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Eidgenössisches Departement des Innern EDI
Bundesamt für Gesundheit BAG



Akteur-Workshop NOSO

Diskussionsgruppe Spitäler

Groupes de discussion Hôpitaux



Freitag, 8. September 2023

Akteur-Workshop NOSO

1



Integration des Wissens für Infektionsprävention in Spitalstrukturen und -prozesse

Intégration des connaissances en matière de prévention des infections dans les structures et les processus hospitaliers

2



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Begrüssung & Einstieg - Accueil & Entrée en matière

Prof. Dr. med. Hugo Sax, Infektiologie Inselspital Bern, Swissnoso, saxhealthdesign.com

Véronique Kobel, Projektleiterin Strategie NOSO, BAG

Carola Christen, Abteilung Internationales, BAG

Prof. Ayse Gurses, PhD, Director, Armstrong Institute Center for Health Care Human Factors,
Professor of Anesthesiology and Critical Care Medicine, Johns Hopkins University, Baltimore, USA



Ziele

- Sich sich mit Werkzeugen beschäftigen, um Infektionsprävention im Spital systematisch zu analysieren.
- Diese Werkzeuge nutzen, um das benötigte Wissen im Spital nachhaltig zu verankern.
- Sich über die eigenen praktischen Erfahrungen und Umsetzungsmöglichkeiten austauschen.
- Für die Strategie NOSO: besser lernen, wie auf die besonderen Probleme und Bedürfnisse bei der Prävention von Infektionen in den Spitälern eingehen.



Objectifs

- Se familiariser avec les outils qui permettent d'analyser systématiquement la prévention des infections à l'hôpital.
- Utiliser ces outils pour ancrer durablement les connaissances requises dans l'hôpital.
- Partager les expériences pratiques et les possibilités de mise en œuvre.
- Pour la Stratégie NOSO: mieux comprendre comment aborder les problèmes et besoins spécifiques dans la prévention des infections dans les hôpitaux.



Programm & Vorgehen - Programme & Démarche

Wann	Was	Wer
10:45	Begrüssung, Ziele, Vorgehen, Einstieg, Kennenlernrunde	Véronique Kobel
11:00	Einführungsreferat	Véronique Kobel
11:15	Einführung in Gruppenarbeit 1 «Patienten Journey»	Hugo Sax
11:35	Gruppenarbeit 1 «Patienten Journey»	Gruppen
12:10	Zusammenführung Gruppenarbeit 1 «Patienten Journey»	Alle Teilnehmenden
12:30 - 13:30	Gemeinsamer Lunch	



Wann	Was	Wer
13:30	Einführung Gruppenarbeit 2 «Integriertes Wissen in der Arbeitsumgebung»	Hugo Sax
13:45	Gruppenarbeit 2 «Integriertes Wissen in der Arbeitsumgebung»	Gruppen
14:25	Zusammenführung Gruppenarbeit 2 «Integriertes Wissen in der Arbeitsumgebung»	Alle Teilnehmenden
15:00 - 15:20	Gemeinsame Pause	
15:20	Zusammenfassung Gruppenarbeit 2 «Integriertes Wissen in der Arbeitsumgebung»	Hugo Sax
15:30	Online-Referat «System Design for infection prevention» (auf Englisch)	Prof. Ayse Gurses
16:00	Feedback und Diskussion zur Umsetzung in der Strategie NOSO	Alle Teilnehmenden
16:35	Zusammenfassung, nächste Schritte	Moderatoren
16:45	Ende des Workshops - anschliessend Apéro	

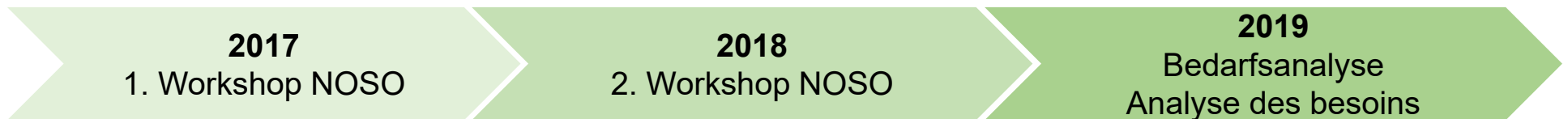


Einführung

Introduction



Feststellungen zum Thema Bildung - Constatations sur le thème Formation



Reduktion von healthcare-assoziierten Infektionen (HAI)

Strategie NOSO

Governance	Monitoring	Verhütung und Bekämpfung	Bildung und Forschung	Evaluation
G-1 Standards und Richtlinien	M-1 Nationales Monitoringsystem	VB-1 Optimierung und Weiterentwicklung	BF-1 Infektionsprävention in der Bildung	E-1 Baseline
G-2 Zuständigkeiten und Strukturen	M-2 Zielgerichtete Datenverwertung	VB-2 Sensibilisierung und Einbezug	BF-2 Forschungsförderung	E-2 Evaluation Strategie NOSO
G-3 Unterstützung der Umsetzung	M-3 Früherkennung	VB-3 Lern- und Dialogkultur	BF-3 Neue Technologien, Qualitätssicherung	
G-4 Wissensmanagement		VB-4 Förderung der Impfprävention		



Resultate der Diskussionen im Rahmen der Workshops

- Schulungen finden **nicht regelmässig** statt.
- Es **fehlt oft an Ressourcen** für die Durchführung.
- Die Weiterbildungen sind **nicht praxisnah genug**.
- Die **Kenntnisse/Kompetenzen** des neu eingestellten Personals im Bereich Infektionskontrolle sind **sehr unterschiedlich**.
- Die Weiterbildungen sind stark von den **Rahmenbedingungen, Prozessen und der Struktur** des jeweiligen Spitals abhängig.

Résultats des discussions dans les Workshops

- Formations n'ont pas lieu **assez régulièrement**.
- Les **ressources manquent** souvent pour leur organisation.
- Les formations continues ne sont **pas assez proches de la pratique**.
- Les **connaissances/compétences** dans le domaine de la lutte contre les infections du personnel nouvellement recruté sont **très variables**.
- Les formations continues dépendent fortement des **conditions-cadres, des processus et de la structure** de chaque hôpital.



Resultate der Bedarfsanalyse

- Sensibilisierung zielt auf Faktenwissen, **zu wenig auf Abläufe** und ungenügende Kompetenzen, Kenntnisse und Knowhow, bei **komplexen Abläufen**.
- Wissen ist **nicht so tief verankert** und wird **nicht routiniert umgesetzt**, wie von Mitarbeitenden und Vorgesetzten angenommen.
- Schwach ausgebildete **Fehlerkultur**, schlecht wahrgenommene **Risikokultur**. **Überschätzung** der eigenen Kompetenzen
- **Organisatorische Rahmenbedingungen** selten infekt präventiv ausgerichtet. Zeitmangel, fehlende Ausrüstung, unbekannter Zugang zu den Richtlinien, ungenaue Instruktion sind typische **organisatorische Probleme**.

