Idiopathic”
gradual onset (micro-trauma)
no immediately obvious TRIGGER (s)

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HYPOTHESIS: TRAUMA TRIGGER & ENABLERS **NEEDED: HYPOTHESIS**

COMMONALITY

- 1 **Heralding Trauma (s) = TRIGGER**
(or a history of *cumulative traumas*) CAUSE
- 2 **Identifiable DAILY Cumulative Traumas = MAGNIFY**
(Keep it Active) (= **ENABLE**)
Simple traumas that exceed the individual's short-term recovery powers (coping) FUEL
- 3 **RESULTS = ACTIVE & ONGOING FM**
Ongoing Traumas → "hyperalgesia" & "allodynia" NEXT → jsgillick

THE EMPEROR'S NEW CLOTHES

The emperor thought of how wisely he could rule his people if only he had such an outfit "Why not only would I look grand, but with those clothes on, I could find out which of my ministers is unfit for his post, I could tell the wise from the foolish. This cloth must be woven for me at once!"

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FM's **NEEDED: HYPOTHESIS**

TRAUMA HYPOTHESIS

Animal Experimentation

EVIDENCE BASE

Chronic Pain Production

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HYPOTHESIS: TRAUMA TRIGGER **NEEDED: HYPOTHESIS**

Animal Experimentation *Animal studies*

TRAUMA INDUCED: Nerve Remodeling

- a) Dendritic new growth toward the thalamus;
- b) Sympathetic nerve sprouting;
- c) Crossing over of spino-thalamic lamina fibers;
- d) Dorsal Horn increased excitability
- e) Retrograde activation of anti-nociceptors

ACQUIRED CNS PLASTICITY

(Dickerson, et al. Anesthesia Biological Foundations. Lippincott. 611-25. 1997)
(Yaksh & Chapman. Anesthesia Clinics N America: Pain. 335-52. 1997)

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HYPOTHESIS: TRAUMA TRIGGER **NEEDED: HYPOTHESIS**

Animal studies

Retrograde activation of Nociceptors

RENEGADE

Neuro-pathic conduction
Hyper-sensitivity to Minimal, Innocuous Stimuli

common to the

Chronic Pain Syndromes

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TRAUMA TRIGGER **NEEDED: HYPOTHESIS**

Treatment & Prevention

CAUSE

FOCUS

nuART

CAUSE

FUEL

- 1 - "Attack the Cause (s)"
- 2 - "Stop the Fuel"

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NEEDED: HYPOTHESIS

FM starts:
 TRIGGER → Plastic ▲'s → CNS **CAUSE**
 (dysfunctional thalamic down-regulation)
 (dysfunctional anti-nociceptive system)
MANIFEST BY: "pain amplification"
 "hyperalgesia and allodynia"
 widespread muscle spasm & pain

FM is kept active by: **FUEL**
MAGNIFIERS (Enablers) & Residual **TRIGGER** activity:
 Commonly the traumas in "activities of daily living"
 Amplified by a dysfunctional CNS

FM is controlled by: **Remove the CAUSE & Limit the FUEL**
 IDENTIFY, NEUTRALIZE, & CONTROL Ongoing Traumas:
MAGNIFIERS (Enablers)
TRIGGER(s) – residual
 Cardiovascular Training & Symptom Control & Vigilant Prevention **NEXT →**

NEEDED: HYPOTHESIS

TRAUMA: TRIGGERS

TRIGGERS (CAUSES) Most COMMON

Macro-traumas: Commonly recognized injuries or happenings with pain-producing consequences **CAUSE**

- Whiplash - 22% 1 yr. - Acute into chronic
- Arthropathies - 30% - RA; 30% - Lupus; OA...
- Vehicular collisions - multiple-trauma
- Pregnancy - difficult, assoc. hip-foot-back
- Shoulder-thoracic trauma - ongoing upper quadrant
- Fractures, unstable - chronic, non-union, esp. ankle
- Fall injury - hip, leg, esp. coccyx
- Malignancies - systemic, ongoing
- Immune-compromise disorders

Multiple-uncontrolled micro-traumas in ADL *** **jsqillick**

TRAUMA: ENABLERS Cumulative-Trauma Fuel (Enablers)

Common MAGNIFIERS (FUEL)

****Micro-traumas**
 Small traumas: background irritants for many, daily stuff (ADLs) that are "sucked-up."
 May also act as a **Cumulative-Trauma Trigger** **FUEL**

