The Sherbrooke disability prevention model

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Outline

- Looking back at the origin of the concept
- The model and its scientific validation
- Why does it work?
- How is it carried out in practice?
- Questions and conclusion
Impact of a structured intervention on low back pain chronicity

Pilot program
Sweden
After Choler et al 1985
Prevention of disability through “return to work” (RTW) programs

Definition:
- Structured interventions aiming at an early return to work
- Targetting low back pain patients selected on precise criteria
- And applied at a given time period in the course of the pain episode
- Involving various components:
  - Education (back school)
  - Physical reconditioning (graded activity)
  - Cognitivo–behavioural approach
  - Workplace intervention

Founding publication: the Spitzer report 1987
RTW programs within the occupational context

- **Canada**
  - Ontario Rehabilitation Program  (Mitchell and Carmen 1990) (1997)
  - Sherbrooke model  (Loisel et al 1994, 1997)

- **Sweden**
  - Volvo activity program  (Lindström et al 1992)

- **Belgium**
  - Cockerill–Sambre  (Mairiaux et Oblin 1997)

- **Netherlands**:
  - KLM Schiphol  (Staal et al 2004)
  - Replication Sherbrooke model  (Anema 2007, Lambeek 2010)
The Sherbrooke model Quebec

Screening of LBP workers at risk of chronicity – > 4 weeks sick leave (SL)

- Step 1: Workplace Intervention
  - 6-10 weeks SL
  - Visit by the occupational physician
  - Participatory Ergonomics

- Step 2: Clinical Intervention
  - 8-12 weeks SL
  - Back specialist
  - Back School

- Step 3: Early Rehabilitation
  - 13-26 weeks SL
  - Functional readaptation
  - Therapeutic Return to work

Randomised trial of the Sherbrooke model

35 COMPANIES (> 175 staff)
(20000 workers)

Stratification
Randomisation

No occupational intervention

WORKERS
4 weeks sick leave

Consent
randomisation

Clinical –
Usual care
(n=26)

Clinical +
Clinical intervention
(n=31)

Occupational / ergo intervention

WORKERS
4 weeks sick leave

Consent
randomisation

Clinical –
Occupational intervention
(n=22)

Clinical +
Full intervention
(n=25)

[Loisel et al. 1994]
Sherbrooke model: return to work results at 1-yr follow-up
[Loisel et al 1997]

Intervention

......... usual care

_____ full model

Signification:

p = 0.022
Program impact on return to usual work

Rate ratio (Cox model) of return to regular work

- Standard
- Clinical
- Occupational
- Sherbrooke

(after Loisel et al 1997)
Cost benefit analysis: 6 yr follow-up

Coût moyen par travailleur

<table>
<thead>
<tr>
<th></th>
<th>Standard</th>
<th>Clinique</th>
<th>Occupationnel</th>
<th>Sherbrooke</th>
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<td>Remplacement de revenu les 5 années suivantes</td>
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<td>16 902$</td>
<td>16 252$</td>
<td>14 494$</td>
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<tr>
<td>Coûts de soins de santé les 5 années suivantes</td>
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$ CAN 1998

(Loisel et al, 2002)
Dutch application of the Sherbrooke model (Steenstra, Anema 2004)

- Organisation of the study based on 13 OH services, with 99 OP’s in charge of about 100,000 employees health
- “Activity program” (// Volvo, or KLM programs) run by 47 physiotherapists working in several in- and out-company training centres
Dutch application of the Sherbrooke model (Anema et al, Spine 2007)

- Workplace intervention run by 25 ergonomists: starts 1 wk after contact with OP, duration 6h over 2 weeks, 2 contacts at workplace (ergo analysis; brainstorming for solutions), participatory process with worker and supervisor, follow-up solutions by the OP

- Content solutions: task or organisation changes (59%), equipment redesign or ergonomic aids (36%)
Design of the study
(by courtesy of Steenstra and Anema – Premus Congress 2004)

First day of sick leave

Recruitment of worker

Workplace intervention

Workplace intervention + Graded Activity

Workplace intervention only

Usual care

Usual care and Graded Activity

Usual care only

Stratification of OP by economic sector

R1 (OP)

R2

R = treatment allocation
Dutch application of the Sherbrooke model  
(Steenstra, Anema 2004)

- Eligible workers = 243 selected through 55 OPs
- Randomised workers = 196; 96 to workplace intervention, 100 to usual care
- Most workers employed in Health Care, due to the large sample of hospitals in the source population (almost all were nurses/ nursing aids)
- Gender: < 50% male
Selecting a “pure” WI group

Stratification of OP by economic sector

First day of sick leave

Recruitment of worker

Workplace intervention (n=96)

