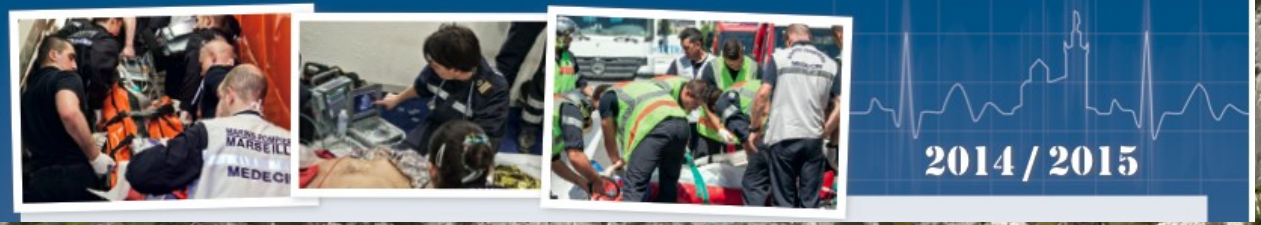
LES JEUDIS DE L'URGENCE

WWW.SMURBMPM.FR

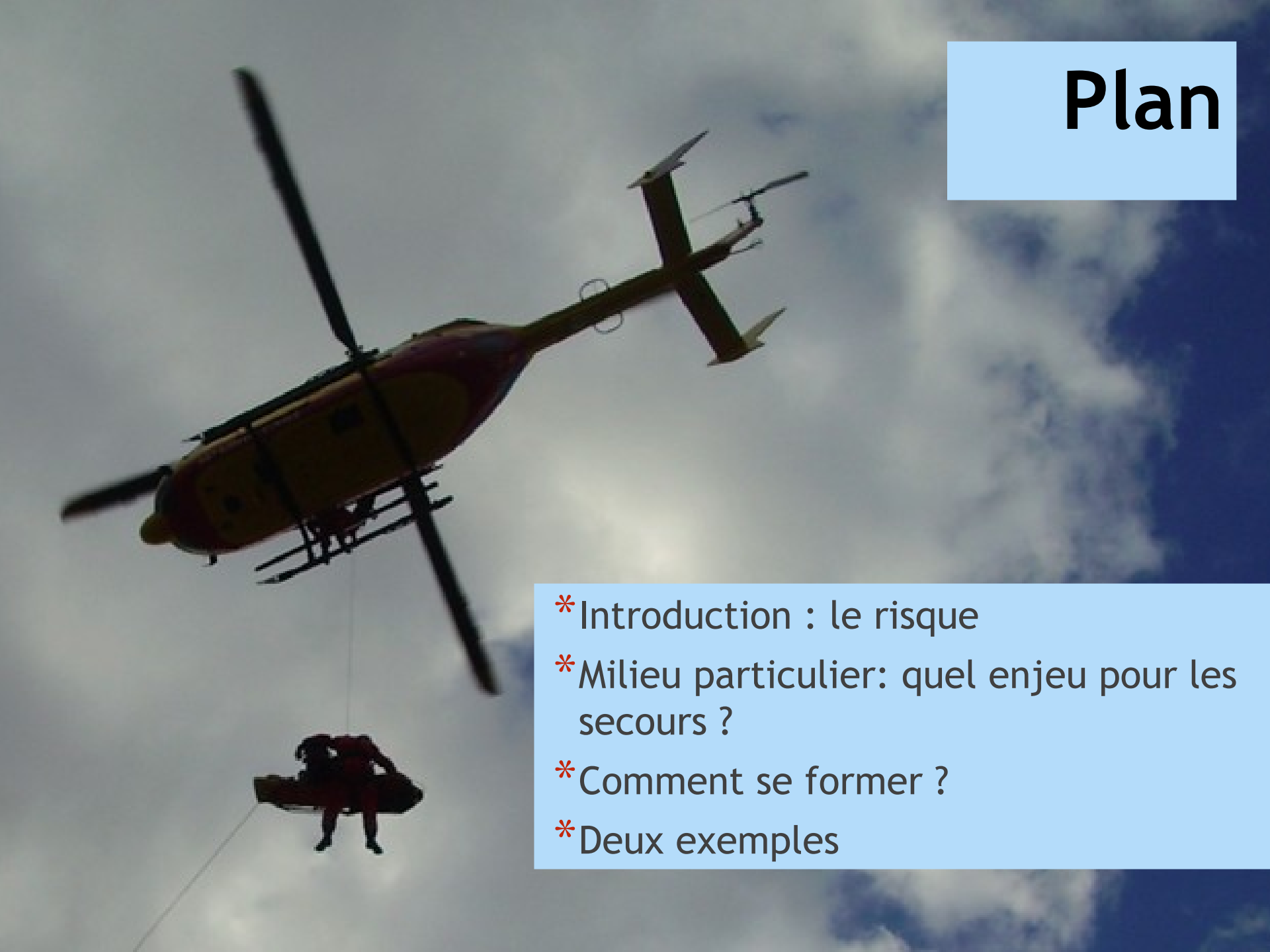


2014 / 2015

Intervention en milieu particulier

- Pourquoi se former?
- Comment se former?

Médecin en chef P. Benner, HIA Sainte Anne, Toulon.



Plan

* Introduction : le risque
* Milieu particulier: quel enjeu pour les secours ?
* Comment se former ?
* Deux exemples

Le milieu particulier

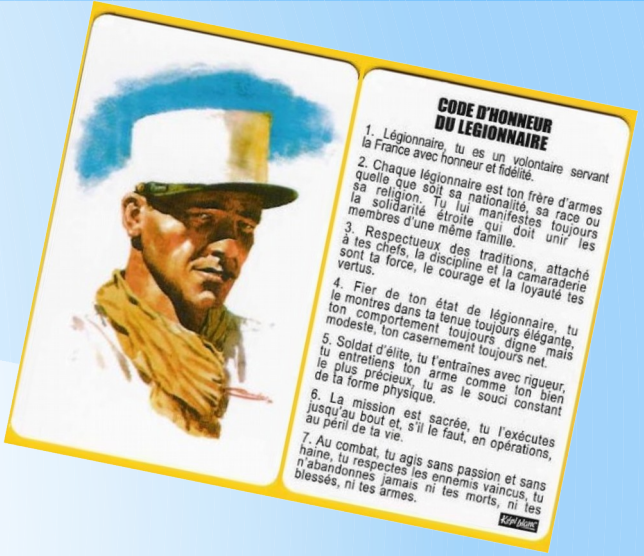
* Points communs des milieux dit « particuliers »:

mer, montagne, SD, NRBC….:

La confrontation au risque

* Sujet à la mode: cf thème de congrès, EPU, séminaire ARES 2015…

Le risque



* Pour le ministère de l'intérieur: le risque ne doit pas exister.

* Pour le ministère de la défense, la mission peut justifier le sacrifice.

En pratique:

« Sauver ou périr » à la BSPP…

Et Risque Zéro en temps de guerre…

Quels problèmes?

Abstract

We conducted a survey of Irish Coast Guard Search and Rescue Helicopter winchmen to establish if their pain management scope of practice was adequate for their working environment. We surveyed 17 SAR personnel. 88% of winchmen have experienced scenarios where they were unable to reduce pain scores below 6/10. In seeking solutions within current Irish Prehospital Clinical Practice Guidelines, repeated descriptions of operations in extreme weather and sea conditions were given which were entirely incompatible with the dexterity required to break a glass ampoule and draw up solution, let alone site an intravenous (IV) line or administer a drug via intramuscular (IM) injection. Irish Coast Guard Search and Rescue Helicopter winchmen encounter polytrauma patients in ext ain management within this tightly gover

- Gestion de la douleur
- Voies d'abord

Helicopter Winchmens' Experie Challenging Environments

Jason van der Velde,Laura Linehan,Cusack

Ir Med J. 2013 Feb;106(2):42-4

J van der Velde, L Linehan, S Cusack
Emergency Department, Cork University Hospital, Wilton, Cork

Il existe des Recommandations

Rôle du medical director:

- Active participation in the safety program, including drafting and reviewing protocols and standard operating procedures;
- Supervision and evaluation of the quality of medical care;
- Ensure all medical personnel are comp
an appropriate level of care.

- Entrainement des équipes
- Application de protocoles
- Traçabilité et évaluation
- Formation des personnels

MEDLINE

Medical standards for mountain resc
consensus recommendations of the International Commission for Mountain Emergency Medicine (ICAR MEDCOM).

High altitude medicine & biology.

Tomazin, Iztok; Ellerton, John; Reisten, Oliver... Tout. Publié January 1, 2011.

Que craindre?
L' erreur médicale

MEDLINE

Human factors and error prevention in emergency medicine.

