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Risks assessment : the prerequisite for ergonomic design

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Health and social sector in France...

1.1 million of caregivers in public and private Hospitals and care facilities, $\frac{3}{4}$ in public facilities

23% in part time jobs ;

78% are women

This is in the lucrative private sector that employment was the more dynamic.

The decrease in non-profit private sector is related to the redefinition of the scope of hospital activities introduced by the revision of the classification of French activities from 2007.

Health and safety at work

Healthcare workers are exposed to high work-related physical stress which combines many risk factors of locomotor apparatus disorders.

Patient handling is an especially stressful task, as much mentally as physically.

Preventive responses most often made to caregivers are too often "gestures and postures training" type to reduce these occupational hazards.

Obstacle to prevention

Lack specific knowledge of equipment manufacturers,...

Performance pressure to which companies, especially SMEs,...

For managers, OSH is expensive and complex,...

The doubt about and a lack of recognition of the fact that prevention is worthwhile in order to :

- prevent accidents,
- preserve health
- save money

The safety of care culture: from concept to practice (HAS - 2010)

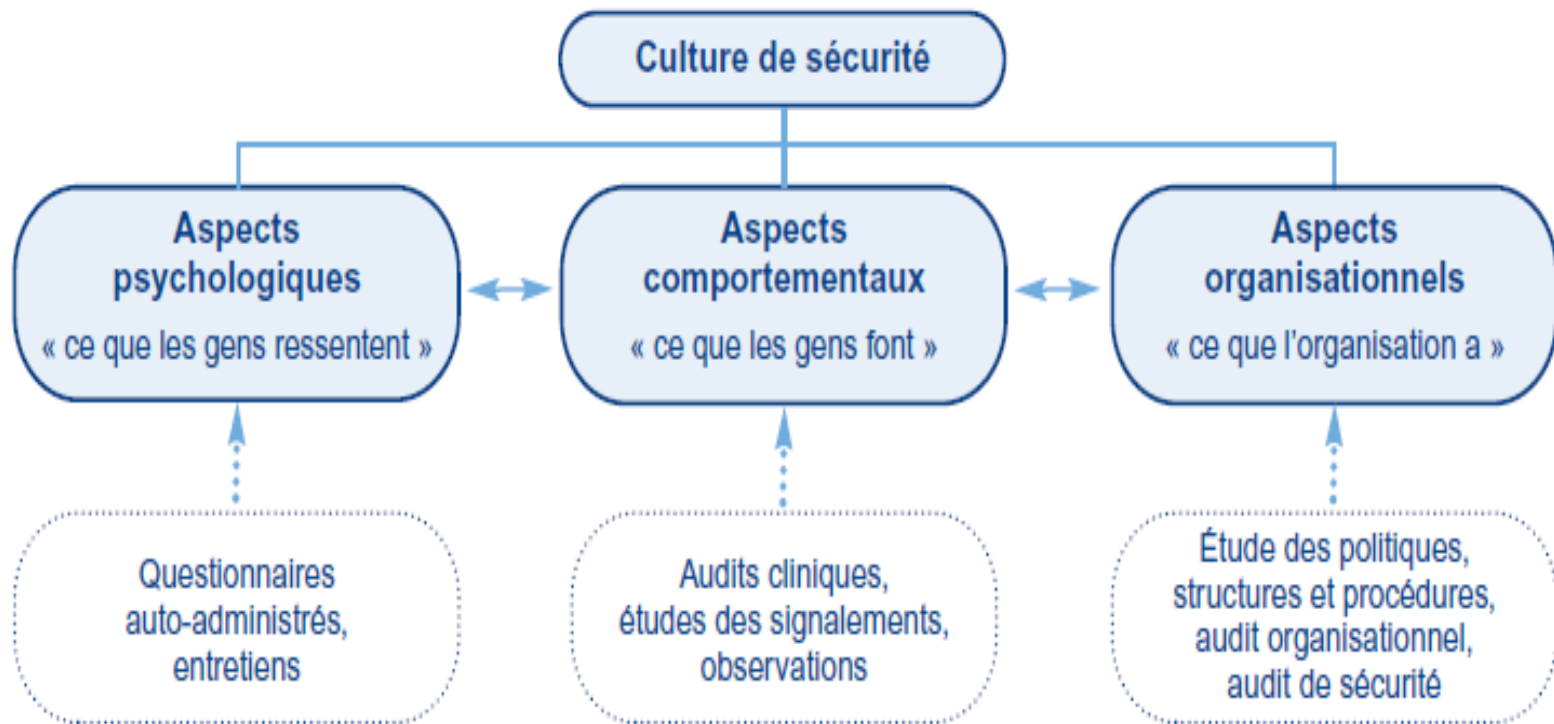


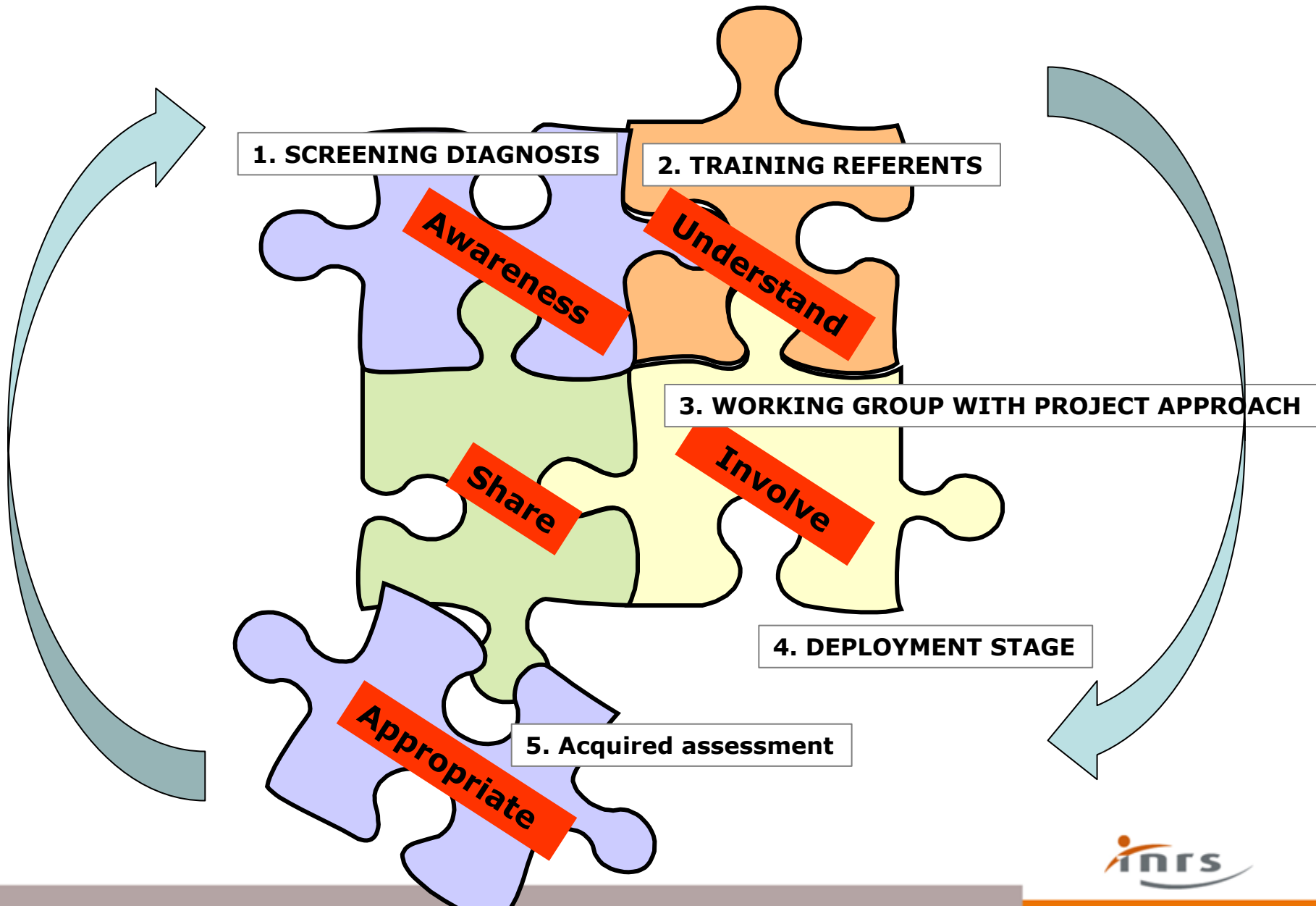
Figure 1. L'évaluation de la culture de sécurité repose sur différentes approches

Basic principles for the prevention of back pain during patient handling

ISSA recommendations 2012

- **analyze and assess each situation** from the point of view of physical constraints,
- give **priority to the safety of the patient and care worker,**
- use **handling aids,**
- **mobilize the patient's own resources**
- Maintaining caregivers expertise (know-how)
- wear appropriate clothing and footwear

The main lines of prevention approach for healthcare sector



The developing prevention approach

The proposed approach is based on the recommendations of the technical report ISO TR 12296.