Workplace intervention + Grad Activity (n=27)

Workplace intervention only (n=25)

Usual care (n=100)

Usual care and Graded Activity (n=28)

Usual care only (n=33)

R = treatment allocation

R1 (OP)

R2

Weeks

2

4

6

8

2 4 6 Weeks

Recruitment of worker

Recruitment of worker
Dutch replication of the Sherbrooke model: workplace intervention impact (Steenstra, Anema 2004)

- Outcome: N calendar days until lasting (>28 d.) return to own work
- WI Usual Care
  64 days 79 days (median; logrank p=.011)
- Cox regression analysis; Intention to treat/per protocol
- Workplace intervention effective after 60 days of sick leave and onwards (hazard ratio = 2.5 [CI 1.5 to 4.1]; p=0.0003).
Selecting a “pure” Graded Activity group

First day of sick leave

Recruitment of worker

Occupational intervention (n=96)

Occupational intervention + Graded Activity (n=27)

Only occupational intervention (n=25)

Usual care and Graded Activity (n=28)

Usual care only (n=33)

Stratification of OP by economic sector

R = treatment allocation

R

R1 (OP)

R2

2 4 6 8 Weeks

Recruitment of worker

Usual care (n=101)
Effects of a “pure” Graded Activity on Return to Work  (Steenstra, Anema 2004)

- GA  Usual care
- 31 d  28 days
- HR=1.02 [0.44–2.38]
- No positive short term effect of GA
Workplace intervention was more effective than usual care on return-to-work of workers 2–6 weeks sicklisted due to non-specific low back pain, but not effective on pain and functional status.

Graded Activity program didn’t work in this setting neither on return to work nor on any of the secondary outcomes (results # KLM and Volvo studies).

Dutch application of Sherbrooke model for chronic LBP patients

- Lambeek et al. study (BMJ 2010; 340)
- RCT comparing usual care (UC) and integrated care (IC = WI + GA) among 134 workers absent from work for > 12 weeks

Results:
- Time until RTW: 88 days in IC group vs 208 d in UC group (p=0.003)
- Improvement in functional status at 12 months: IC > UC (p=0.01)
- Pain improvement: no difference
Interventions for workers on sick leave due to LBP – effectiveness?

- The evidence on the effectiveness of *intense physical conditioning* programs versus usual care in workers with subacute back pain is conflicting.
- Further subgroup analysis shows that if the intervention is executed at the workplace or include a workplace visit, it significantly reduces the duration of sickness absence at the intermediate, long and very long-term.

*(Schaafsma et al, Cochrane Review 2010)*
Interventions for workers on sick leave due to low-back pain - effectiveness?

- There is moderate-quality evidence to support the use of workplace intervention to reduce sickness absence among workers with musculoskeletal disorders when compared to usual care.
- Workplace intervention are not effective to improve health outcomes (pain, functional status…) among workers with musculoskeletal disorders.

(van Oostrom et al, Cochrane Review 2009)
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Interventions to prevent chronicity and disability – the black box

Formal components
- Graded activity
- Back school
- Workplace intervention
- Pain management

Non formal components

Outcomes
- Pain reduction
- Early RTW
- Better exercise tolerance
- Functional disability

?
Structured intervention?

The viewpoint of ergonomists, OTs, OPs, RTW coordinators, ...

Workplace intervention

Physical reconditioning

T1
off work

T2
intervention

T3
Return to work
Structured intervention?

The viewpoint of rehab specialists, GPs, PTs, ...

- Physical conditioning, graded activity, functional restoration
- Workplace visit or intervention

T1 off work
T2 intervention
T3 Return to work
Workplace intervention (WI)
Content ? Definition ?

- Early healthcare provider communication with the workplace *(see Kosny et al 2006)*
- Workplace visit: who? With/without the worker? Meeting the supervisor? Aim?
- Interview with the occup. Health physician (OP) during the sick leave period
- Participatory ergonomic program (PEP) including task analysis, risk factors identification, improvements proposals, prioritization of solutions, ...

*(see Loisel 2001, Anema 2003)*
Workplace intervention (WI) Implementation of solutions

- (PEP) solutions: 40 to 50% only are implemented; intervention cost: 5 to 13 hours ergonomist involvement per workplace
- Work design and organisation modifications (hours adaptation, job design, training, human support) can be temporary and are easier and quicker to implement
- Workplace and equipment design changes imply more often time delays and are generally of permanent nature

(see Loisel 2001, Anema 2003)
Workplace intervention (WI) How does it work?