Bleetman A, Sanusi S, Dale T, Brace S. - Emerg Med J - May 1, 2012; 29 (5); 389-93

- Importance du facteur humain
- Importance de « l'organnisationel »

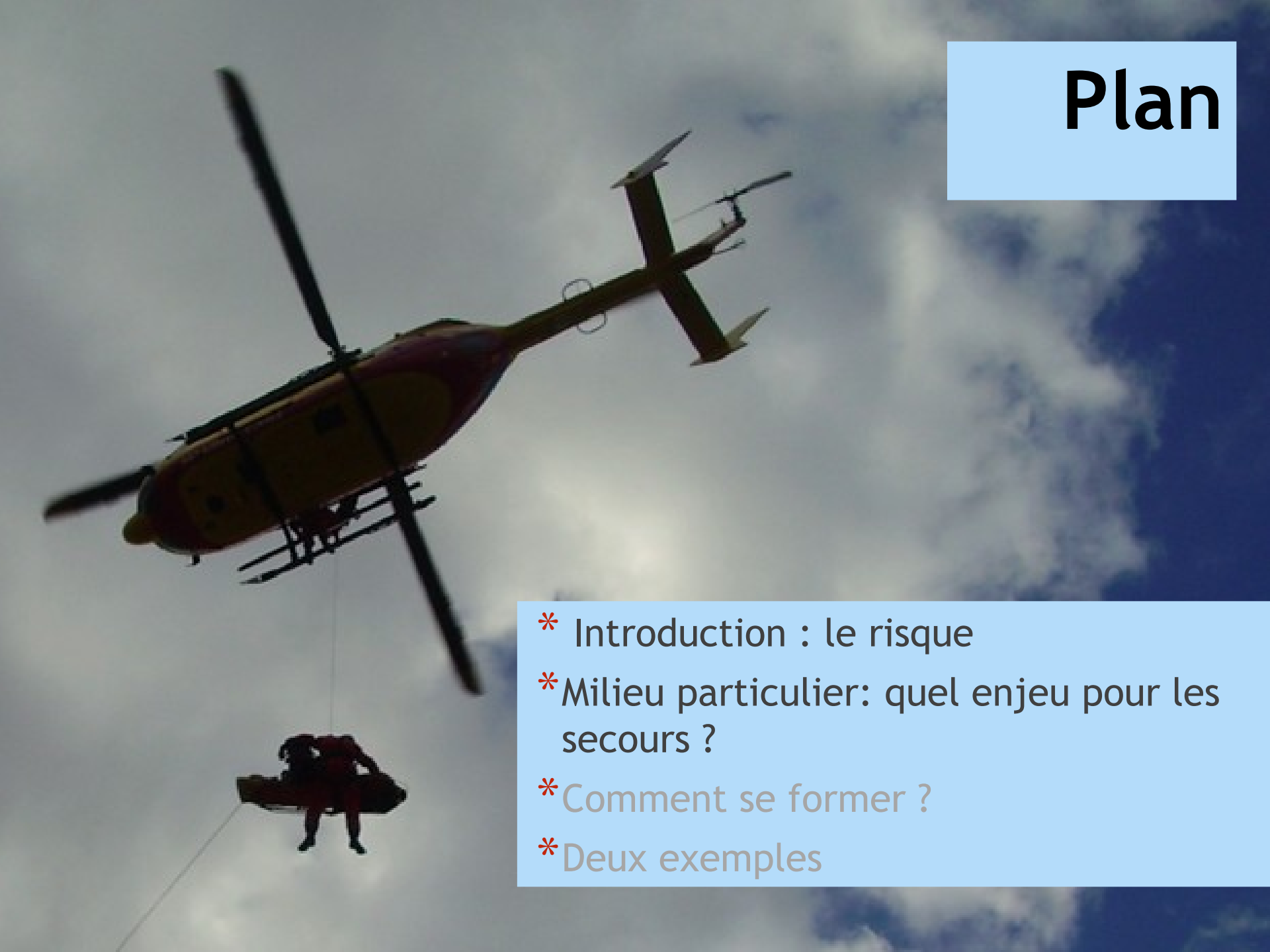
methods that disclose latent working conditions such as high workload and interruptions. Patient safety research needs to include understanding of human behaviour in complex organizational systems and the impact of working conditions on patient safety and quality of care.

Si l'intervention est « complexe »?

- La performance est liée à la complexité

* Confrontation au risque:

Nombreuses pistes de réflexions évoquées…



Plan

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Milieu particulier: quel enjeu?

- Agir sur notre capacité à faire face au risque.
  Souvent surestimée et source d'accidents

L'idée est d'éviter les erreurs…

*Avant, on faisait quoi?

*On apprend la médecine à l'hôpital

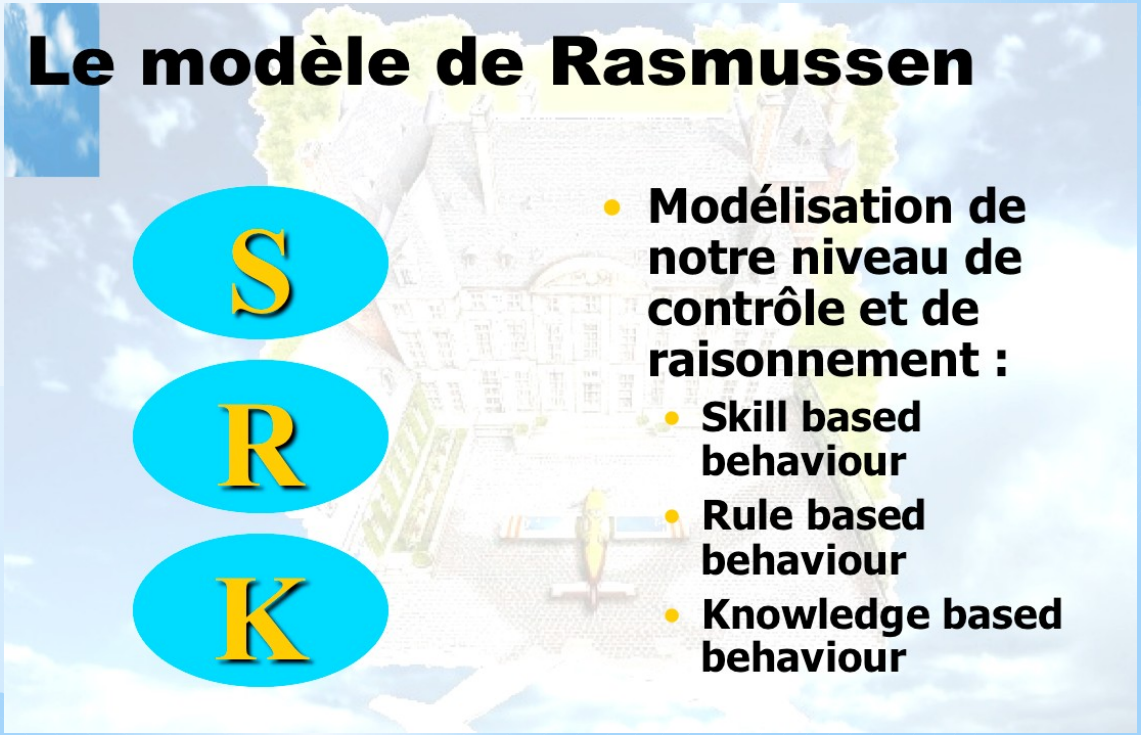
*Puis on va reproduire l'apprentissage en dehors de l'hôpital: dans les maisons, sur les routes...

*Puis les médecins apprennent à descendre en paroi, à skier, à être treuillé ou à ramper sur des dalles.

- Peut- on mieux faire?

*Milieu particulier: Peut-on raisonnablement faire de la bonne médecine?

Que disent les industriels?