- Sleep** – Position: Stomach, Arms, Twist (**bed** – 50 hrs/wk)
- Standing** – Arch, Balance, Foot-ankle (**stand /walk** – 50 hrs/wk)
- Sitting** – Balance, Elbow-arm rest (**sit / slouch** 60 hrs/wk)
- Sinusitis/ rhinitis** (**breathe** 168 hrs/wk)
- Driving** – Stick/ Auto, Seat, Balance (**travel** 15 hrs/wk)
- Ergonomics**, Home, Work, Hobby (**active** – 80 hrs/wk)
- Repetitive impact loading** (**exercise** – 5+ hrs)

NEXT → **jsqillick**

EMPEROR WITHOUT CLOTHES **TREAT**

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TREAT → TRAUMA APPROACH **TREAT**

- DIAGNOSIS / IDENTIFY: Cause & Fuel**
- EDUCATE**
- DETERMINE PATIENT AGENDA:** **MANAGE** **CURRENT ART**
- DRAFT & FACILITATE solutions** → Educate **TREAT** **nwART**
- Rehab / Prevention** → Educate **NEXT →**

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A 11/ 18 Points

Dx


- HEAD
- SHOULDER
- BACK
- NECK
- CHEST
- ARM **DIAGNOSIS DETAIL**
- BUTTOCK
- HIP
- LEG

- Occiput → superior insertion of nuncial muscles
- Trapezius → upper border of muscle midportion
- Scapula → muscle attachments to upper medial border
- Neck → anterior aspects of the C5, C7 inter-transverse spaces
- 2nd rib space → 3 cm lateral to the sternal border
- Forearm → 2 cm distal to the lateral epicondyle muscle attachment
- Buttock → Upper outer quadrant of the gluteal muscles
- Greater trochanter → posterior muscle attachments
- Knee → medial fat pad, proximal to the joint line

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A Sx's

GATHER PERTINENT INFORMATION



NAME & ID		SYMPTOMS			
DATE #1		Sinusitis / rhinitis			
DATE #2		Sleep disorder			
DATE #3		Multiple allergies			
DATE #4		Fatigue			
		Headaches			
		Light headedness			
		Jaw Pain (TMJ)			
		Chest pain			
		Irregular Heart			
		Stiffness			
		Cold intolerance			
		Worsen /w weather			
		Anxiety			
		Numbness & weak			
		Raynaud's			
		Shoulder dysfunction			
		Udder swollen			
		Carpal tunnel			
		Hearburn			
		Upset stomach			
		Irritable bowel			
		Diarrhea/Constipation			
		Irritable bladder			
		Ovarian pain			
		Dysmenorrhea			
		Endometriosis			
		Cervical Spine			
		Low back			
		Sacro/Coccyx			
		Hip pain			
		Radiculopathy / arms			
		Radiculopathy / legs			
		Patello femoral			
		Ankle sprain, etc.			
		Plantar fasciitis			
		Flat feet			
		Bunions / Morton's			

Global Function

Fibro Functional Level scale of 0 - 4

Standard Pain Scale scale of 1 to 10

REMEDIES

Orthotics/shoe change

Sleep position

Automobile - seat/air

Wallet in pocket -

Glasses change

Clothing

Shin medication

Energy medication

Tropicid

Analgesic

Medications

next →

A C-T's

IDENTIFY

CAUSE(s): TRAUMAS / CONDITIONS / RESIDUALS

-- & --

All Active FUEL(s): Cumulative-Traumas in ADLs

Sleep - position -- NECK, SHOULDERS, ARMS, NECK, BACK

Stand - arches & feet -- HIPS, KNEES, ABDOMEN, FEET

Sit - Balance -- NECK, SHOULDERS, ARMS, NECK, BACK

Breathing -- OBSERVATION, NECK, NOSE

Automobile -- STICK, BACK, SHOULDER, KNEE

Ergonomics -- ALL ACTIVITIES: WORK/ HOME, PLAY

Exercise routine -- POUNDING, IMPACT, SHOULDER, ANKLE

Clothing -- OBSERVATION

IDENTIFY

CAUSE(s)

FUEL(s)

next →

B Ed

EDUCATION

TREAT

Explain the FM Condition:

Onset: -- Causes / Fuels (Magnifiers)

Focused

Options: Manage = Meds & Modalities
versus **Treat = Behavioral Modifications**

Expectations:

Ownership:

next →

C Role

AGENDA

MANAGE (Non-Focused)

1. NEEDS, MOTIVATIONS, EXPECTATIONS
Functional Disability is not an Option!

TREAT (Focused) ↔ **MANAGE** (Non-Focused)

2. ROLES & RESPONSIBILITY:

Provider role (ADVISOR):
nuART - diagnose, teach, guide, and facilitate
- Offer simple practical choices/ resources

Patient role (OWNER):
- Functional Disability - not an Option
- Behavioral Modifications -- with needed personal equipment
- Review and maintain the needed treatment remedies
- Secure/ follow through with:
ancillary services; medicines; devices

next →

EXAMPLE -1

CURRENT ART

Non-Focused

"Mina" - MLC 59 years old WF

MANAGE

ONSET: 1990-45yo **DX:** FM 1991/2-47yo

SX (7): 1-Foot-ankle pain; 2-Hip-leg pain; 3-Neck-shoulder-arm pain; 4-Dysfunctional Sleep/ Fatigue; 5-IBS; 6-Chest pain; 7-Allergic rhinitis-sinusitis

EVENTS (Precipitants): Endocarditis-89; Work-stress disgruntled employee-suit-90; Rhinitis-sinusitis, Foot-ankle-hip pain; Neck-shoulder-arm

• Aggravated: (1) son- MV death '94-49yo; (2)Meds-hyper sens (Drs → narcs)// (3) Ankle surgery for chronic tendonitis → tear → surg /w infection and RSD '99

MANAGE: ('90→'99) hyper-sens to meds; NSAIDS, Narcotics; intolerant elavil; ASA; meds → all ineffective -- still full-time work; MD's suggest disability and narcotics around the clock -**SX WORSE 1999**

Sx: Unimproved '90→'98, Worsened '98-9 - Full time employed
(except surgery - RSD recovery- 4 mo in 99)

AGENDA: Get Better - no -meds, full-work

next →

EXAMPLE -1

nuART

Focused

"Mina" - MLC 59 years old WF

TREAT

ONSET: 1990-45yo **DX:** FM 1991/2-47yo

FUEL ('99): SleepPo; Foot-arch-super-cavus; perennial rhinitis-sinusitis; MV arm-pedal fit /w 500mi/wk-commute; Balance; Injured ankle; RSD

FOCUSED RX -'99 -53yo: 1- Orthotics-cavus 24/7; 2- Claratin & Nasal Steroid; 3-SleepPo; 4- change MV; 5-mini-Neurontin; 6-forearm-crutch; 7-balance

COURSE: Remission of FM & RSD @ 8 wk Rx (since 99); IBS gone 2 wk; full work; no relapses, despite meniscus tear /w surg & fall /w cervical strain

CURRENT (5 yr - remission): Orthoses 100%; SleepPo; Claratin; MV selection; Balance; ASA for aches; Neurontin 30-50 hs; occas Kinesio Tape

Sx: REMISSION since 1999: Employed full-time health care provision and administration

next →

**TRAUMA:
HYPOTHESIS**

Non-Focused

**AGENDA:
DEPENDENT**

MANAGE - 1/7

TREAT - 6/7

**AGENDA:
INDEPENDENT**

Focused

NEXT →

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D

Focused TREAT

FACILITATE SOLUTIONS

FIRST: Address and control **CAUSE(s)** and Residual(s); THEN

- 1. Behavioral Modifications** **D-1**
- mechanical changes
- 2. Adjuncts** **D-2**
 - a- personal equipment **2 a**
 - b- medicines -supplements **2 b**
 - c- physical medicine **2 c**
- 3. Exercise, progressive** **D-3**
- 4. Specialists, CBT, Trial Med** **D-4**

NEXT →

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D1.

THE KEY TO TREATMENT

Focused TREAT

DIMINISH THE FUEL

Behavioral Modifications

SLEEP - position, time
-stomach, arm position, twist
-shoulder warmth, face

STANDING - balance, anatomy
- arch, orthoses
- leg-length, foot-wear

SITTING - balance, anatomy
-hemi-pelvis, back-pocket
-arm-trunk, elbow support

BREATHING - allergy, sinuses
- daily meds

VEHICLE - type, fit
-stick, cockpit. habits

ERGONOMICS - fit, friction
-work, home, play, school
-hobby, exercise, 2nd job,
-telephone, computer, mouse