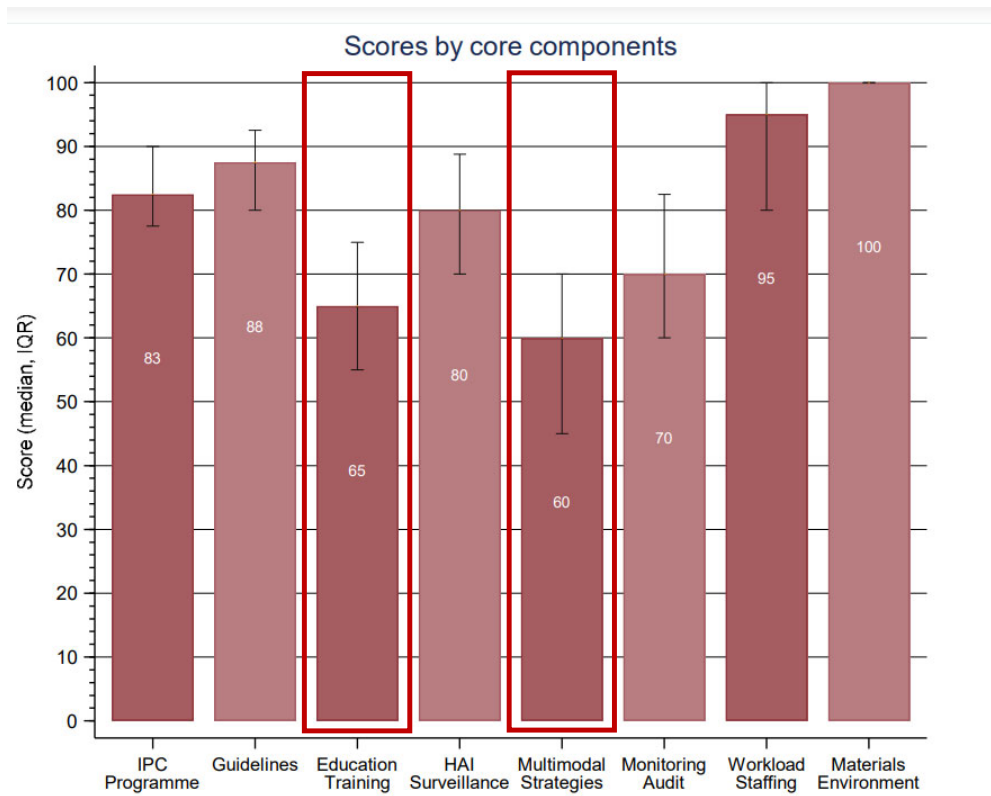


Résultats de l'analyse des besoins

- La sensibilisation se concentre sur les connaissances factuelles, **pas assez sur les procédures et les compétences**. Les connaissances et le savoir-faire sont insuffisants en ce qui concerne les **procédures complexes**.
- Les connaissances ne sont **pas si profondément ancrées** et **pas appliquées de manière routinière** que ne le pense les collaborateurs et les supérieurs.
- **Culture de l'erreur** peu développée, **culture du risque** mal perçue. Surestimation de ses propres compétences.
- **Cadre organisationnel** rarement orienté vers la prévention des infections. Le manque de temps, le manque d'équipement, l'accès aux directives pas toujours clair, les instructions imprécises sont des **problèmes organisationnels typiques**.



Resultate / Résultats IPCAF 2022





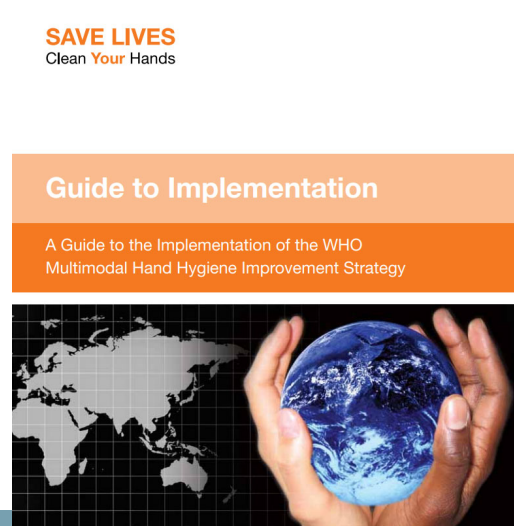
Multimodale Strategien

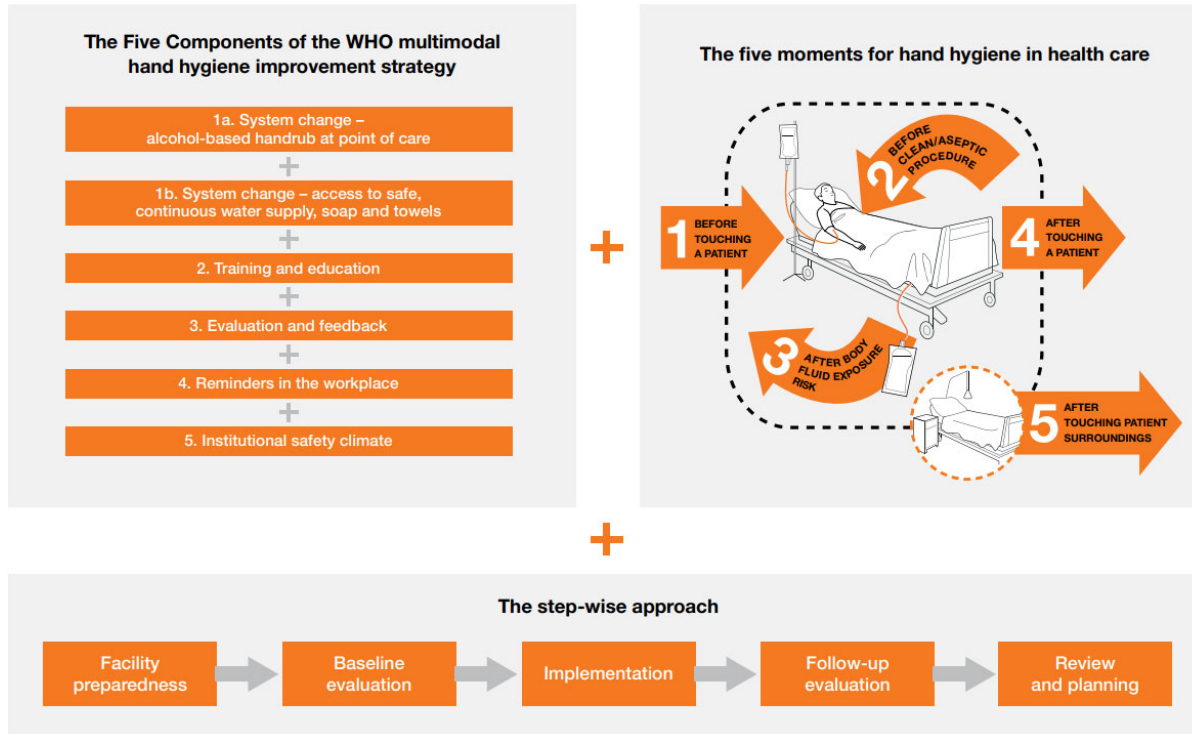
3 (oder mehr) Komponenten,
die auf integrierte Weise implementiert werden,
um eine Verbesserung eines Outcomes zu erreichen
und Verhaltensweisen zu ändern.



Stratégies multimodales

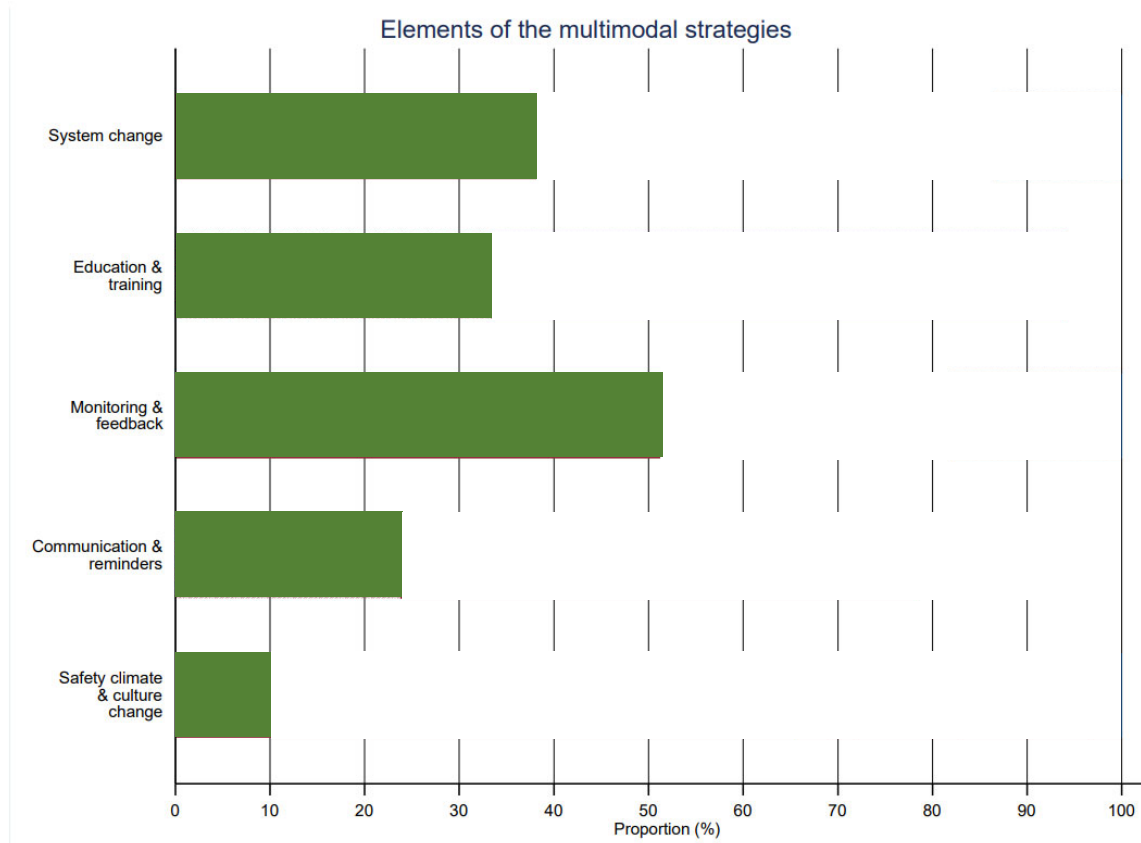
3 (ou plus) composantes,
mises en œuvre de manière intégrée
afin d'obtenir une amélioration d'un outcome
et de modifier les comportements.