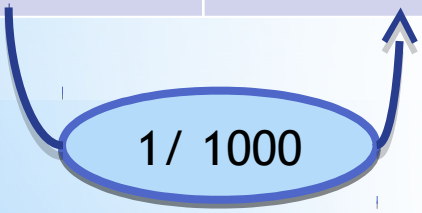
*Adaptation principes SRK

	% estimé d'erreurs humaines
Comportement machinal	0,005 à 0,5%
Comportement procédural	0,05 à 5%
Comportement cognitif	0,5 à 50%

*Ordres de grandeur

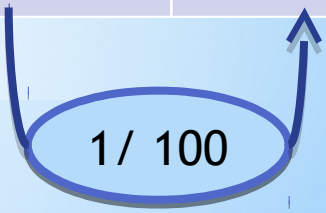
Réponse à un signal:

Temps de réponse	1 min	10 min
Probabilité d'erreur	10%	0,01%



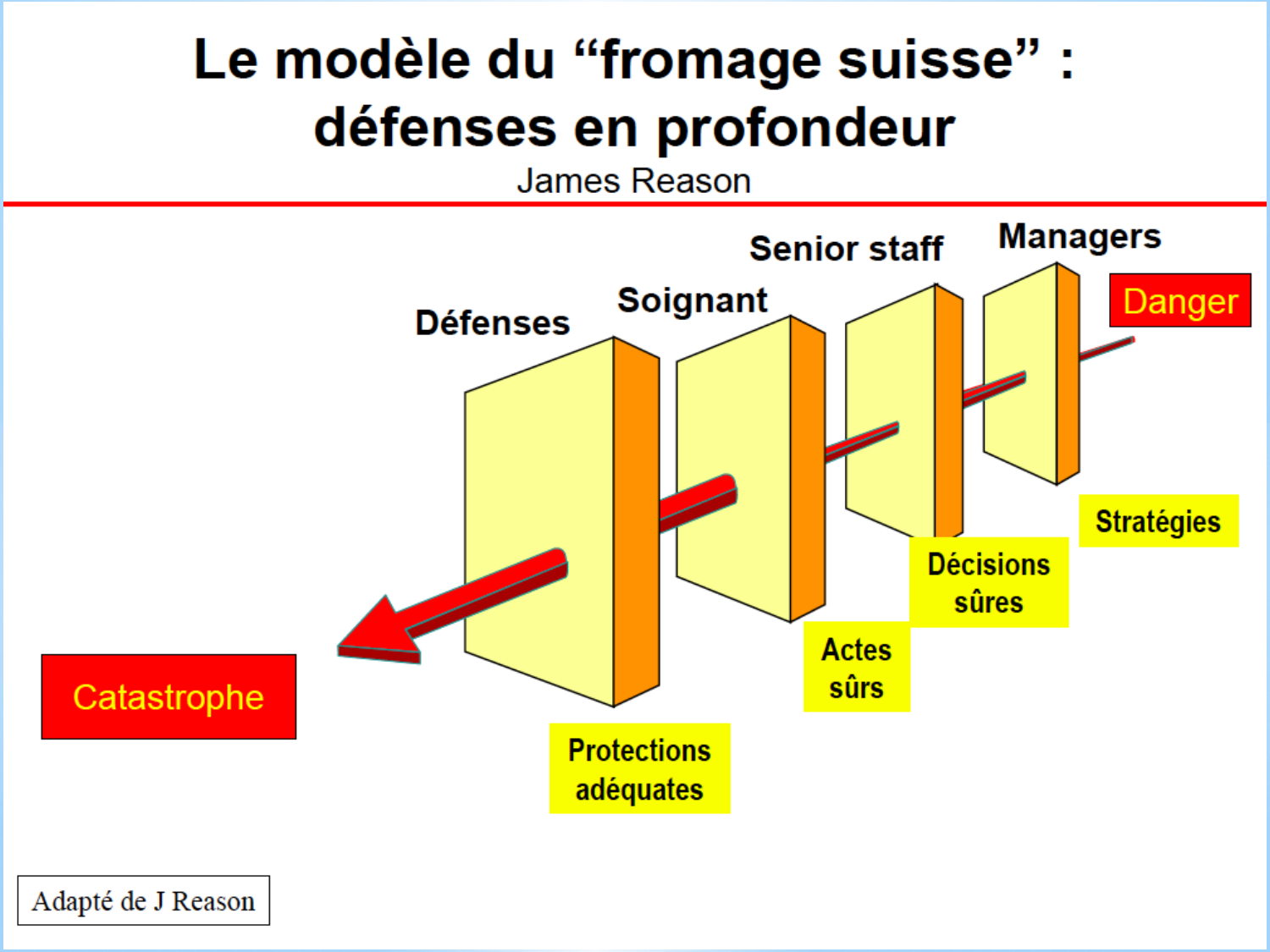
Tâche de diagnostic complexe:

Temps de réponse	1 min	10 min
Probabilité d'erreur	100%	1%

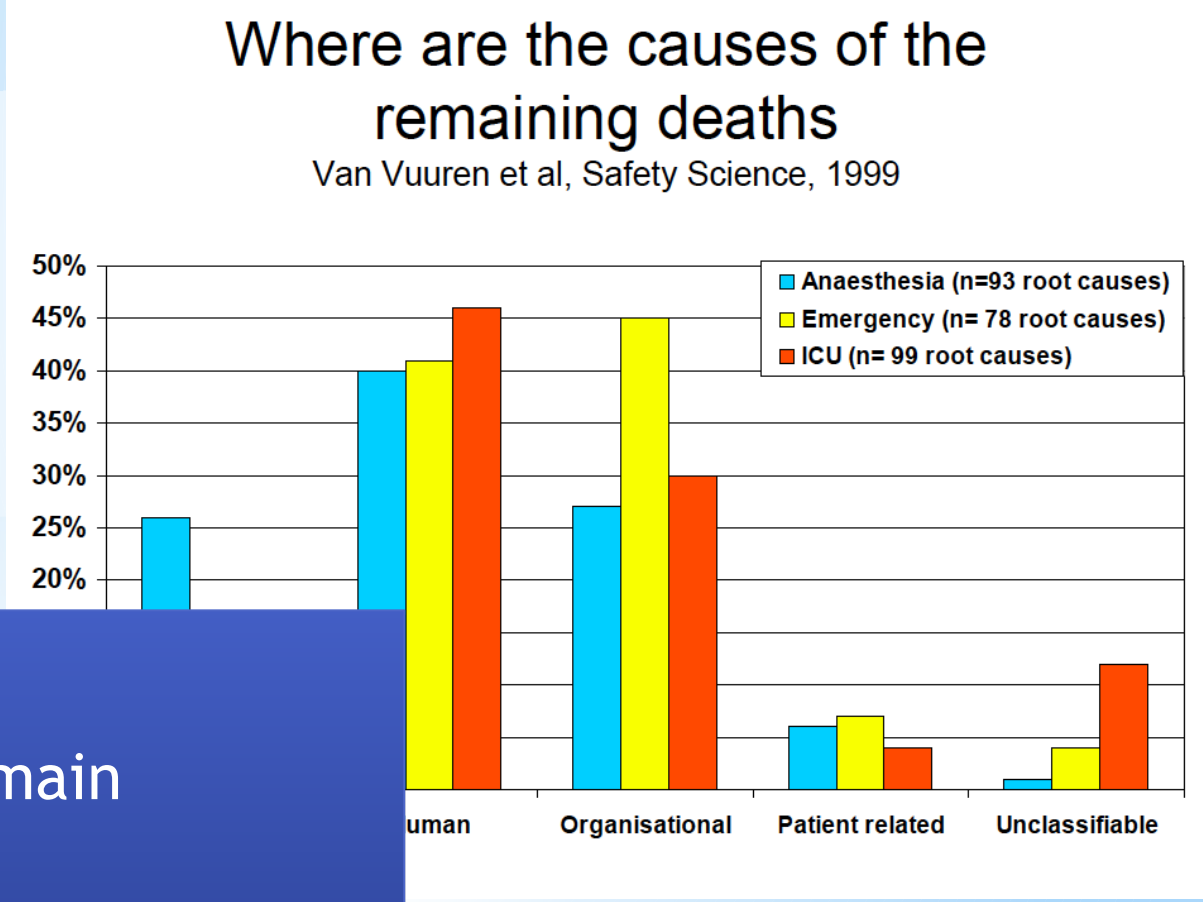


EPFH: méthode THERP- diagnostic

*Applicable en médecine



*En médecine d'urgence,



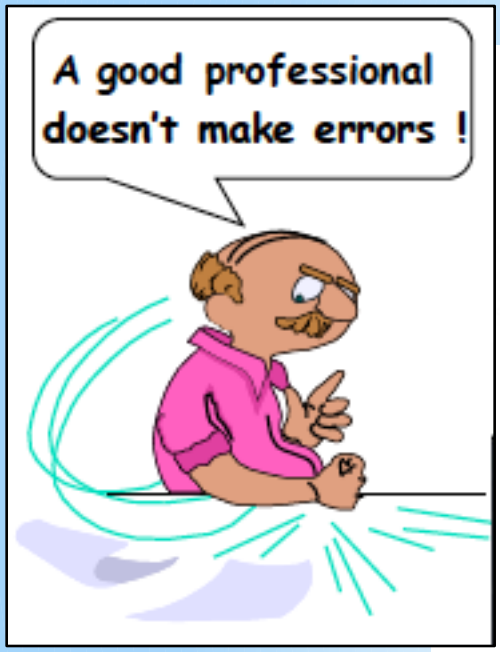
- Axes d'efforts:
  - Le facteur humain
  - L'organisation

- Les récupérations

* **3 axes d'amélioration (industrie ou médecine)**

* Agir sur l'organisation
* Augmenter la fiabilité humaine
* Mettre en place des aides: récupération

