Pearls in Primary Care Occupational Medicine for the Family Physician

Family Medicine Forum
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Outline of the Presentation

Brief introduction to key concepts, followed by application of these concepts and clinical cases:

Relevance of Occupational Medicine in Primary Care

Work as a determinant of good health

Importance of knowing about the patient's occupation/employment status and to do an occupational screening history

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HISTORY

Dottor Bernardino Ramazzini 1633-1714

Chancellor Otto Von Bismarck 1815-1898

Sir William Meredith 1840-1923

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Occupational Medicine

- Ramazzini: 1700, Modena, Italy; De Morbis Artificum Diatriba,

What is the patient's occupation ?

- World Health Organization (WHO) and International Labour Organization (ILO) definition of occupational health.
- American Medical Association: OM is the medical specialty devoted to the prevention and management of occupational and environmental injury, illness and disability, and promotion of health and productivity of workers

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Occupational Medicine

- **Effects of work on health and health on work**
- E.g. Illness/injury/disease and Fitness for work, return to work, pre-employment assessment, health monitoring.
- Prevention aspects of occupational medicine

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Work as determinant of good Health

- Employment is an important determinant for good health.
- Self-image and self-esteem, identity, financial stability, contribution to society.
- Appropriate, meaningful, rewarding and satisfying occupation. Healthy workplaces.
- Being unemployed or away from work for disability is a risk factor for adverse health outcome.
- **Is Work Good for your Health and Wellbeing?**
  (Waddell and Burton, 2006, systematic review)

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Health Benefits of Employment

- Safe, appropriate and durable employment is a key determinant of good health: widely supported by evidence in the literature
- Appropriate work activities and employment are very likely to promote good physical and mental health and can be used as primary or adjunctive treatment

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Long Term Unemployment is a known risks for ill health

- Suicide rate is higher in unemployed people
  (Hawton and van Heeringen 2009)
- Suicide rate in general can be 6x in longer term worklessness
  (Bartley et al, 2005)
- Greater risk that the most dangerous jobs

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Include Occupational History in your SOAP !

- Recognizing occupational etiology or causation is critical to provide an accurate diagnosis, prevent further exposure, modify work, facilitate appropriate return to work
- Avoid misdiagnosis
- Identify "sentinel events"
- Provide correct clinical management
- Excellent management also includes: assisting the patient in seeking compensation; advocacy and collaboration/communication with main stakeholders eg WCB

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Include Occupational History in your SOAP !

1. **Screening questions**
2. **More detailed occupational history as needed**

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Occupational screening questions

- **What are your symptoms?**
- **What is your job? Previous jobs?**
- **What is your work process/duties?**
- **How long have you been employed in your current job?**
- **What are you exposed at work?**
- **Personal protective equipment?**
- **Were the symptoms worse at home or at work?**

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Occupational history (examples of key questions)

- Current Occupation (not just title but also duties and tasks)
- Past occupations
- Disabled, retired, unemployed, claims resulting in disability,
- Potential exposures to hazards, eg: noise, chemical, confined spaces
- Current restrictions and limitation
- Safe sensitive and decision critical jobs
- Personal protective equipment? ventilation? is it adequate?
- Anyone else sick at work? Similar problems? Taking time off work for the current complaints?
- Did something change at work?
- Symptoms better/worse when off work/holidays?
- Stress at work
- Relation with coworkers, management

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Language and Terminology

Impairment

Disability

Capacity

Risk

Restrictions

Limitations

Tolerance

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Risk, capacity and tolerance

A framework to help with fitness for work consultations

- It helps to:
  - determine what is safe
  - determine what is possible
  - describe ability, not disability

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Risk

- *Risk* refers to the chance of harm to the worker, co-workers, or the general public, if the worker engages in specific work activities.
- The worker may be capable of undertaking the activity, but they should not do so due to the risk of harm.
- For example:
  - driving after a seizure
  - climbing ladders in an aircast
  - attempting heavy manual work too soon after a rotator cuff repair

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Risk

- The physician imposes the restriction on the activity
- Safety-sensitive roles
- Non-negotiable
- Temporary or permanent

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Risk

"Mr. Singh is not medically fit to operate a forklift truck or other machinery where a sudden loss of consciousness would pose a risk of harm to himself or others."