Multimodal strategies elements implemented in Swiss acute care hospitals





Schlussfolgerung

Diese Ergebnisse deuten darauf hin, dass innovative Ansätze erforderlich sind, um:

- Infektionsprävention wirksam umzusetzen.
- Praktisch anwendbares Wissen zu garantieren.
- Eine nachhaltige Reduktion der HAI zu erreichen.



Conclusion

Ces résultats indiquent que des approches innovantes sont nécessaires pour :

- Mettre en œuvre efficacement la prévention des infections.
- Garantir des connaissances applicables dans la pratique.
- Atteindre une réduction durable des IAS.



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Strategie
NOSO



Merci pour votre attention!

Integrierte Intelligenz für Spitalhygiene


Intelligence intégrée pour la prévention des infections

Prof Dr med Hugo Sax, Infectious Diseases, Bern University Hospital, Swissnoso, saxhealthdesign.com

Human Factors & Ergonomics



**Systeme an menschliche Fähigkeiten und Grenzen anpassen.
Adapter les systèmes aux capacités et limites humaines.**



Systemdenken Pensée systémique

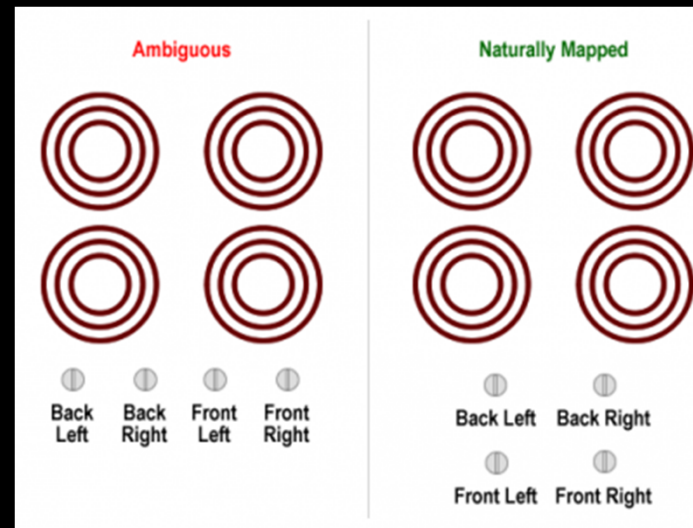
Blick über das Einzelne hinaus:

Wie Elemente inter-agieren & sich beeinflussen.

Regarder au-delà de l'individu:

Comment les éléments interagissent et s'influencent mutuellement.

Die nötige Intelligenz einbauen. Incorporer l'intelligence nécessaire.

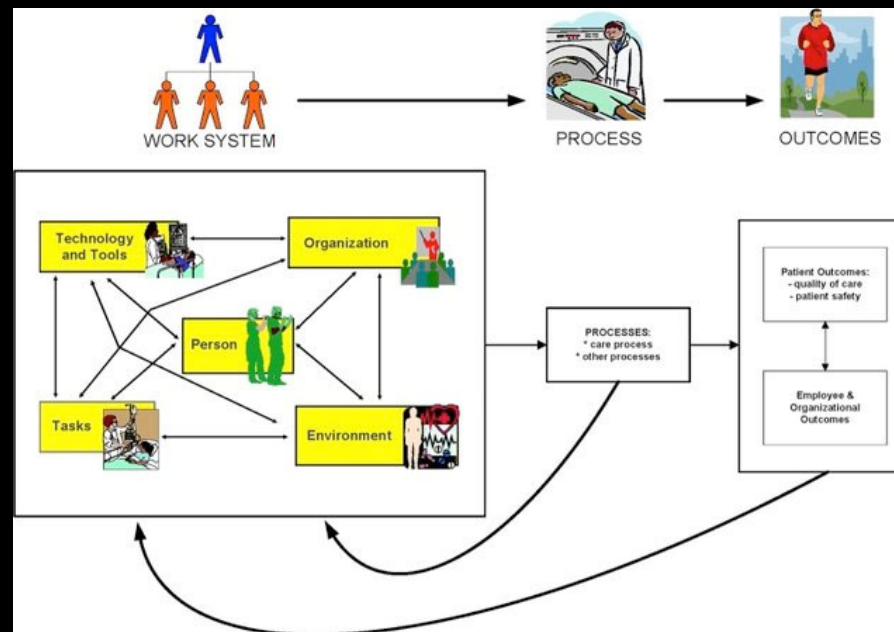


“Wissen in der Welt” anstatt “Wissen im Kopf”.

“Connaissance dans le monde” plutôt que “connaissance dans la tête”.

Das SEIPS Modell - Le modèle SEIPS

System Engineering Initiative for Patient Safety (SEIPS)



Les dimensions du système de travail de l'hôpital.
Die Dimensionen des Arbeitssystems Spital.

Deux travaux de groupe.
Zwei Gruppenarbeiten.

Nr 1: Patienten Journey.



Aufgabe / Exercise -> -> ->

SHARECARS

FLEXICAR, HERTZ24/7 GO GET, CARNEXT 0000

ESTIMATED 50,000 CAR-SHARERS IN AUSTRALIA.



CONVENIENCE

2017, 10,000 BIKES across the US. "google bikes for wheels do it best"

FINDING A BIKE



PASS BOX

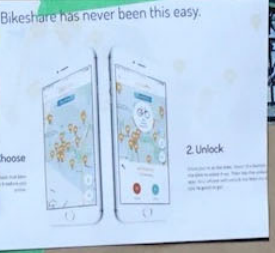
PROTOTYPE IN MELB. USES ULTRA-SOUND REPORTS ON CYCLIST SAFETY TO AUTHORITIES

do others deposit

LOCATION

BAAS DOIKLES/SHAREBIKES

ALL APP - RUN FIND - UNLOCK - RIDE LETS YOU PICK UP ANY BIKE THAT IS AVAILABLE & LEAVE IT THERE (VARIETY OF BIKES)



Bikeshare has never been this easy.

SMARTGRIPS

RETRO FITS INTO HANDLEBARS. HAS GPS. GIVES RIDER HAPTIC FEEDBACK FOR MV, LETS LOCATE BIKE VIA APP.

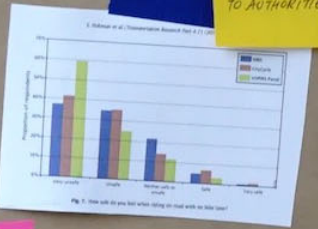


Fig. 7. How well do you feel which bike you should use on the road?

PRICING

\$3 seems like a good deal.



HANGZHOU

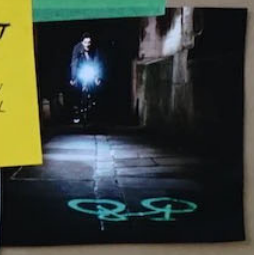
60,000 BIKES FOUND EVERY 100 METRES. 30% OF LOCALS INCORPORATED THE BIKES IN TRANSPORT

DENSITY

SAFETY

BLAZE LASERLIGHT

NOW ON 250 CITIBIKES IN NEW YORK AS A TRIAL



NAVIGATION

LIFE LIGHT

SUPER LIGHT MAP HOLDER PREVENTS FROM ADJUST. REPLACE

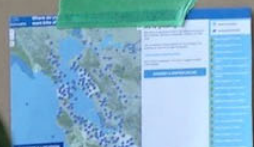


BLUBELL

SIMPLE LIGHT NAVIGATION THAT TAPS INTO MOST CYCLE FRIENDLY ROUTES

ECO HELMET

FOLDABLE LIGHT COLLAPSIBLE HELMET OUT OF CARDBOARD



Warum?

Indikation

Wie?

Prozessablauf

Wer?

Involvierte Personen

Wo?

Umgebung

Womit?

Werkzeuge

Pourquoi?

Indication

Comment?

Déroulement du processus

Qui?

Personnes impliquées

Où?

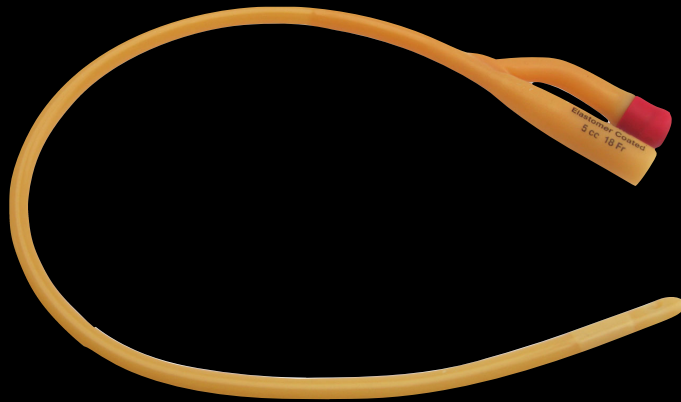
Environnement

Avec quoi?