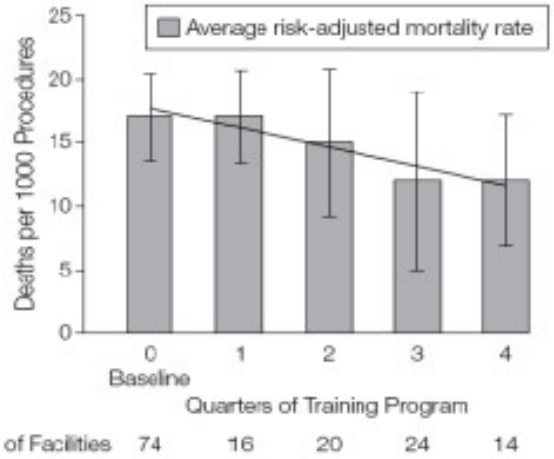
Il y a donc du travail à faire…



Association Between Implementation of a Medical Team Training Program and Surgical Mortality

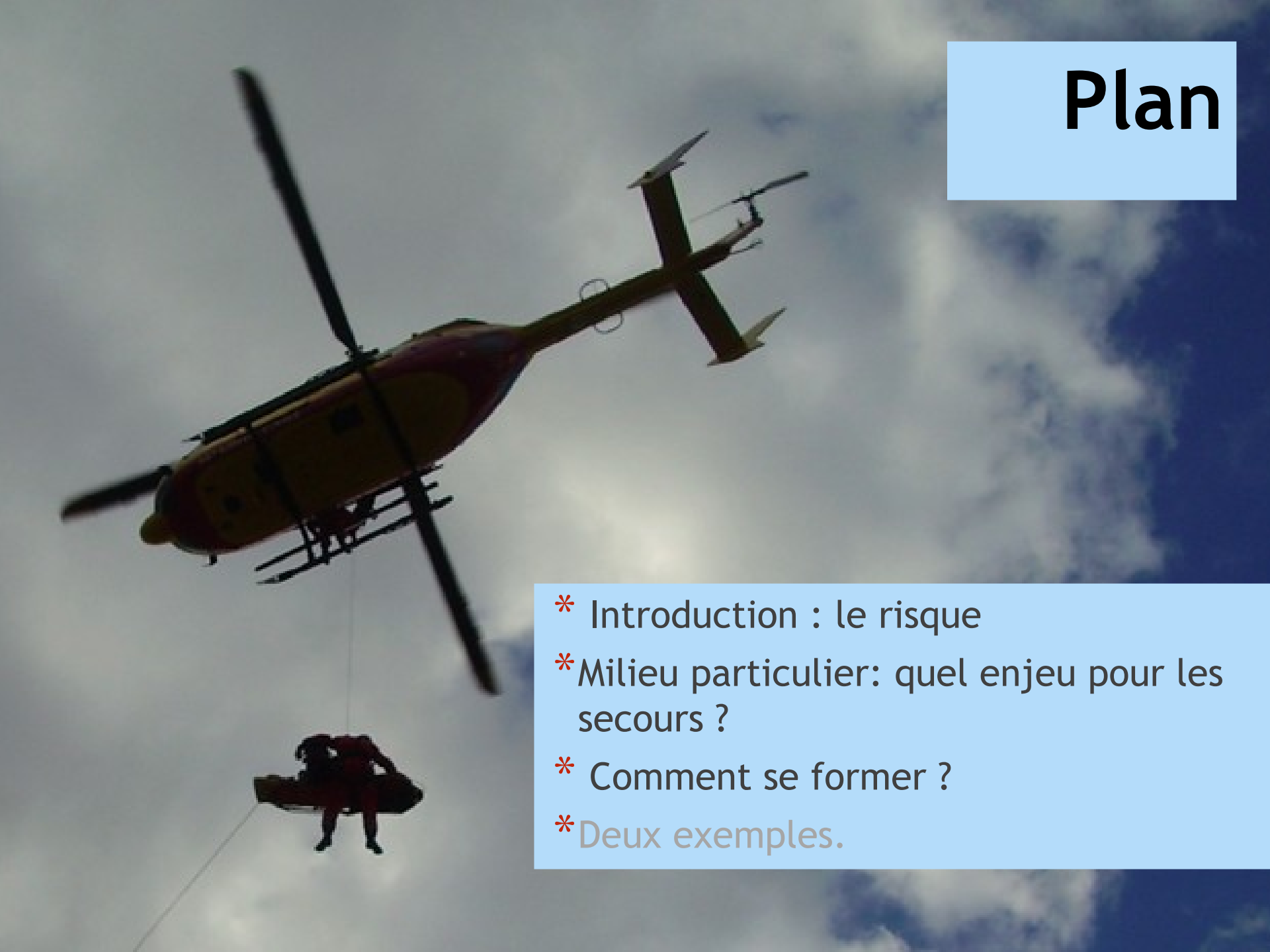
J Neily et al, JAMA 2010

Figure. Quarters of Risk-Adjusted Surgical Mortality Rate



- **Postop mortality was ↘ by 18%**
- Dose-response relationship for additional quarters of the training program :
  every ¼ of the program : ↘ by 0.5 deaths per 1000 procedures (95% CI : 0.2-1.0; p=0.001)

*La formation diminue la mortalité…



Plan

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L'exemple de la chirurgie

* L'acquisition de compétences « techniques » pour un geste se décline en 2 composantes : la composante cognitive et la composante psychomotrice

* To
chi
cog
psy
profici

En médecine d'urgence, en particulier en situation difficile, l'activité sera cognitive:

« Il faut réfléchir…. ».

2003;196 (6) :933-7

L'exemple de la chirurgie (2)

* L'acquisition de la composante psychomotrice du geste n'est pas innée et doit faire appel à la répétition

* La compétence psychomotrice s'acquière d
séquentielle en trois étap
une étap

Aggarwa
and asse

En médecine d'urgence, la répétition des gestes est difficilement réalisable:

Exemple de l'intubation orotrachéale, voie intra- osseuse, etc …

*L'exemple de la chirurgie (3)

Plus une situation est techniquement complexe plus la « mémoire de travail » doit être libre de toute composante psychomotrice pour se concentrer sur l'aspect cognitif de la tache .

Reznick RK,
wind. N Engl

En médecine d'urgence, si la situation est complexe, il faut que les gestes techniques soient automatiques….

« comportement machinal »

*Quelle réponse en chirurgie?

*Les résultats de nombreuses études publiées dans la littérature internationale semblent valider l'intérêt de la simulation pour l'apprentissage de compétences techniques et pour leur transférabilité en situation réelle.

*A ce jour les preuves d'un transfert de compétences en situati… le on… essentiellement été démontrées pour la chir… s particulièrement la coelios…

L'apprentissage du geste technique est possible sur mannequin…

- *Rehrig ST et al. In… …ard. J Gastrointest Surg 2008 ;12 (2)*

-Jones DB. Video tra… …ality: a new paradigm for surgical training. Asian J Surg 2007;… (1) : 6-12.

-Aggarwal R,, et al. An evidence-based virtual reality training program for novice laparoscopic surgeons. Ann Sur… 2006 ;244 (2) : 310-4.