EXERCISE - regularity, type
-impact trauma
-technique, irregularity

CLOTHING - selection, fit
-warmth/ neck, shoulders
-back pack, purse, brassier

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EXAMPLE -2

CURRENT ART

Non-Focused

MANAGE

1

“Ellie” - EMK 54 years old WF

ONSET: 1985 -34 yo DX: FM 1992 -42 yo

SYMPTOMS (7): 1-Neck-shoulder-arm pain;
2-Dysfunctional Sleep; 3-Right-side body pain; 4-Hip-leg pain;
5-IBS; 6-Rhinitis-sinusitis; 7-Fatigue

EVENTS (Precipitating): Pancreatitis /w Whipple: Post Surg

MANAGE: ('85→'03): Flexeril; Elavil; SSRI's; Serotonin
inhibitors; NSAIDS; Darvoset → A little help – Function C/D.

Sx: unimproved '85→'03 -- Employed full-time office manager

AGENDA: Get Better – no meds, full-work

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EXAMPLE -2

nuART

Focused TREAT

2

“Ellie” - EMK 54 years old WF

ONSET: 1985 -34 yo DX: FM 1992 -42 yo

FUEL: SleepPo (prone); Foot-arch-cavus; OccErgoWork-
desk-phone; Allergic rhinitis; Balance,sit-stand; Long-hours

FOCUSED RX- 12/03: Remission in 3 wk; SleepPoit 3 wk- arm ok,
neck better; Orthotics- hip pain imp/ IBS gone 1 wk; Allegra-D- breathing better
1 day; Neurontin -sensitive -100 hs - stopped @ 2 mo. Kinesio tape for neck

CURRENT: Orthotics 100%; SleepPo; Zyrtec/ Sudafed; OccErgo = ok, Arm-
rests, Occas Neurontin; Kinesio tape = 1x/mo

STATUS: Remission since 1/04, exacerb of neck & IBS with 7 day work-week/
stress (1-2/05); better /w vacat; back /w overload; resolve /w lo-dose Neurontin

Sx: REMISSION from 1/04 -one 3 wk exacerb.- Employed full-time office mgr.

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D 2a.

PERSONAL EQUIPMENT

Focused TREAT

NIGHT →

Sleep hygiene ownership

*Position; Squared pillows
Sleeping surface - absorptive
Warm nightwear, Climate
Breathing, CPAP*

DAY →

Balanced: stand and sit

*Shoes / Orthotics
Vehicle, chair selection*

WORK →

Ergonomic obsession

*home and personal office
equipments/ tools
vehicle, hobby, recreation*

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D 2b. **USEFUL MEDS** Focused

TREAT

***Antihistamines & decongestants**
i.e., fexofenadine or *****loratadine +/- pseudoephedrine**

***Anticonvulsants (Sodium pump inhibitors)**
i.e., *****gabapentin**, pregabalin (Lyrica), duloxetine (Cymbalta) Topomax

****Muscle relaxants"**
i.e., ****cyclobenzapine**, **baclofen**


****Antidepressants - (Tricyclics)**
i.e., ****amitriptyline**

Analgesics +/-
i.e., tramadol, acetaminophen (NSAIDs, narcotics = not useful)

Mood enhancers +/-
i.e., sertraline, bupropion

Sedatives, anxiolytics +/-
i.e., trazadone, ambien

Others: +/-
i.e., *****KINESIO TAPE**; SAM-e (S-adenosylmethionine); Capsaicin cream; (guaifenesin = not useful)



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EXAMPLE -3 CURRENT ART Non-Focused

"Gwen" - GWC 54 years old WF **MANAGE**

ONSET: 1992-4 -41yo DX: FM 1996 -45 yo **1**

SYMPTOMS (7): 1-Neck-shoulder-arm pain; 2-Headache; 3-Dysfunctional sleep; 4-Hip-leg Pain; 5-IBS; 6-Arm-hand neuralgia; 7-Rhinitis-sinusitis

CAUSE (Precipitants): OccErgoDesk - WorkComp-CTD 92-4; Whiplash-loose - MVA (1st 79) 85+94; Bilat, CTS-epicondylitis, post-trauma -94

MANAGE: (92->99): Flexeril; Elavil; Nortriptyline, NSAIDS, Actifed; Vicodan, Tramadol, Baclofen, Chiro from 1979