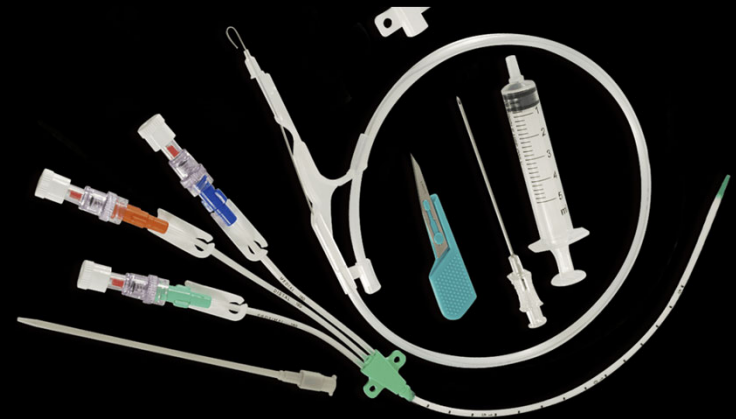
Outils



Wie verhindern wir eine [...]?
Comment prévenir [...]?



CAUTI



CLABSI

Wie läuft die Patient Journey ab?

Comment se déroule le parcours du patient ?

Warum? Pourquoi?

Wo? Où?

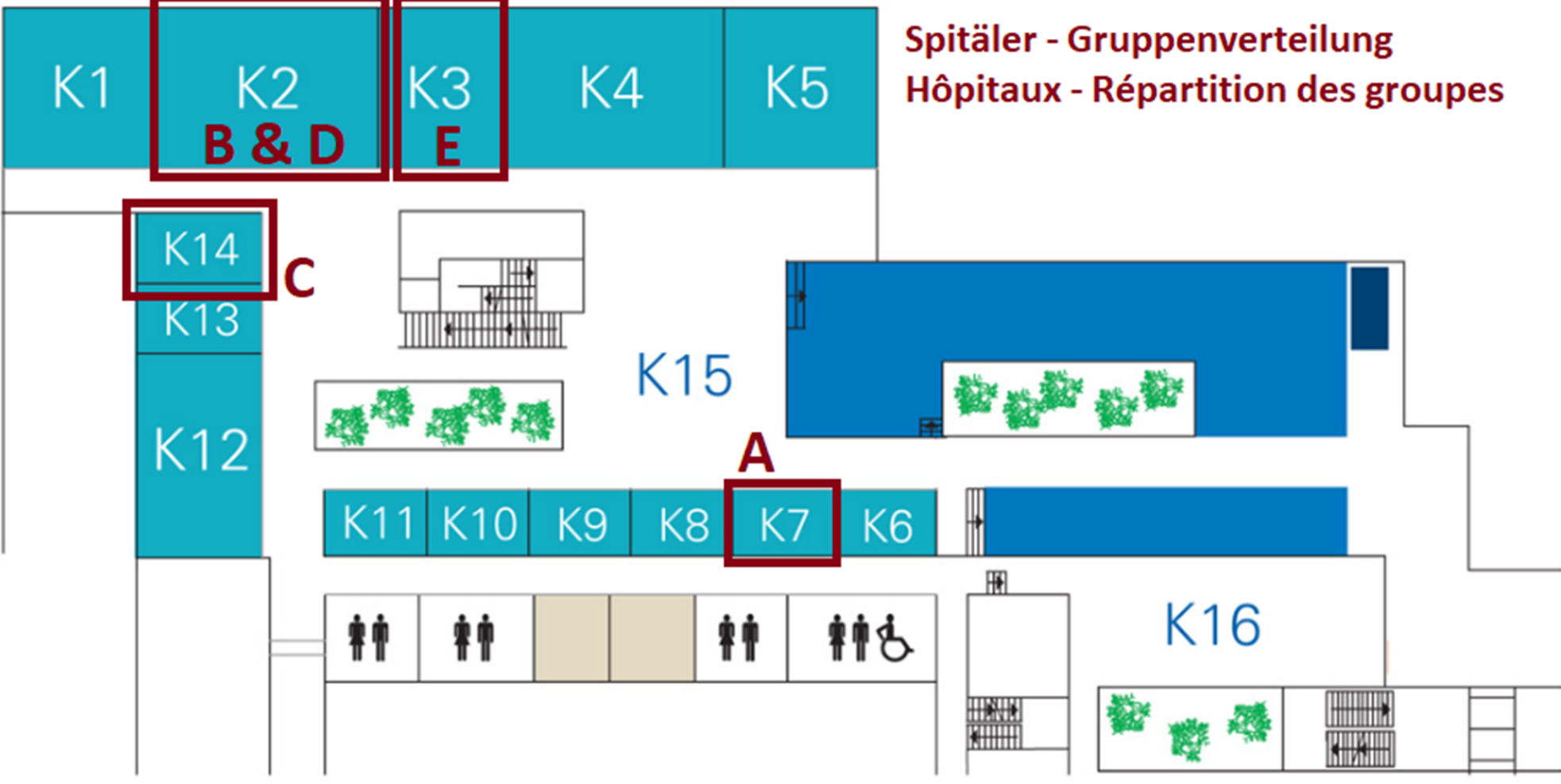


Wer? Qui?

Wie? Comment?

Womit? Avec quoi?

Spitäler - Gruppenverteilung
Hôpitaux - Répartition des groupes

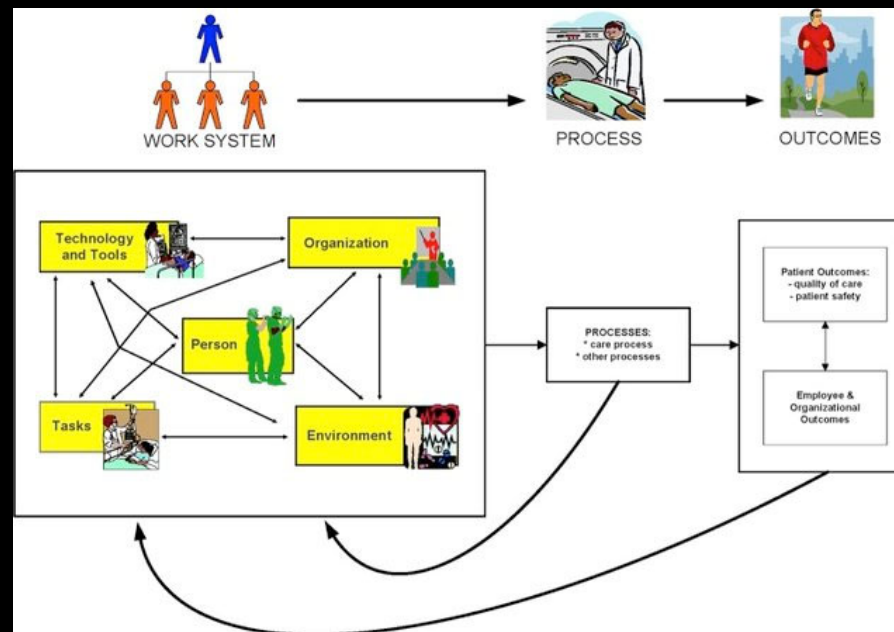


Nr 2: Wissen integrieren.