Modèle classique d'acquisition des connaissances durant les études de médecine

Acquisition des connaissances

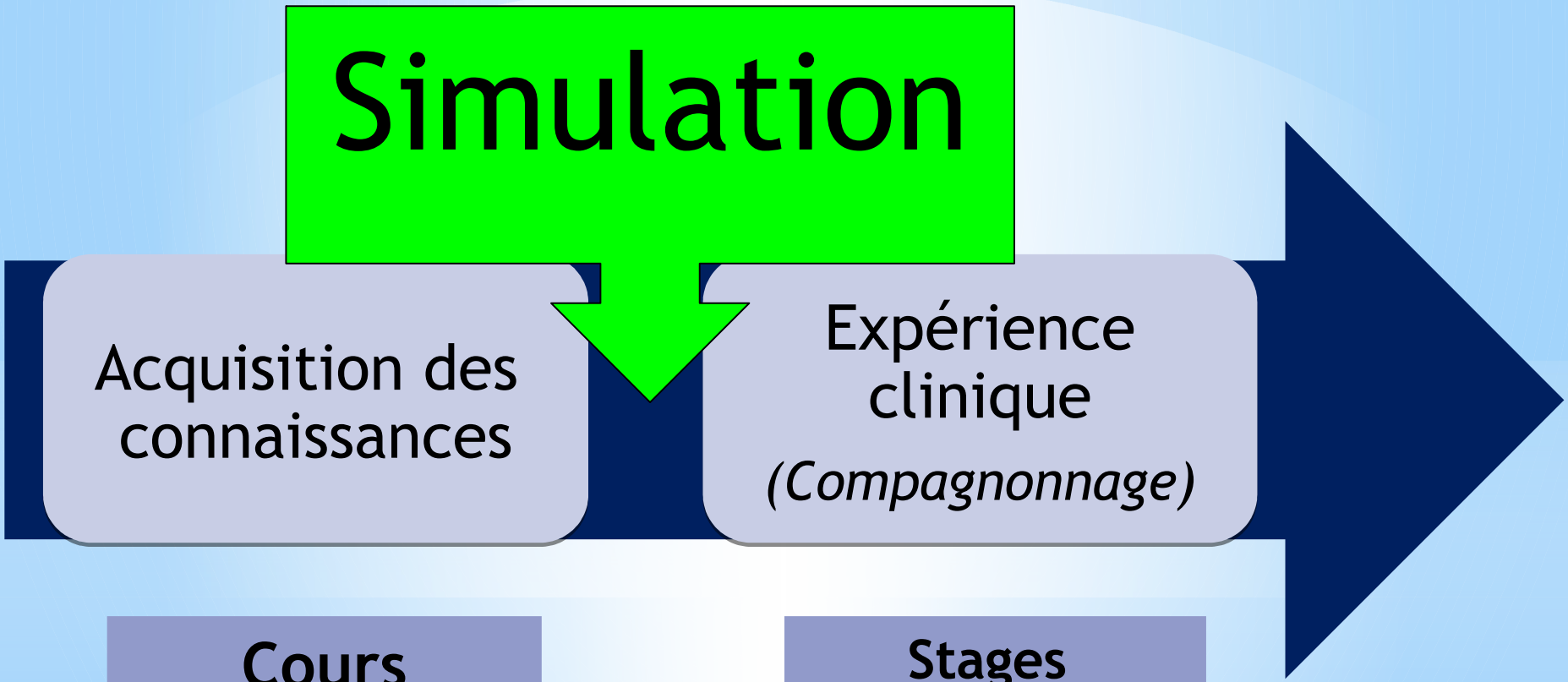
Expérience clinique

(Compagnonnage)

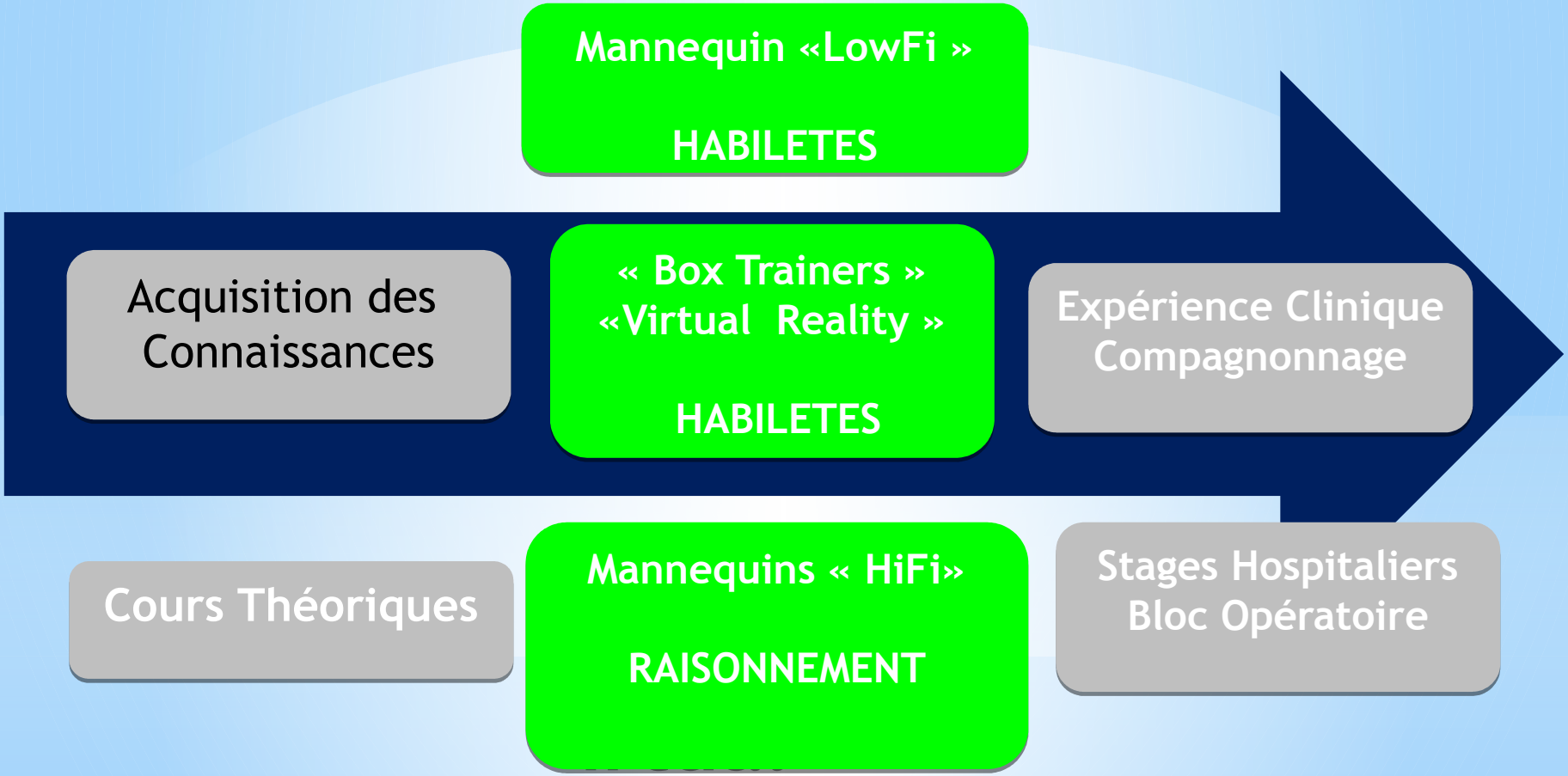
Cours Théoriques

Stages Hospitaliers

Apprentissage du Geste Technique



De l'Enseignement Classique au KSA :
(Knowledge, Skills, Attitude)



Deux simulations complémentaires:

- Mannequins basse fidélité = acquisition du geste
- Mannequin haute fidélité: la mise en situation: existe au BMPM en situation d'exception depuis 2013.

- Rem: serious games peuvent être utilisés: cf simulateurs feu de forêt du BMPM…

*La mise en situation Pacte HAS 2013

Peut être utilisée pour la gestion des comportements (travail sur les facteurs humains dits non techniques)

- Mise en situation professionnelle dans son environnement habituel
- Travail en équipe permettant d'apprendre ensemble
- S'entrainer à la communication, etc

Peut être utilisée pour la gestion des risques

- Identification des points critiques (zones de vulnérabilité) dans l'environnement habituel
- Reconstitution d'événements indésirables, enseignements et solutions adaptés au contexte
- Capacité à faire face à des situations exceptionnelles, etc
- Évaluation possible du travail en équipe

*Pourquoi la mise en situation?

Simulation et gestion de crise

Simulation and crisis resource management

M. Jaffrelot · S. Boet · A. Di Cioccio · E. Michinov · G. Chiniara

Reçu le 28 mars 2013 ; accepté le 3 juin 2013

Résumé Les facteurs humains caractérisent la façon dont les individus interagissent entre eux et avec leurs environnements. L'analyse des erreurs médicales met en évidence qu'au sein des facteurs humains, les dimensions psychologi
cognitive et organisationnelle sont di
lité des soins. C'
connaissances,
niques, les soigr
manière perform
place une démar
une méthode effi
à ces capacités q
tions reconstruites

d'entraînement, d'évaluation et d'échanges qui pe
professionnels de santé d'être
tiques, de d

ravail d'équipe · Gestion de
ation · Compétences

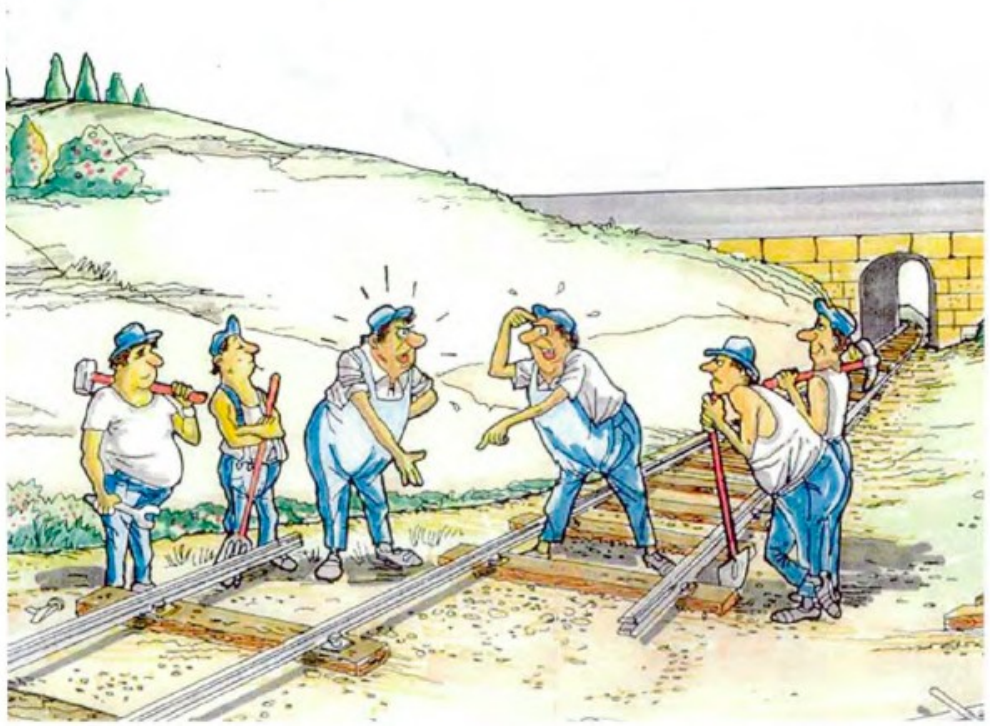
Notion de « CRM » utilisée en aéronautique apparaît en médecine…

*A quoi sert le CRM?