Sx: unimproved '92->'99 -- Employed full-time public relations, sales

AGENDA: Get Better - no -meds, full-work

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EXAMPLE -3 nuART Focused

"Gwen" - GWC 54 years old WF **TREAT**

ONSET: 1994 -41yo DX: FM 1996 -45 yo **2**

FUEL: Sleep-posit; Foot-arch-cavus; Balance s+s; Allergic rhinitis-sinusitis; OccErgo; Neck facet ligament looseness

FOCUSED RX (97/8): SleepPos-arm better-1 wk; Orthotics - hip pain/IBS gone 1 wk; Balance s+s; Allegra D; NasalSteroid; Neurontin 100's/ pm; CTS-epicond Surg; Chiro+PT-neck release; Kinesio tape -sx relief better than with most medications and for 3-4 days

STATUS: Controlled since '97, remission since '98 (7-years) (start meds gone '99) - with BehavMod - Neurontin; no relapses despite surgery x5, chemo, radiation

CURRENT: Orthotics 100%; SleepPo; Allegra; Balance; Ergo; arms-phone-office-car; Neurontin 300-600 hs & occas pm; Frequent irritations: esp. neck, some hip -> Kinesio Tape, PT & Chiro (2-3/ mo),

Sx: REMISSION from 1998, some aches -- Employed full-time, sales

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D 2c. Focused TREAT

PHYSICAL MEDICINE

Formal Exercise Program
Recovery & Prevention
4 - 6 X's / Week @ SET TIME
Patient - specific

ASSISTED AND SUPPLEMENTED BY -- (NOT REPLACED BY):

PHYSICAL MEDICINE MODALITIES

physical therapy	acupuncture
chiropractic +/-	massage
aqua-therapy	yoga +/-
careful self-workout	daily loosening activities

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D 3. Focused

EXERCISE TREAT

Maintenance

START WITH WATER AEROBICS

LOW IMPACT

CARDIOVASCULAR

GRADUAL, RITUALISTIC

YOGA (Depends upon Type)

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D 4. Focused TREAT

SPECIALIST REFERRAL

Cognitive Behavioral Therapy

TRIAL DRUGS/

ALTERNATIVE RX

MANAGE

(MANAGEMENT) Non-Focused

NEXT ->

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Focused TREAT EXPECTATIONS REALISTIC GOALS

Sustained Remission > **80%**

60% calmed in < one month

80% controlled (remission) within two months

80% "ownership" within four months **NEXT →**

90% Remission >11 mo/ yr // Other 10% Remission = 6 -10 mo/ yr jsgillick



SUMMARY **ESSENCE OF FIBROMYALGIA**

FM manifests as

“PAIN AMPLIFICATION”

of

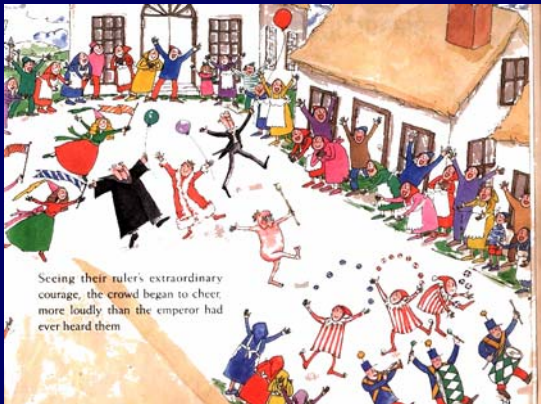
the simple **TRAUMAS** encountered during an individual’s routine **ACTIVITIES OF DAILY LIVING**

resulting in a

CHRONIC PAIN SYNDROME

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SUMMARY



Seeing their ruler’s extraordinary courage, the crowd began to cheer more loudly than the emperor had ever heard them

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FIBROMYALGIA DEFINITION **TRAUMA HYPOTHESIS DEFINITION OF FIBROMYALGIA**

Neurologic pain amplification disorder
trauma-induced and trauma-fueled

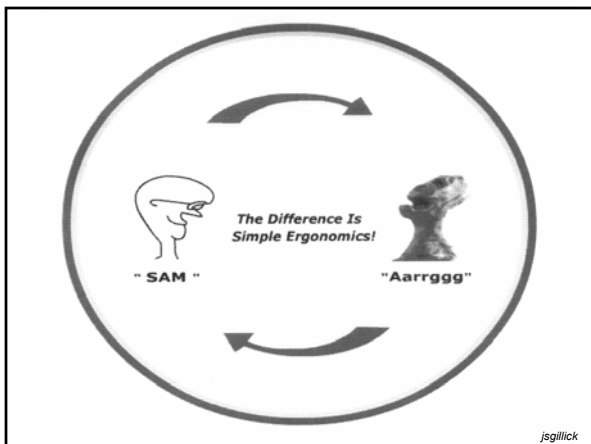
Symptoms from continued cumulative-trauma
within common activities of daily living
breathing, sleeping, standing, walking, sitting, driving...