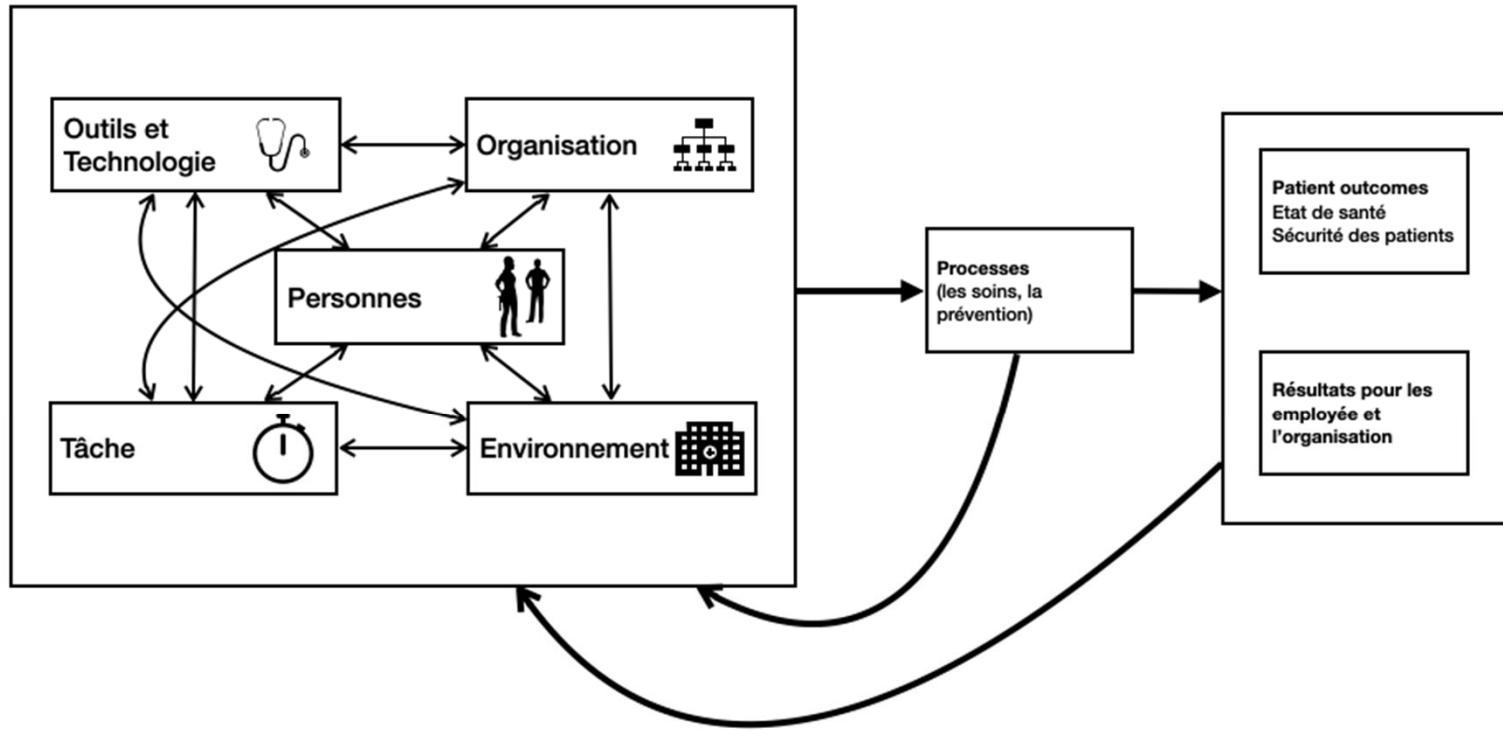
Nr 2: Intégrer les connaissances.

Das SEIPS Modell - Le modèle SEIPS

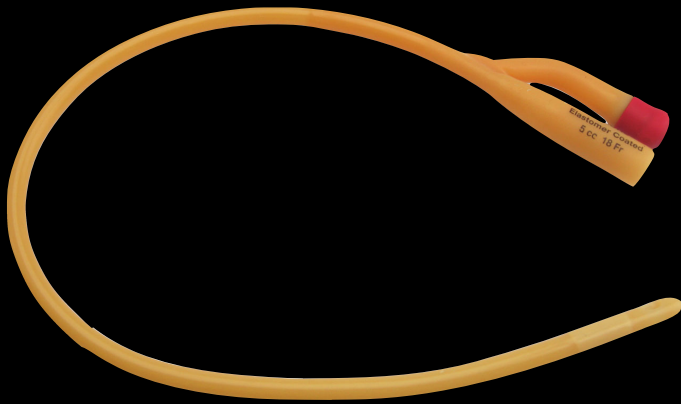
System Engineering Initiative for Patient Safety (SEIPS)



Die Dimensionen des Arbeitssystems Spital.
Les dimensions du système de travail de l'hôpital.



CAUTI



Indikationsliste

Aseptische Einlage

Tägliche Reevaluation

Monitoring & Feedback

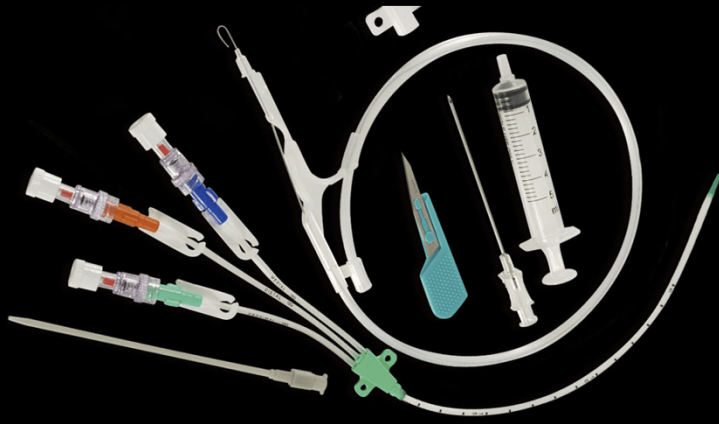
Liste des indications

Insertion aseptique

Réévaluation quotidienne

Suivi et retour d'information

CLABSI



Indikation

Einlageort

Aseptische Einlage

Tägliche Reevaluation

Monitoring & Feedback

Indication

Site d'insertion

Insertion aseptique

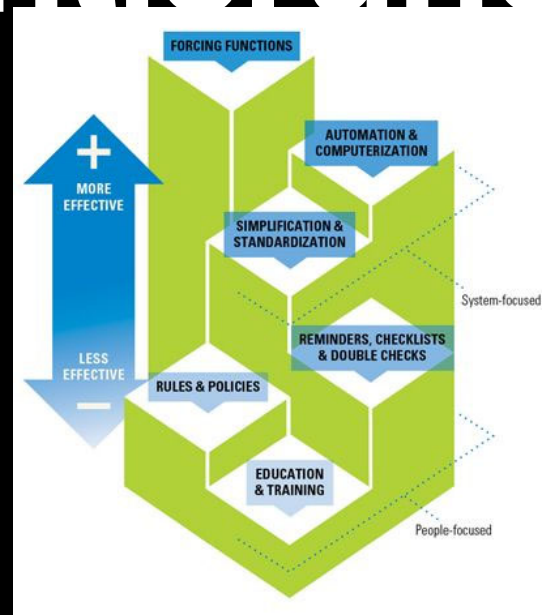
Réévaluation quotidienne

Suivi et retour d'information

Aufgabe / Exercise -> -> ->

Die Hierarchie der Implementierungs-Effizienz

La hiérarchie de l'efficacité de la mise en œuvre



Il existe des solutions plus efficaces que "...plus de formation...".
Es gibt bessere Lösungen als "...mehr Schulung...".

System-integriertes Wissen. Connaissance intégrée au système.

Struktur isst Prozess zum Frühstück. Nachhaltig.
La structure dévore le processus au petit-déjeuner. Durable.

Wissen 'on demand', das heisst nahe dran.
Connaissance "à la demande", c'est-à-dire à portée de main.

Wissen im Kopf versus Wissen in der Welt.
Connaissance dans la tête versus connaissance dans le monde.

Zielführendes Wissen.
Connaissances orientées vers un objectif.

Motivierendes Wissen.
Connaissances motivantes.

Feedback.
Feedback.

System-Denken. Ein paar Tipps. Pensée systémique. Quelques conseils.

First principle!

Öffne und schliesse den Rahmen um ein Problem.
Ouvrez et fermez le cadre autour d'un problème.

Fokussiere auf den Raum zwischen den Dingen/Menschen.
Concentrez-vous sur l'espace entre les choses/les personnes.

Einschliesslich Interfaces.
Y compris les interfaces.

Denke an Feedback Loops, nicht nur linear.
Pensez en boucles de rétroaction, pas seulement en linéaire.

Let's go!

Toolset?



SEIPS Diagnostic Dashboard
HFMEA Module
Action Cards
Interactive Workflow Simulator
Augmented Reality (AR) Overlays
AI Chatbots
Gamification
IoT Sensors

Systems Design to Improve Infection Prevention

www.hopkinsmedicine.org/armstrong/humanfactors

Ayse P. Gurses, PhD, MS, MPH

Director, Armstrong Institute Center for Health Care Human Factors

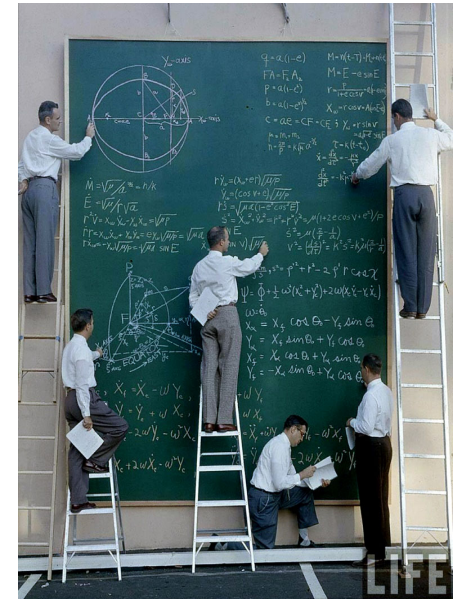
Professor, Schools of Medicine, Bloomberg Public Health, Whiting Engineering

Johns Hopkins University

What is Human Factors/Ergonomics (HFE)?