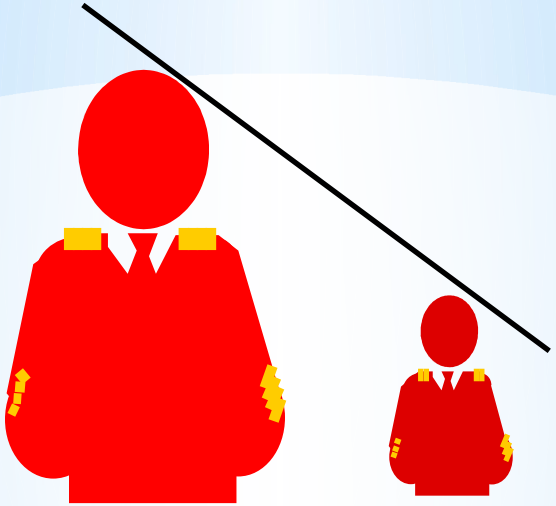
Améliorer le travail en équipe par l'entraînement des équipes :

concept du CRM

«crew resource management »



*Le cockpit autocratique

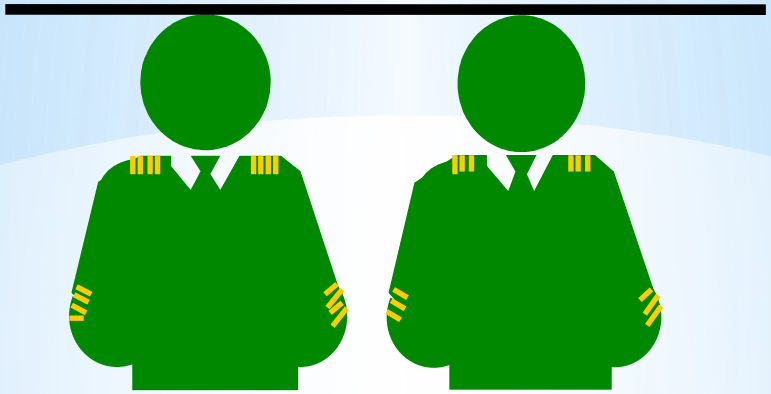


Le commandant de bord décide seul et impose ses décisions.

Il prend peu en compte les opinions de ses subordonnés.

Il est habituellement très surchargé, et la synergie du groupe s'avère négative.

*Le cockpit "laisser-faire"



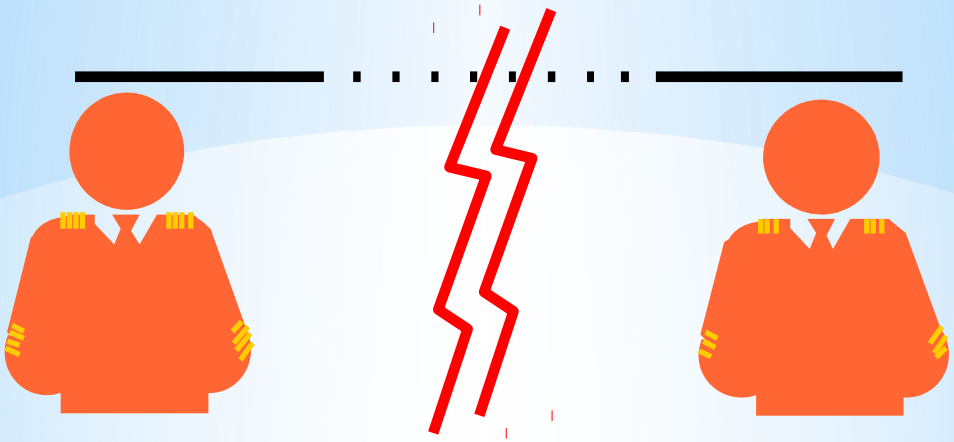
Le commandant de bord commande peu.

Il fait peu de suggestions, mais ne porte jamais un jugement négatif sur les autres.

L'atmosphère du cockpit est plutôt sympathique, détendue.

En bref, ce style démago plait à tous, mais n'est pas associé à une bonne concentration sur l'objectif et une performance élevée. La synergie n'est pas très positive

*Le cockpit autocentré



Le commandant de bord et les membres d'équipages travaillent en parallèle.

Chacun avance dans son coin.

Ce type de situation survient typiquement dans des conditions de stress.

La synergie est très négative et ce mode de fonctionnement/management est considéré comme le mode le plus dangereux.

*CRM: le bon cockpit

- *Communication
- *Gestion des erreurs
- *Gestion de crise

La simulation a deux aspects:

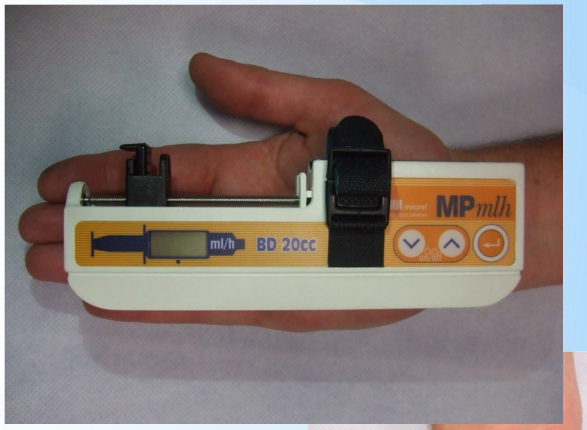
- Le geste technique
- Le mise en situation et le « CRM »

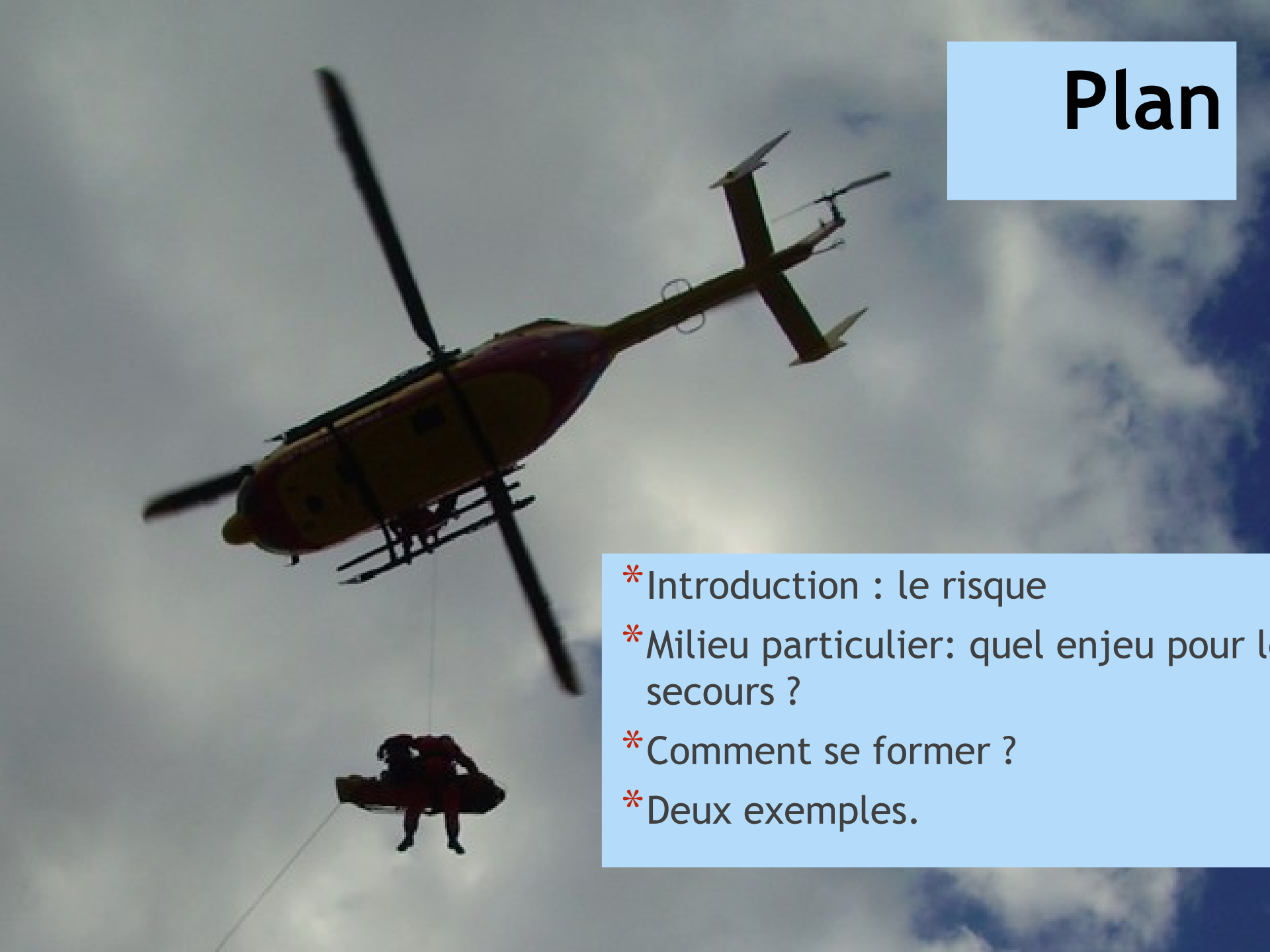
- Intérêt majeur en situation d'exception: débriefing +++