Psychological stress is a predictable consequence
stress may also be a contributing non-physical trauma

Control FM by:
identification and neutralization of remnant TRIGGER-traumas and ongoing ENABLER micro-traumas

Assisted by
daily activity management, behavior modification, ergonomic improvements, exercise, and Rx medical conditions

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FM's

REFERENCES

- Management of Fibromyalgia Syndrome **CURRENT ART**
 - JAMA 2004;292:2388-95 --Clinical Review = 11/17/04
 - Don Goldberg, Carol Burkhart, Leslie Crofford
- Scientific Basis for FMS: Robert Bennett, MD **CURRENT ART**
 - Oregon Fibromyalgia Foundation
 - www.myalgia.com
 - Editor: CS Burkhart, PhD

Focused TREAT

Behavioral Modifications: Sleep Position, Feet, SNSS, Back Pain Puzzle, FMS

www.Simple-Ergonomics.com & www.DrGillick.com

- Web site repositories: John S. Gillick, MD, MPH

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**NEEDED:
HYPOTHESIS**



Trigger
macro-trauma*
multiple micro-trauma**

Enablers
Usually multiple (micro) traumas **
May be: Residuals of macro-traumas*

***Macro-trauma**
Commonly recognized injuries or happenings with pain-producing consequences

****Micro-trauma**
Small traumas: background irritants for many, daily stuff that is "sucked-up"

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TRAUMA HYPOTHESIS

PREVENT RECURRENCE

1. Guard against Over-Tasking
2. Keep using needed medicines
3. Repeatedly review T & E solutions
4. Stay educated
5. Build on strong points
6. Don't expect the magic pill or cure
7. Maintain routine daily fitness and mobility

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FM's **CURRENT DEFINITIONS** **ACCEPTED
KNOWN**

¹. Goldberg
Idiopathic chronic generalized musculoskeletal pain syndrome that cannot be traced to a specific structural or inflammatory cause.¹

The diagnosis is based on a history of widespread pain, defined as bilateral, upper and lower body, as well as spine, and the presence of excessive tenderness on applying pressure to 11 of 13 specific muscle-tendon sites.¹

². Bennet:
Fibromyalgia is a clinical construct, developed, for the most part, by Rheumatologists and a direct descendent of a common misnomer, "fibrositis," which was coined in 1904. The diagnosis is made by applying Guidelines proposed by the American College of Rheumatologists in their 1990 Classification Criterion.²

¹. Goldberg, D et al. Management of Fibromyalgia Syndrome. JAMA 292-19: 2388-95. November 17, 2004.
². Bennet R. The scientific basis for understanding fibromyalgia. Oregon Fibromyalgia Society. www.myalgia.com

EXAMPLE - 4

Focused
TREAT

"Mary Lou" - MLM 80 years old WF

SX: from 1946 -25 yo **Dx:** FM 1998 -age 73

CAUSE: 1944 CFS -age ; Sulfa Rx -24yo; EnvironAllergy; /w pregnancy - age-26 yo

- Active /w Exacerbations & good/ bad - 1945 - 98
- **FUEL:** Sleep-position, Foot-arch, Allergic rhinitis; Balance s+s
- **RX:** Start: Controlled - partial remission from '99

Short relapses: in 1999 2x 2mo. in 1999 /w stop of BehavMod & Allergy Rx

- **STATUS:** Full Remission since 2000

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EXAMPLE - 5

Partial-Focus
MANAGE

"Gertrude" - GAE 91 years old WF

SX: Active 1943

DX: Fibrositis 1945, FM 1992

CAUSE: Pregnancy, depression, SleepPo = shoulder/ neck; feet = hip/leg

Ups/Downs, always active

FUEL: Sleep-posit, Foot-arch, Balance s+s

- **AGENDA:** No arch supports, shoes too important
- **RX:** multiple over years, very sensitive to drugs
- **STATUS:** partial BehavMod (SleepPo) Moderate decrease sx.

No Remission - Attempts from 1996 - Agenda

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