- The provision of suitable duties facilitates return-to-work, reduces days lost due to injury, and is cost-effective (Krause et al 1998; Loisel et al 2005)
- Stimulating effect of solutions on work resumption? Yes, for 66% of workers (Anema et al 2003)
- But many return to work before the implementation of solutions (Loisel et al 2001)
- Importance of social exchange theory and organisational justice in the work setting? (Ambrose 2002; Wayne et al 1997)
Outline

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Therapeutic Return to Work as applied in Quebec (M–J Durand, 2010)

Three components or phases:

- Diagnosis of the disability situation at work
- Pre–Return To Work (clinical training)
- Return To Work
  - Rehabilitation focused on the work
  - Interdisciplinary team
  - Coordination – Collaboration with partners in the work environment
Talking with the worker

To initiate a partnership
Je reconnais avoir pris connaissance du texte ci-dessus, qui m’a été expliqué à ma satisfaction et l’avoir compris. En foi de quoi, je confirme, ci-dessous, ma participation volontaire à l’évaluation du programme PRÉVICAP. De plus, j’autorise les intervenants du programme à communiquer des informations me concernant et à faire parvenir à mon médecin traitant, Dr __________, et aux intervenants de la CSST, les rapports et documents suivants :

- Lettre expliquant la démarche de réadaptation au travail et résumant les interventions offertes
- Rapport du Diagnostic de la situation du handicap au travail

Cette autorisation est valide pour la durée de l’évaluation de la situation du handicap au travail ou pour une durée maximale de six(6) mois.

Traveillant : __________________________________________________________________________

Représentant du programme PRÉVICAP

Nom et prénom : _________________________

Nom et prénom : _________________________

Signature : ___________________________________________________________________________

Signature : ___________________________________________________________________________

Date : __________

Date : __________

Promoting a collaboration
IDENTIFICATION OF BARRIERS TO RETURN TO WORK

Diagnostic tools: SCID and DSHT
(1 half day work)
1) Diagnosis
- Discussion with the worker to initiate the collaboration
- Informing the treating physician
- Worker informed consent
- Identification of barriers to RTW
- Search for consensus among the partners
- Authorization of the proposed intervention

2) Pre–Return To Work (clinical training)
- Integrated approach
- Install a partnership with the employer
- Weekly person–tailored interventions
- Weekly follow–up with partners
- Regular discussions with the treating physician
Weekly follow-up with the partners

To promote consistency and protect the partnership
3) Return to Work ("in vivo" exposure to the work environment)

- Progressive reintegration at work
- Weekly consensus searching with worker and supervisor
- Weekly revision of the person-tailored intervention
- Recognition and celebration of the efforts made by the worker in order to resume his role
- Concluding the work integration process with partners
Example of therapeutic RTW (after Durand 2010)

TRAJECTORY - Worker #1

- Worker's consent
- Clinical evaluations
- Plan proposition to GP
- Contact & monitoring insurance
- Contact & monitoring employer
- Contact & monitoring external psychologist
- Meeting with supervisor
- GP consent to plan and applied modifications

Women
Technician
Absence: 4 months
Dx: Major Depression

HOURS

WEEKS
Example of therapeutic RTW

TRAJECTORY - Worker #2

- Women
- Technician
- Absence: 8 months
- Dx: Major Depression

- Worker’s consent
- Clinical evaluations
- Plan proposition to GP
- Contact & monitoring insurance
- Contact & monitoring employer
- Contact & monitoring external psychologist
- Meeting with supervisor
- GP consent to plan

- Work exposition
- Psychology
- Occupational therapy
Example of therapeutic RTW

TRAJECTORY - Worker #4

Men
Manager
Absence: 4 months
Dx: Major Depression

- Work exposure
- Psychology
- Occupational therapy

- Worker's consent
- Clinical evaluations
- Contact & monitoring
- Contact & monitoring by employer
- Meeting with supervisor

PREPARATION

THERAPEUTIC RETURN TO WORK (TRW)

WEEKS

HOURS
The arena of disability prevention
Conclusion

- A strong rationale supports a Sherbrooke type of approach (incapacity paradigm, early intervention, workplace component...)
- Mechanisms of effectiveness are only partly understood
- Present Canadian application of the model (RTT in Previcap program) is so individually-tailored that it is resource-consuming. It is no more applied to subacute cases but chronic cases (on average 6 months sick leave)
Conclusion

- Applying a Sherbrooke type of approach in a given health care system must take into account
  - the other dimensions of the disability prevention model (financial incentives for the worker and/or employer, legal constraints imposed to the employers, health professionals attitudes and perceptions, .....)
  - the need to effectively build bridges between health care system and practitioners, and the workplace environment (occupational physicians, employers, HR managers, ....)
Dank u voor uw aandacht
Thank you for your attention
Merci pour votre attention!

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