“...the scientific discipline concerned with the understanding of interactions [btw] humans and other elements of a system...profession applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.”

International Ergonomics Association, 2003



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Armstrong Institute at Johns Hopkins Bayview

Center for Diagnostic Excellence

Center for Health Care Human Factors

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Armstrong Institute Center for Health Care Human Factors

The Armstrong Institute's Center for Health Care Human Factors is dedicated improving the way that people — health care professionals, patients and families — interact with care systems so that they are safer, high performing and patient-centered. We bring a scientific approach to reengineering health care systems and processes so that medical errors are "designed out" and evidence-based care is built in.

The center brings together experts in human factors and organizational psychology with an interdisciplinary group of researchers, practitioners and educators who want to design health care systems and technologies that work for people, rather than set them up for mistakes and inefficiencies.

[Contact us](#) with any questions about our work and how we may be able to collaborate with your team to reduce preventable harms, enhance patient outcomes and experiences, and reduce waste in care delivery.

Human Factors in Health Care

The science of human factors accepts that health care professionals, like all humans, make errors. Human factors experts focus on designing systems that make it "easy to do things right and hard to do things wrong." See why our scientific methods have promise to move the needle on stubborn patient safety and health care quality problems.

[Learn more.](#)

Our Projects

The center's investigators lead and collaborate on projects that aim to make health care safer, more productive and more patient-centered. These efforts have been funded by the Agency for Healthcare Research and Quality, the Centers for Disease Control and Prevention, National Institutes of Health, NASA and foundations.

[Discover our projects.](#)

Our Team

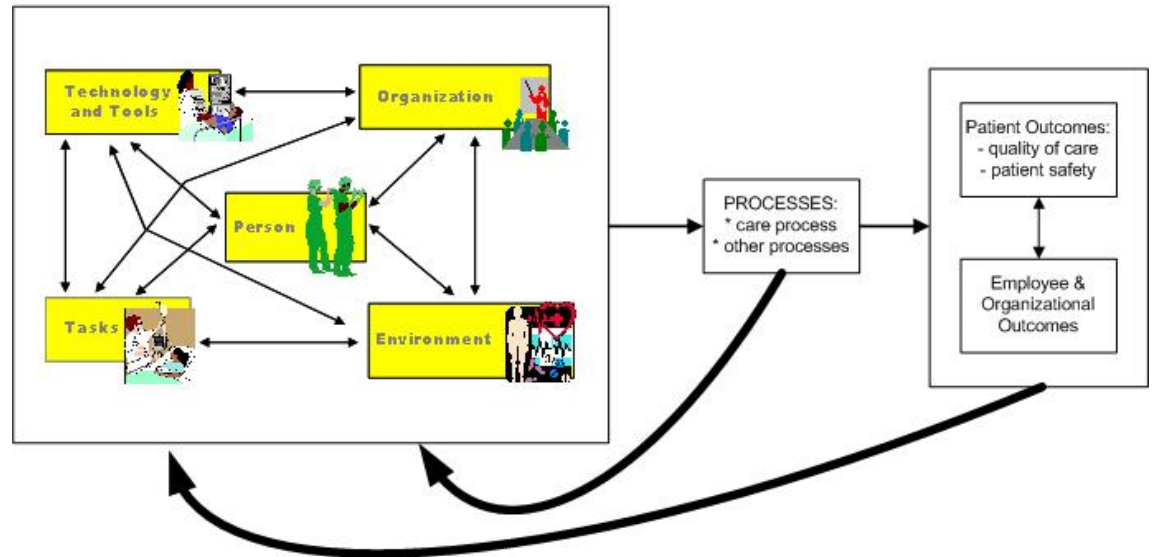
www.hopkinsmedicine.org/armstrong/humanfactors

Center for Health Care Human Factors



We bring a scientific approach to reengineering health care systems and processes so that medical errors are "designed out" and evidence-based care is built in.

Human Factors and Systems Approach to Patient Safety and Health Care Worker Safety

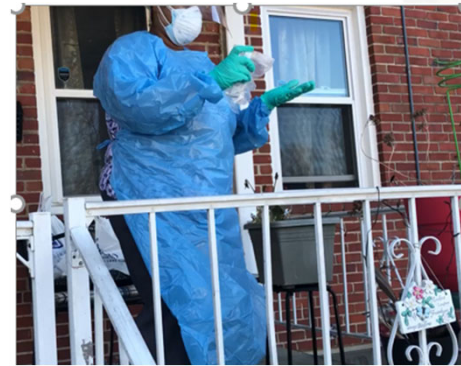


Human factors approach

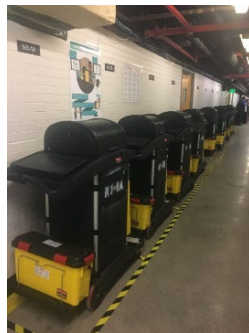
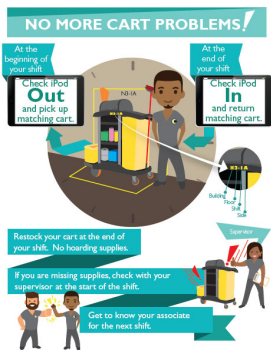
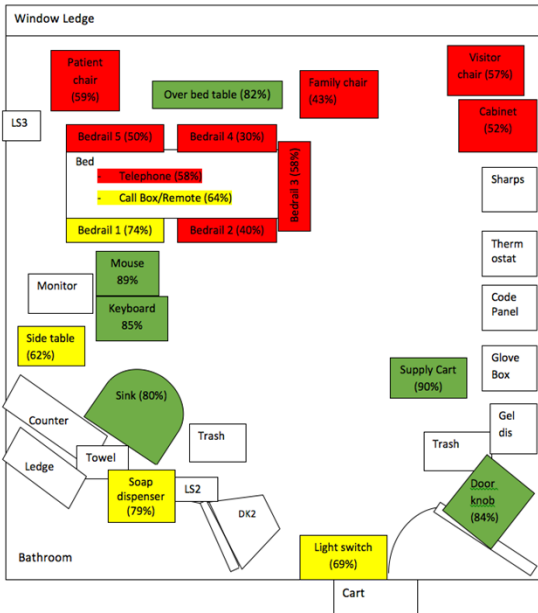
“Make it easy to do the right things and hard to do the wrong things.”

Systems Engineering Initiative for Patient Safety (SEIPS)

HFE Projects for Improving Infection Prevention Across the Continuum of Care



Sample HFE Projects in Infection Prevention



Main Rooms

1. Introduction
2. Knock on the door, "May I come in?"
3. "My name is... I'm the EIC Associate."
4. I am here to perform a daily detailed cleaning.
5. "Our goal is to keep the environment safe and germ-free."
6. Visual inspection of room.
7. "Are there any areas that you are concerned about?"
8. Repeat to change nurse if patient refuses to allow cleaning.

Bathrooms

9. 1. Introduction
10. 2. Knock on the door, "May I come in?"
11. 3. "My name is... I'm the EIC Associate."
12. 4. I am here to perform a daily detailed cleaning.
13. 5. "Our goal is to keep the environment safe and germ-free."
14. 6. Visual inspection of room.
15. 7. "Are there any areas that you are concerned about?"
16. 8. Repeat to change nurse if patient refuses to allow cleaning.

Things to Watch While Cleaning

- 1. Neatly organize medical supplies, patient belongings in main room and bath supplies in bathroom.
- 2. Position furniture and remote controls for ease of use by patient.
- 3. If you experience any interruptions while cleaning.

Before Entering Patient Room

- 1. Purify/wash hands with soap and water.
- 2. Put on required PPE as instructed by door sign.

On Entering Patient Room

- 1. Introduction
- 2. Knock on the door, "May I come in?"
- 3. "My name is... I'm the EIC Associate."
- 4. I am here to perform a daily detailed cleaning.
- 5. "Our goal is to keep the environment safe and germ-free."
- 6. Visual inspection of room.
- 7. "Are there any areas that you are concerned about?"
- 8. Repeat to change nurse if patient refuses to allow cleaning.