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Capacity

- Capacity describes what the worker is able to do at that time
  - Strength, range of movement, cognitive function
  - Capacity can change with fitness levels, and rehabilitation
  - Usually measurable
  - Temporary or permanent

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Capacity

- When there is a lack of capacity to undertake an activity, the worker cannot perform the activity, even if they wanted to
- Not all medical problems or deficits lead to a lack of capacity to undertake a task:
  - impairment vs disability

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Impairment

- Any loss or abnormality of physiological function, anatomical structure or psychological function

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Disability

- Is when the impairment of function leads to a lack of ability to perform an activity in the manner or within the range considered normal for a human being
- Not all impairments lead to disability

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Capacity

- If a worker lacks the capacity to undertake an activity, then this can be described by the physician
- For example:
  - unable to undertake tasks that require the ability to squat in the case of bilateral calcaneal fractures with fusion
  - unable to perform cognitively demanding tasks in the case of severe depression
- The worker cannot perform the activity, even if they wanted to

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Tolerance

- Refers to the ability to sustain an activity over time at a given level
  - Tolerance is a psycho-physiological concept
  - Usually due to pain or fatigue
  - Not measurable or verifiable
  - Described by the worker
- May be entirely understandable or may be quite improbable
- Worker decides if the "rewards" of work are worth the "cost" of symptoms

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Tolerance

- For example, difficulty with:
  - frequent walking over uneven ground with severe OA of both knees
  - repetitive, frequent bending with non-specific low back pain
  - repetitive gripping with lateral epicondylopathy

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Tolerance

- Mr. Scheer has a medical condition affecting his elbow in his dominant arm. He may have difficulty sustaining activity that requires frequent, forceful gripping with this arm. He is otherwise fit for work.
- Mr. Trudeau has a medical condition that would benefit from the ability to have control over his posture and the facility to sit for short periods.
- These statements describe the problem but correctly puts the responsibility to find a solution on the worker and the employer.

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Summary

- **Risk** is safety-sensitive, *physician imposed* and not negotiable
- **Capacity** is *physician described* and usually measurable
- **Tolerance** is *worker described* and not medically verifiable

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A useful framework

- **Risk** - safety-sensitive
- **Capacity** - with an emphasis on what the worker can do
- **Tolerance** - acknowledges the worker's struggles, but is not proscriptive

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Occupational Diseases

Occupational Diseases have been recognized since antiquity but have only received their rightful attention in recent times.

Why?

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Occupational Diseases

Answer:

The People with Occupational Diseases Just Didn't Matter

- - earliest cases of lead poisoning often among **slaves** in mines and smelters
- - **tradespeople** were of little interest to physicians
- - **marginalized** groups were those who were most at risk
- - working-class **women** fueled the Industrial Revolution
- - in 1788 in Britain 2/3 of workers in cotton mills were **children** and there were 350,000 seven- to 10-year-olds in the labor force

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Occupational Diseases

- **Fast Forward** to the Twentieth Century and the present:
- Workers Compensation Boards begin to define "occupational diseases" - still ongoing
  - e.g., Ontario's WSIB listed 6 'Schedule 3' conditions (including hookworms) in 1914
  - Occupational disease categories expanded, e.g., WSBC's 'Schedule B' and 'Schedule D' (NIHL)

Challenge of Under Reporting?

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Occupational Diseases

- Occupational Diseases don't look different when they arrive at your office

Key to Recognition: Workplace Exposure

"Arising out of and in the course of employment" (cf. WCB)

- The Physician's Search for an Occupational Causation begins with:

Taking an Occupational History

"Tell me about your work" (How many MDs ask this?)

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Occupational Diseases

- A study of 2000 medical records at a tertiary care facility in Pennsylvania found that "Overall, 27.8 % of the records contained some indication of occupational history."*
- A study of 366 working patients at 5 Ontario health centres** found that their *current* workplace exposures included:

Exposure	% of Patients Reporting Exposure
Chemicals	43.7
Noise	54.4
Heavy lifting	51.1
Repetitive movements/awkward body position	66.4

*Politi BJ et al. *Journal of Occupational and Environmental Medicine* 2004; 46.6: 550-555.
**Rushner R, Kramer DM, Holness DL. *Work* 2018; 60.3: 365-384.

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Occupational Diseases

- In the above U.S. study of occupational history-taking, only 25.1 % of the records for those over 50 years old contained some indication of occupational history
- Occupational Diseases may have long latencies, e.g., cancers, so older workers and retirees can be at a higher risk. Asking about past occupations is important.
- In 534 patients surveyed (average age 56) at a Veteran's Affairs Clinic in Iowa, the frequency distribution of past occupational hazardous exposures was:

Schwartz DA et al. *American Journal of Medicine* 1991; 90.3: 315-319.