Two methods are necessary

MAPO Index developed by teams Italian EPM (ergonomics posture and movement)

It is a method for analyzing the work conditions organization and layout, adapted to managers of care units.

Method for analyzing the physical workload developed by INRS.

Method MAPO

MAPO index to comfort the requirement of organization analysis

Considers interaction of factors

It considers the different factors in an integrated manner and analysis of a ward, needs with a short evaluation time,

MAPO Index is calculated considering in an integrated manner the organizational issues, type of patients, type of handling, use of equipment (if available), operators training to specific risk and handling environment.

SCOPE

The method was conceived to be used by companies of all sizes and relates to the work activity of an adult population without restriction of aptitude.

It applies to a workstation, a workshop, a service, a care unit,....

It is addressed to continuous or intermittent activities, even of very short duration and with strong intensity.

Method of physical workload analysis

Overall diagram of the method

Phase 1: Location and hierarchy of physical workload in 2 stages with a checklist of 5 indicators

Phase 2: Analyze physical workload (5 indicators)

Phase 3: Search for tracks of prevention

Phase 4: Evaluation of the actions

Phase 1 : Identification checklist

For this worksituation, are there difficulties related to...			Yes but	Yes and
For this worksituation, are there difficulties related to...			Yes but	Yes and
For this worksituation, are there difficulties related to...		No	Yes but non critical	Yes and critical
Dir				
TEMPORAL CHARACTERISTICS	... repetitiv work ?			
	... a work in tended flow (required to hurry) ?			
	... exposure time to the physical workload ?			
	... the catch of pauses?			
	... unforeseen changes of activity (hazards, customer dependence,...) ?			
	...			

Phase 2 : Physical efforts

		1 - PHYSICAL EFFORTS				
		2 - DIMENSIONNEMENT - SIZING				
		3 - TEMPORALS CHARACTERISTICS				
		ITEMS	0	+	++	+++
Lifting Unit	Acc dis var	Frequency of tasks or activities repeated of whole body (time/mn)	< 1 time/5 min	[1 time/5mn-2 fois/min]]2 times/mn-6 times/mn]	>6 times/min
Haul (en r)	Up eny	Number of technical actions repeated by each upper limb(time/mn)	< 10	[10-30]]30-40]	>40
Tonn hand Less De 1 De 4 Expr tonn	Spa lim	Work in tended flow	Never	Rarely	Often	Always
Push	Inf rot tru	Exposure time to a heavy physical load (in hour)	< 1	[1-2]]2- 4]	>4
Carr Tran Bed-	Un pos	Recovery period	≥10min/h]10min/h - 10min/2h]	<10min/2h	< 10min/4h
Dista displ mova	Ad wo	Free pauses	Always	Often	Rarely	Never
For a Subje musc	Ha obj	Unforeseeable variation of the activity (breakdowns, hazards,...)	Never	Rarely	Often	Always

En références aux normes Françaises, Européennes et Internationales en ergonomie

According to 3 generic axes:

Vigilance points
in design
in exploitation

The expected: Development of action plans,
Definition of the means to implement

Vigilance points of reference

- An improvement on an indicator should not degrade some others,
- The training of the employees follows the technical and organizational evolutions,
- The perception of caregivers of their environment (efforts, autonomy, schedules, aids equipments, medicals beds...) is regularly listened and questioned;
- The choice of adjustable materials takes account of the individuals variations.
- The workwears are adapted to the situation and the employees, are accepted, maintained and checked;
- The maintenance and the quality of the equipment and the grounds are provided;
- The peaks of activity are anticipated and adapted times of recovery;
- Working conditions (loads, daily tonnage, peak of activity, obstructions, quality of the containers, wearing of PPE...) are followed and their prevented drifts;
- Communication guides all actions of prevention.

Actions assessment

Controls average

Impact on the company

Balance and perspective

Expected: Report of reduction of the physical workload.

With all my thanks for your attention
To transmit is the condition of progress
Homage to all those which make me doubt each day

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