Preparation to Clean

- 1. Scan barcode.
- 2. Remove waste, dirty linen bag, and bathroom trash.
- 3. Turn on all sink/shower faucets that and hold for 2 minutes and sign water flush log.
- 4. "I am turning on the water faucets to flush your water pipes."

Bed Cleaning

1. Bed Area

Daily

- 1. Explain why starting with bed area.
- 2. "I will be cleaning the area closest to you first to keep it as clean and germ free as possible."
- 3. "Is it okay if I move your belongings or clothes?"
- 4. Wipe tables.
- 5. **Over bed table (in, out and base)**
- 6. **Bed side table**
- 7. Telephone (receiver, cords, base and dial pad), Neatly coil cords.
- 8. **Remote**
- 9. **Bed rolls (including 4 side rails, headboard and footboard)**
- 10. Dump dust bed frame (underneath the bump).

M/W Only

- 1. * Yellow Pledge Cloth on Swiffer Stick
- 2. Door frame, hinges, top/side of door
- 3. Vents. Start on door side without light switch.
- 4. Alarm clock
- 5. TV & base
- 6. Ledger above room sink and sink pipes
- 7. Wipe window sills and coastertops
- 8. Bedboards and corners

Last Updated 9/3/18



Not all interventions are created equal

Weaker actions

- Warnings & labels
- New policies
- Training
- Double checks

Intermediate actions


- Checklists
- More huddles
- Reducing distractions

Stronger actions

- Real leadership involvement
- Robust process (re)design
- Devices designed to prevent errors

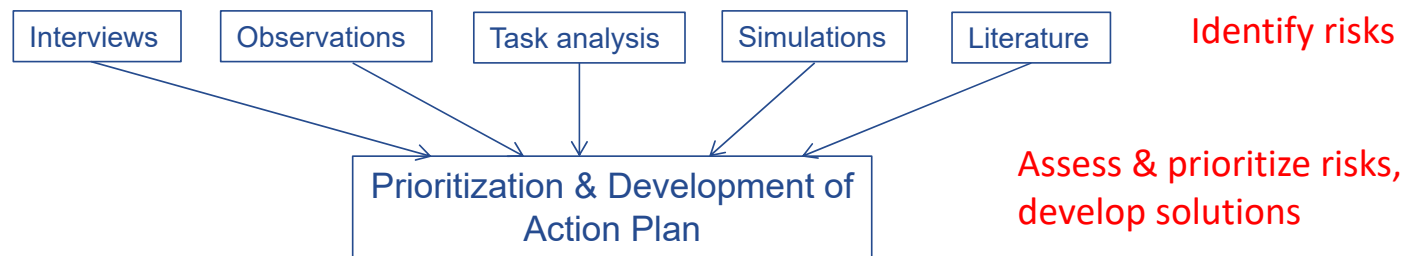


Multiple Methods of HFE

- Interviews
 - Observations/ Shadowing
 - Usability evaluation of information tools/ technologies
 - Simulation
 - Cognitive walkthroughs
 - **Proactive Risk Assessment**
 - **Barrier Identification and Mitigation (BIM) Tool (Gurses et al, 2009)**
 - Healthcare Failure Mode and Effects Analysis (HFMEA)
 - Others
- 

Approach to Proactive Risk Management (e.g., BIM)

1. Proactive risk assessment



2. Participatory and iterative nature of the study and interventions

Multi-Dimensional Enhancements Informed by Proactive Risk Assessment

Participatory Ergonomics



- Nurse- Environmental Care Relations
- Safety Culture
- Training/ Coaching on Better Engagement with Patient and Family
- Etc.

Human-Centered Design Approach for Checklist Development

JOHNS HOPKINS MEDICINE

Bed Cleaning

1. Bed Area

Before Entering Patient Room

- Handwash hands with soap and water
- Put on required PPE as instructed by door sign

On Entering Patient Room

- Introduction
 - Knock on the door, "May I come in?"
 - "My name is _____, I am the EVC Associate."
 - Turn here to perform a daily detailed cleaning.
- "Our goal is to keep the environment safe and germ free."
- Visual inspection of room
 - "Are there any objects that you are concerned about?"
 - "Are there any objects that you are concerned about?"
 - Report to charge nurse if patient refuses to allow cleaning.

Preparation to Clean

- Scan barcode
- Remove waste, dirty linen bag, and bathroom trash
- Turn on all sink/shower faucets (hot and cold) for 5 minutes and sign water run log
- "I am turning on the water faucets to run your water pipes."

Things to Watch While Cleaning

- Neatly organize medical supplies, patient belongings, (in main room and both supplies in bathrooms)
- Position furniture and remote controls for ease of use by patient.
- If you experience any interruptions while cleaning.

Daily

- English only starting with bed area
 - "I will be cleaning the area closest to you first to keep it as clean and germ free as possible."
 - "Is there anything I can help you with?"
 - "Is there anything I can help you with?"
- Hand hygiene
- Over bed table (in, out and base)
- Bed side table
- Telephone (receiver, cord, base and dial pad), nearby clock
- Remote
- Bed rails (including 4 side rails, headboard and footboard)
- Check that bed frame (underneath the bed)

M/W only

- Follow Hledge Clean on Shelter Stack
- Door frame, hinges, top/sides of door
- Walls. Start on door side without light switch
- Around clock
- Legs above room sink and sink pipes
- Wipe window sills and counter-top
- Baseboards and corners

Last Updated 9.13.18

NO MORE CART PROBLEMS!

At the beginning of your shift
Check Cart Out

At the end of your shift
Check Cart In

The Inventory Clerk stocks the carts overnight.

If you are missing supplies, check with your supervisor at the start of the shift.

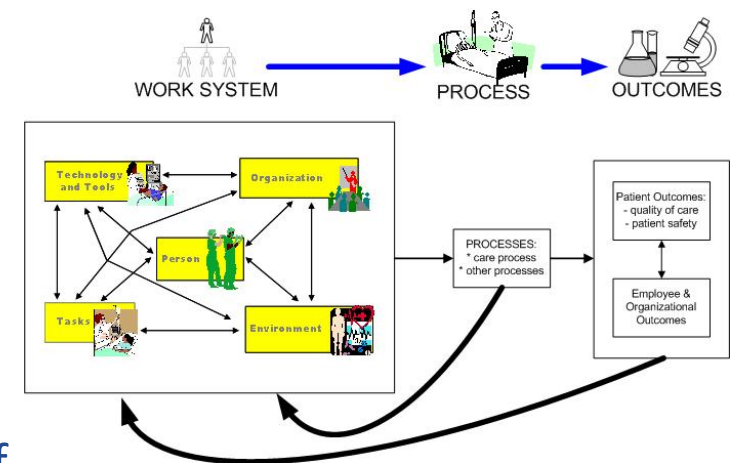
Get to know your associate for the next shift.

Supervisor



Compliance with Evidence-Based Guidelines

- Consistent compliance with evidence-based guidelines is challenging yet critical to patient safety.
- Need for interdisciplinary approach to improve compliance
- From human factors point of view: **Compliance as “systems property.”**
- GOAL: To identify and eliminate/mitigate the effects of barriers to compliance with guidelines



Barrier Identification and Mitigation (BIM) Tool*

The Joint Commission Journal on Quality and Patient Safety

Tool Tutorial

A Practical Tool to Identify and Eliminate Barriers to Compliance with Evidence-Based Guidelines


Readers may submit Tool Tutorial inquiries and submissions to Steven Berman at sberman@jcrinc.com.

Ayse P. Gurses, Ph.D.; David J. Murphy, M.D.; Elizabeth A. Martinez, M.D., M.H.S.; Sean M. Berenholtz, M.D., M.H.S.; Peter J. Pronovost, M.D., Ph.D.

***Similar to HFMEA or proactive risk assessment approach**



Evidence-based Behaviors to Prevent CLABSI

- Remove unnecessary lines
 - Perform hand hygiene prior to procedure
 - Use maximal barrier precautions
 - Clean skin with chlorhexidine
 - Avoid femoral lines
- 

Interventions for Reducing CLABSI

- Educational intervention to increase clinician's awareness of evidence-based infection control practices
- Central catheter insertion cart
- Daily goals form used during rounds
- Checklist to be completed by the bedside nurse
- Empowering nurses to stop procedures if guidelines not followed



Steps of Barrier Identification and Mitigation Tool (BIM)*

- Step 1: Assemble the interdisciplinary team
- Step 2: Identify barriers
 - Observe the process
 - Walk the process
 - Ask about the process
- Step 3: Summarize barriers in a Table
- Step 4: Prioritize barriers
- Step 5: Develop an action plan for each prioritized barrier

* Gurses et al. (2009) A practical tool to identify and eliminate barriers to evidence-based guideline compliance. [Joint Commission Journal on Quality and Patient Safety](#) 35(10):526-532



Step 2: Identify Barriers

- Observe the Process
 - Include **different lenses** – nurse, infection control, human factors/ QI expert conducting observations
 - Why is it difficult to comply?
 - Steps skipped, work-arounds

Step 2: Identify Barriers

- Ask about the process: Ask staff
 - whether they are aware of/ agree with the guideline
 - what some of the leading problems and barriers encountered in their unit that may hinder compliance with this guideline?
 - Have any suggestions to improve compliance with the guideline
 - Specific questions (e.g., How do you find out the date that a central venous catheter was inserted to a patient?)
- Walk the process
 - Try to comply with the guideline using simulation or, if appropriate, under real circumstances.