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Occupational Diseases

Try this WHACS* mnemonic as a screening Occupational History:

- **W**HAT is your work?
  Job titles and types of industry, include self-employment
- **H**OW do you perform your work?
  Repetition, forces, shifts, safety-sensitive, responsibilities, demand-control-support, etc.
- **A**ny hazardous exposures in your work?
  Physical, Chemical, Biological, Psychological, Ergonomic
- **C**o-worker concerns at your work?
  Work-related symptoms, absenteeism, etc.
- **S**atisfaction with your work?
  Enjoyment, advancement, relations with management and co-workers, labour-relations climate

*Blue AV et al. *Journal of Occupational and Environmental Medicine* 2000; 42: 1050-1053.
Woodall HE, Simpson WM Jr., Schuman SH. *American Family Physician* 2011; 83: 1247.

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Occupational Diseases

- Refining the History to make an Etiological Diagnosis
- Identifying exposure characteristics:
  - Frequency
  - Intensity
  - Duration Jan Feb Mar Apr May Jun Jul ..... Oct Nov Dec .....
- Identifying exposure-response:
  - temporal relationship to work, e.g., changes in symptoms on and off work
  - dose-response relationship, e.g., changes in symptoms with intensity of exposure
  - effects in any others with exposure ("cluster")

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CASE

- A 47-year-old single man employed as a mental health worker in the same residential group home over the past 10 years.
- Recalls "asthma" when around cats during his 20s and minor upper airway symptoms over the years without lost time at work. A lifelong non-smoker.
- No health issues at his group home job until August 23, 2016 when he developed a "burning throat" at work which subsided when he went home but recurred within about an hour after returning to work. Went off work for 4 months until March 2017.
- He had skin prick tests by an allergist in January 2017 which showed dust mite, birch, grass, and cat reactions. Patch tests were positive to thimerosal but not to formaldehyde. Allergist diagnosed asthma in March 2017.
- He tried using face masks and an air purifier at work but his pattern persisted. He used Flovent (fluticasone) and Ventolin (salbutamol). When I first saw him in early August 2017 his PFTs were normal.
- A methacholine test was negative in late August 2017.

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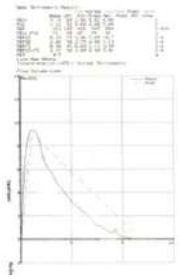
CASE



PFT
August 2017

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CASE

- On August 23, 2016 a set of new furniture was moved into his residential group home. The furniture remains there to this day.
- The worker made a WSBC claim for "environmental allergies" and an allergic reaction to formaldehyde.
- His WSBC claim was denied in a Review Board decision dated June 19, 2017. The denial of his claim was largely based on a WSBC Medical Advisor's opinion that "there has been no medical clinical information provided that supports any form of diagnosis related to any form of allergy at work" and there is "no biological plausible reason why the worker would be exposed to formaldehyde".
- When the claimant's claim was reframed as "work exacerbated asthma," due to irritant effects of formaldehyde off-gassing from glues in new furniture, a WCAT decision (March 28, 2018) found that "the worker sustained an occupational disease as diagnosed on an aggravation basis."
- The worker returned full time to his former worksite in October of 2018.

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CASE

Adapted from Trivedi V, Apala DR, Iyer VN. *Current Opinion in Pulmonary Medicine* 2017; 23.2: 177-183.

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Occupational Diseases

- Ontario patients with occupational asthma were found to wait for 7 months before discussing the work-relation of their symptoms with their physician. The main reason for delay in 41% was said to be a lack of inquiry about work-relatedness by their physician.
- A UK sample of new onset adult asthma found that occupation was recorded in only 14% of cases and only 3% had detailed work-effect inquiries recorded.
- Other research has found that the proportion of adults with current asthma who have discussed the work-relation of their symptoms with a health professional ranges from 7% to 17%.
- A prospective cohort study of American HMO members found that physicians documented asking about work-related symptoms in 15% of new onset adult asthma cases.

Poonai N et al. Canadian Journal of Public Health 2005; 96.3: 230-123.
Walters GI, McGrath EE, Ayres JG. *Occupational Medicine (Lond)* 2012; 62.7: 570-573.
Mazurek JM et al. *Annals of Allergy, Asthma and Immunology* 2015; 114.2: 97-102.
Milton DK, Solomon GM, Rosiello RA, Herrick RF. American Journal of Industrial Medicine 1998; 33.1: 1-10.

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Occupational Diseases

- BOTTOM LINE MESSAGE:

Ask your patients about their work !

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