Quelques précisions

- La simulation est un élément d'un curriculum:
  - Acquisition de connaissances
  - Formation gestes techniques
  - Formation initiale
  - Compagnonage
  - RMM, staffs de service
  - Evaluation…
- La simulation est d'autant plus importante que la situation est rare:
  - Mise en situation et gestion de crise

La simulation permet aussi de tester des matériels





Plan

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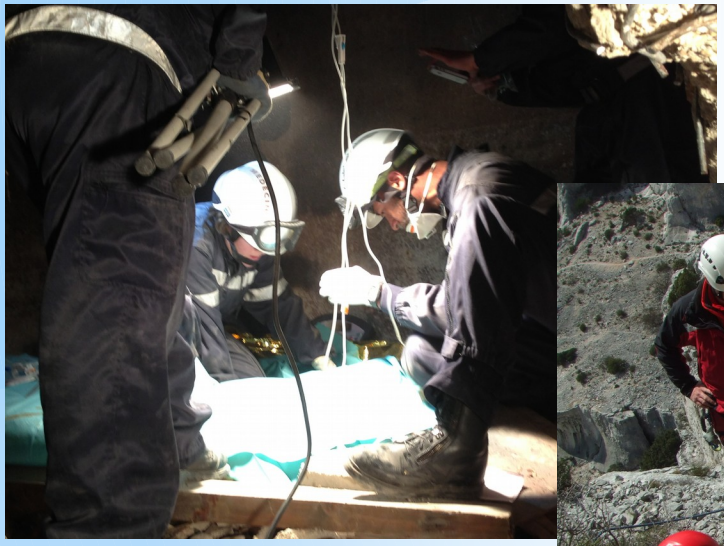
  secours ?
* Comment se former ?
* Deux exemples.

*Stage situation d'exception du BMPM: 3 à 4 jours



<u>Mise en situation:</u>

- Sauvetage déblaiement
- GRIMP
- Mer
- Hélico

<u>Points clés:</u>

- Médecin/ IDE/ conducteur
- Film
- Débriefing
- Curriculum d'accès à la garde VMS

*Stages SSA

*Mise en condition de survie du blessé de guerre: 5 jours

*MEDICHOS: 5 jours

*Stages SSA: 3 centres en France (2015)

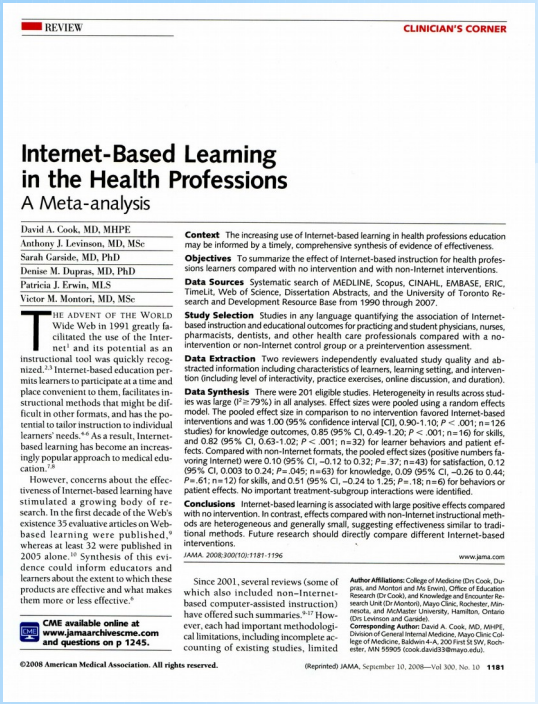
- *SAFE MARCHE RYAN
- *Population ciblée: Sauvetage au combat niveau 3
- *Ateliers apprentissage des gestes techniques
- *Mise en situation avec des unités de combat

*Une formation spécifique adaptée au terrain

Exemple: Gestion du choc avec hémostase et administration d'amines sans PSE, ni scope:

« Adrénaline en IVD , 0,1 mg jusqu'à perception d'un pouls radial ».

*Conclusion:



REVIEW

CLINICIAN'S CORNER

Internet-Based Learning in the Health Professions

A Meta-analysis

David A. Cook, MD, MHPE
Anthony J. Levinson, MD, MSc
Sarah Garside, MD, PhD
Denise M. Dupras, MD, PhD
Patricia J. Erwin, MLS
Victor M. Montori, MD, MSc

Context The increasing use of Internet-based learning in health professions education may be informed by a timely, comprehensive synthesis of evidence of effectiveness.

Objectives To summarize the effect of Internet-based instruction for health professions learners compared with no intervention and with non-Internet interventions.

Data Sources Systematic search of MEDLINE, Scopus, CINAHL, EMBASE, ERIC, TimeLit, Web of Science, Dissertation Abstracts, and the University of Toronto Research and Development Resource Base from 1990 through 2007.

Study Selection Studies in any language quantifying the association of Internet-based instruction and educational outcomes for practicing and student physicians, nurses, pharmacists, dentists, and other health care professionals compared with a no-intervention or non-Internet control group or a preintervention assessment.

Data Extraction Two reviewers independently evaluated study quality and abstracted information including characteristics of learners, learning setting, and intervention (including level of interactivity, practice exercises, online discussion, and duration).

Data Synthesis There were 201 eligible studies. Heterogeneity in results across studies was large ($I^2 \geq 79\%$) in all analyses. Effect sizes were pooled using a random effects model. The pooled effect size in comparison to no intervention favored Internet-based interventions and was 1.00 (95% confidence interval [CI], 0.90-1.10; $P < .001$; n = 126 studies) for knowledge outcomes, 0.85 (95% CI, 0.49-1.20; $P < .001$; n = 16) for skills, and 0.82 (95% CI, 0.63-1.02; $P < .001$; n = 32) for learner behaviors and patient effects. Compared with non-Internet formats, the pooled effect sizes (positive numbers favoring Internet) were 0.10 (95% CI, −0.12 to 0.32; $P = .37$; n = 43) for satisfaction, 0.12 (95% CI, 0.003 to 0.24; $P = .045$; n = 63) for knowledge, 0.09 (95% CI, −0.26 to 0.44; $P = .61$; n = 12) for skills, and 0.51 (95% CI, −0.24 to 1.25; $P = .18$; n = 6) for behaviors or patient effects. No important treatment-subgroup interactions were identified.

Conclusions Internet-based learning is associated with large positive effects compared with no intervention. In contrast, effects compared with non–Internet instructional methods are heterogeneous and generally small, suggesting effectiveness similar to traditional methods. Future research should directly compare different Internet-based interventions.

JAMA. 2008;300(10):1181-1196 www.jama.com

THE ADVENT OF THE WORLD Wide Web in 1991 greatly facilitated the use of the Internet[1] and its potential as an instructional tool was quickly recognized.[2,3] Internet-based education permits learners to participate at a time and place convenient to them, facilitates instructional methods that might be difficult in other formats, and has the potential to tailor instruction to individual learners' needs.[4-6] As a result, Internet-based learning has become an increasingly popular approach to medical education.[7,8]

However, concerns about the effectiveness of Internet-based learning have stimulated a growing body of research. In the first decade of the Web's existence 35 evaluative articles on Web-based learning were published,[9] whereas at least 32 were published in 2005 alone.[10] Synthesis of this evidence could inform educators and learners about the extent to which these products are effective and what makes them more or less effective.[8]

CME available online at www.jamaarchivescme.com and questions on p 1245.

Since 2001, several reviews (some of which also included non–Internet-based computer-assisted instruction) have offered such summaries.[9-17] However, each had important methodological limitations, including incomplete accounting of existing studies, limited

Author Affiliations: College of Medicine (Drs Cook, Dupras, and Montori and Ms Erwin), Office of Education Research (Dr Cook), and Knowledge and Encounter Research Unit (Dr Montori), Mayo Clinic, Rochester, Minnesota, and McMaster University, Hamilton, Ontario (Drs Levinson and Garside).
Corresponding Author: David A. Cook, MD, MHPE, Division of General Internal Medicine, Mayo Clinic College of Medicine, Baldwin 4-A, 200 First St SW, Rochester, MN 55905 (cook.david33@mayo.edu).

Virtual Patients/Simulation

Computerized Virtual Patients in Health Professions Education: A Systematic Review and Meta-Analysis

David A. Cook, MD, MHPE, Patricia J. Erwin, MLS, and Marc M. Triola, MD

Abstract

Purpose
Educators increasingly use virtual patients (computerized clinical case simulations) in health professions training. The authors summarize the effect of virtual patients compared with no intervention and alternate instructional methods, and elucidate features of effective virtual patient design.

Method
The authors searched MEDLINE, EMBASE, CINAHL, ERIC, PsychINFO, and Scopus through February 2009 for studies describing virtual patients for practicing and student physicians, nurses, and other health professionals. Reviewers, working in duplicate, abstracted information on instructional design and outcomes. Effect sizes were pooled using a random-effects model.

Results
Four qualitative, 18 no-intervention controlled, 21 noncomputer instruction-comparative, and 11 computer-assisted instruction-comparative studies were found. Heterogeneity was large (I^2>50%) in most analyses. Compared with no intervention, the pooled effect size (95% confidence interval; number of studies) was 0.94 (0.69 to 1.19; N=11) for knowledge outcomes, 0.80 (0.52 to 1.08; N=5) for clinical reasoning, and 0.90 (0.61 to 1.19; N=9) for other skills. Compared with noncomputer instruction, pooled effect size (positive numbers favoring virtual patients) was −0.17 (−0.57 to 0.24; N=8) for satisfaction, 0.06 (−0.14 to 0.25; N=5) for knowledge, −0.004 (−0.30 to 0.29; N=10) for reasoning, and 0.10 (−0.21 to 0.42; N=11) for other skills. Comparisons of different virtual patient designs suggest that repetition until demonstration of mastery, advance organizers, enhanced feedback, and explicitly contrasting cases can improve learning outcomes.

Conclusions
Virtual patients are associated with large positive effects compared with no intervention. Effects in comparison with noncomputer instruction are on average small. Further research clarifying how to effectively implement virtual patients is needed.

Diagnostic errors represent a significant source of patient morbidity, and cognitive errors represent the most common cause of diagnostic error.[1-4] Cognitive errors also lead to suboptimal treatment decisions.[5] Evidence suggests that most cognitive errors arise from faulty interpretation, synthesis, and judgment rather than insufficient data gathering or fund of knowledge[2,3,5] and that decreasing the incidence of cognitive error will require that health care providers experience multiple, varied patient cases.[6,7] Yet even as the rapid growth of medical information and expectations for quality care have increased the complexity of medical decision making, we see decreased time for education[8] and heightened concerns regarding patients as educational subjects.[9] Safer and more efficient means of facilitating the development of clinically relevant knowledge and skills are needed. The computer-screen–based virtual patient, "a specific type of computer program that simulates real-life clinical scenarios: learners emulate the roles of health care providers to obtain a history, conduct a physical exam, and make diagnostic and therapeutic decisions,"[10] has been proposed as one way to develop these essential cognitive clinical skills.[4,11-13]

Educators would benefit from a better understanding of the potential effectiveness of virtual patients in health professions training, the design features commonly employed when implementing virtual patients, and which of these features are associated with improved learning outcomes.[14] A review and synthesis of evidence from existing studies could inform decisions on when and how to effectively use virtual patients. Although previous reviews have focused on surgical and procedural simulators,[15-18] we are aware of only one review of research on virtual patients.[19] This review had important methodological limitations, including incomplete accounting of existing studies, limited assessment of study quality, and no quantitative pooling of study results. Other reviews of computer-assisted instruction have incorporated research on virtual patients as only a small minority of included studies.[20-26] In the present review, we sought to identify and summarize all studies involving virtual patients for training health professionals.

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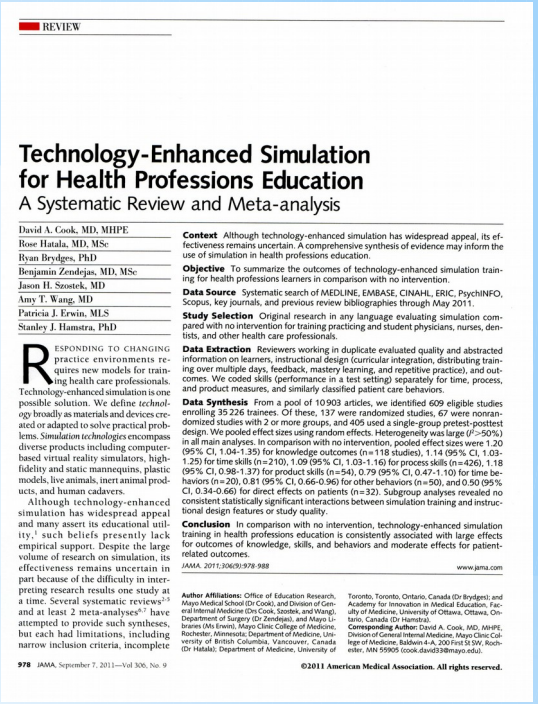

REVIEW

Technology-Enhanced Simulation for Health Professions Education

A Systematic Review and Meta-analysis

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Context Although technology-enhanced simulation has widespread appeal, its effectiveness remains uncertain. A comprehensive synthesis of evidence may inform the use of simulation in health professions education.

Objective To summarize the outcomes of technology-enhanced simulation training for health professions learners in comparison with no intervention.

Data Source Systematic search of MEDLINE, EMBASE, CINAHL, ERIC, PsychINFO, Scopus, key journals, and previous review bibliographies through May 2011.

Study Selection Original research in any language evaluating simulation compared with no intervention for training practicing and student physicians, nurses, dentists, and other health care professionals.

Data Extraction Reviewers working in duplicate evaluated quality and abstracted information on learners, instructional design (curricular integration, distributing training over multiple days, feedback, mastery learning, and repetitive practice), and outcomes. We coded skills (performance in a test setting) separately for time, process, and product measures, and similarly classified patient care behaviors.

Data Synthesis From a pool of 10 903 articles, we identified 609 eligible studies enrolling 35 226 trainees. Of these, 137 were randomized studies, 67 were nonrandomized studies with 2 or more groups, and 405 used a single-group pretest-posttest design. We pooled effect sizes using random effects. Heterogeneity was large (I^2>50%) in all main analyses. In comparison with no intervention, pooled effect sizes were 1.20 (95% CI, 1.04-1.35) for knowledge outcomes (n = 118 studies), 1.14 (95% CI, 1.03-1.25) for time skills (n = 210), 1.09 (95% CI, 1.03-1.16) for process skills (n = 426), 1.18 (95% CI, 0.98-1.37) for product skills (n = 54), 0.79 (95% CI, 0.47-1.10) for time behaviors (n = 20), 0.81 (95% CI, 0.66-0.96) for other behaviors (n = 50), and 0.50 (95% CI, 0.34-0.66) for direct effects on patients (n = 32). Subgroup analyses revealed no consistent statistically significant interactions between simulation training and instructional design features or study quality.

Conclusion In comparison with no intervention, technology-enhanced simulation training in health professions education is consistently associated with large effects for outcomes of knowledge, skills, and behaviors and moderate effects for patient-related outcomes.

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RESPONDING TO CHANGING practice environments requires new models for training health care professionals. Technology-enhanced simulation is one possible solution. We define *technology* broadly as materials and devices created or adapted to solve practical problems. *Simulation technologies* encompass diverse products including computer-based virtual reality simulators, high-fidelity and static mannequins, plastic models, live animals, inert animal products, and human cadavers.

Although technology-enhanced simulation has widespread appeal and many assert its educational utility,[1] such beliefs presently lack empirical support. Despite the large volume of research on simulation, its effectiveness remains uncertain in part because of the difficulty in interpreting research results one study at a time. Several systematic reviews[2-5] and at least 2 meta-analyses[6,7] have attempted to provide such syntheses, but each had limitations, including narrow inclusion criteria, incomplete

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Prouver le bénéfice de la simulation en situation d'exception!

*Merci pour votre attention