Types of Barriers

- **Health Care Professional**

- Knowledge, attitude
- Current practice habits

- **Guideline-related**

- Applicability to patient population
- Evidence supporting guideline
- Ease of compliance

- **System**

- Inadequate or poorly designed tools and technologies
- Poor organizational structure (e.g., staffing, policies)
- Inadequate leadership support
- Unit/hospital culture
- Inadequate feedback mechanisms
- System ambiguities

- **Other**

Systems Ambiguity* as a Barrier to Guideline Compliance

Ambiguity Types

- Task
- Responsibility
- Expectation
- Method
- Exception

* Gurses AP, et al. Systems ambiguity and guideline compliance: A qualitative study of how intensive care units follow evidence-based guidelines to reduce healthcare-associated infections. [Quality and Safety in Health Care](#), 2008; 17(5):351-59.

Method Ambiguity

- Complexity of some of the guidelines and the demanding work environment of ICUs

“The tight glucose protocol is very wordy and I don’t have enough time to go and look through it...I’ve developed my own way of calculating the insulin that needs to be given. I’ve done this job quite enough that I can guess how much insulin to give based on trends [in patient’s condition]...I feel like it’s [following the TGC] going to take more time to achieve the goal than I’ve been able to achieve already [using my own method].”

- Being able to quickly find the necessary supplies without spending time searching was reported as a key factor in complying with some guidelines

“It is really easy to comply with the central venous catheter (CVC) insertion guidelines in this unit because everything you need is available on the [CVC insertion] cart.”

Task Ambiguity

- Lack of clarity in the goal

“A lot of times [night shift staff] will keep on giving sedation to patient especially for preventing patients from moving around and extubating themselves... You have to DC [discontinue] all the orders because if you give PRN orders, patients are going to get it at night. You really have to have a clear goal on what this patient needs and the night shift providers need to understand that...If not, you will go to the unit in the morning and find that patient is not awake, and therefore cannot participate in the weaning trial.”

- Strategies to reduce task ambiguity: Visual cues, clearly specifying what needs to be done for the patient and standardizing processes

“For patients vulnerable to aspiration, like ENT patients, physicians type [head of bed >30°] in the computer as an order. The unit secretary will then actually print this order in large, bold letters and post it in patient’s room.”

Barrier Identification Form

CONTRIBUTING FACTORS	BARRIER(S)	POTENTIAL ACTIONS
Provider		
Current practice habits : What do you currently do (or not do)?	Lines rarely discussed on daily interdisciplinary rounds	Add lines section to rounding form.
Guideline		
Ease of complying with guideline How does this guideline impact the workload?		
System		
<u>Tools & technologies</u> Are necessary supplies and equipment available and used appropriately?	Materials (full drapes) were missing from the line cart for an afternoon procedure (cart restocked at night).	
<u>Physical environment</u> How does the unit's layout affect compliance?	MD walked through busy hallway to wash hands at closest sink before procedure.	Make sink access more convenient?
<u>Performance monitoring and feedback mechanism</u> How does the unit know it is consistently (and appropriately) applying the guideline?	No mechanism to monitor central line use and provide feedback	Review central line use at monthly unit meetings.
Other		

Barrier Summary and Prioritization

Barrier	Relation to Guideline	Source	Likelihood Score*	Severity Score†	Barrier Priority Score‡	Target for this QI cycle?
Difficult for providers to cleanse their hands prior to performing central line insertion	Hand washing	Observe Ask	4	3	12	Yes
Central line cart missing items (especially late in the afternoon)	Full barrier precautions and clean skin with chlorhexidine	Observe Walk	3	3	9	Yes

***Likelihood score: How likely will a clinician experience this barrier?**

1. Remote 2. Occasional 3. Probable 4. Frequent

†**Severity score: How likely will experiencing a particular barrier lead to non-compliance with guideline?**

1. Remote 2. Occasional 3. Probable 4. Frequent

‡**Barrier priority score** = Likelihood score X Severity score

Development of Action Plan

Prioritized barriers	Potential Actions	Source	Potential Impact Score [*]	Feasibility Score [†]	Action Priority Score [‡]	This QI cycle?	Action Leader	Performance Measure (Method)	Follow-up Date
Difficult for providers to cleanse their hands prior to performing central line insertion	Install sinks in rooms	Observe	3	0	0	No			
	Place alcohol-based hand sanitizer in rooms	Observe Ask Walk	4	4	16	Yes	KM	Compliance with hand cleaning (observation)	2 months

***Potential impact score:** What is the potential impact of the intervention on improving guideline compliance?

0. No impact 1. Low 2. Moderate 3. High 4. Very high

†Feasibility score: How feasible is it to take the suggested action?

0. Not feasible 1. Low 2. Moderate 3. High 4. Very high

‡Action priority score = Potential impact score X Feasibility score

Conclusions

- Innovative approaches are needed for patient safety and prevention
- HFE/ systems perspective is important to
 - identify and prioritize correct problems systematically
 - develop effective, sustainable solutions
- These HFE/ systems approaches can be adapted and applied to many problems across various care settings

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Questions/ Comments?

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Systems Design für Infektionsprävention

www.hopkinsmedicine.org/armstrong/humanfactors

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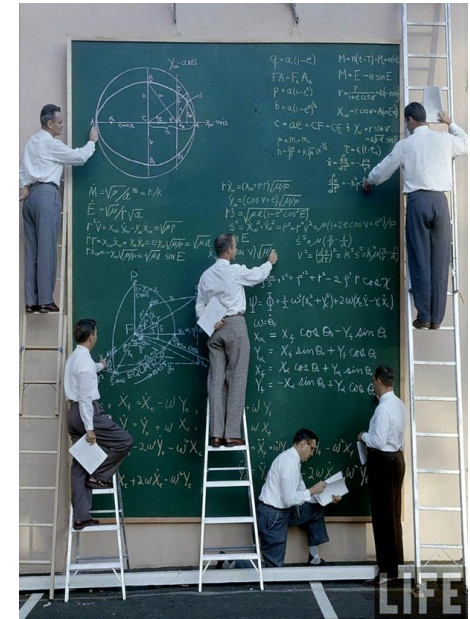
Professor, Schools of Medicine, Bloomberg Public Health, Whiting Engineering

Johns Hopkins University

Was ist Human Factors/Ergonomics (HFE)?

„...die wissenschaftliche Disziplin, die sich mit dem Verständnis der Wechselwirkungen [zwischen] Menschen und anderen Elementen eines Systems befasst...Diese Fachrichtung wendet Theorie, Prinzipien, Daten und Methoden im Design an, um das menschliche Wohlbefinden und die allgemeine Systemleistung zu optimieren.“

International Ergonomics Association, 2003



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Armstrong Institute Center for Health Care Human Factors

The Armstrong Institute's Center for Health Care Human Factors is dedicated improving the way that people — health care professionals, patients and families — interact with care systems so that they are safer, high performing and patient-centered. We bring a scientific approach to reengineering health care systems and processes so that medical errors are "designed out" and evidence-based care is built in.

The center brings together experts in human factors and organizational psychology with an interdisciplinary group of researchers, practitioners and educators who want to design health care systems and technologies that work for people, rather than set them up for mistakes and inefficiencies.

[Contact us](#) with any questions about our work and how we may be able to collaborate with your team to reduce preventable harms, enhance patient outcomes and experiences, and reduce waste in care delivery.



Human Factors in Health Care

The science of human factors accepts that health care professionals, like all humans, make errors. Human factors experts focus on designing systems that make it "easy to do things right and hard to do things wrong." See why our scientific methods have promise to move the needle on stubborn patient safety and health care quality problems.

[Learn more.](#)



Our Projects

The center's investigators lead and collaborate on projects that aim to make health care safer, more productive and more patient-centered. These efforts have been funded by the Agency for Healthcare Research and Quality, the Centers for Disease Control and Prevention, National Institutes of Health, NASA and foundations.

[Discover our projects.](#)



Our Team

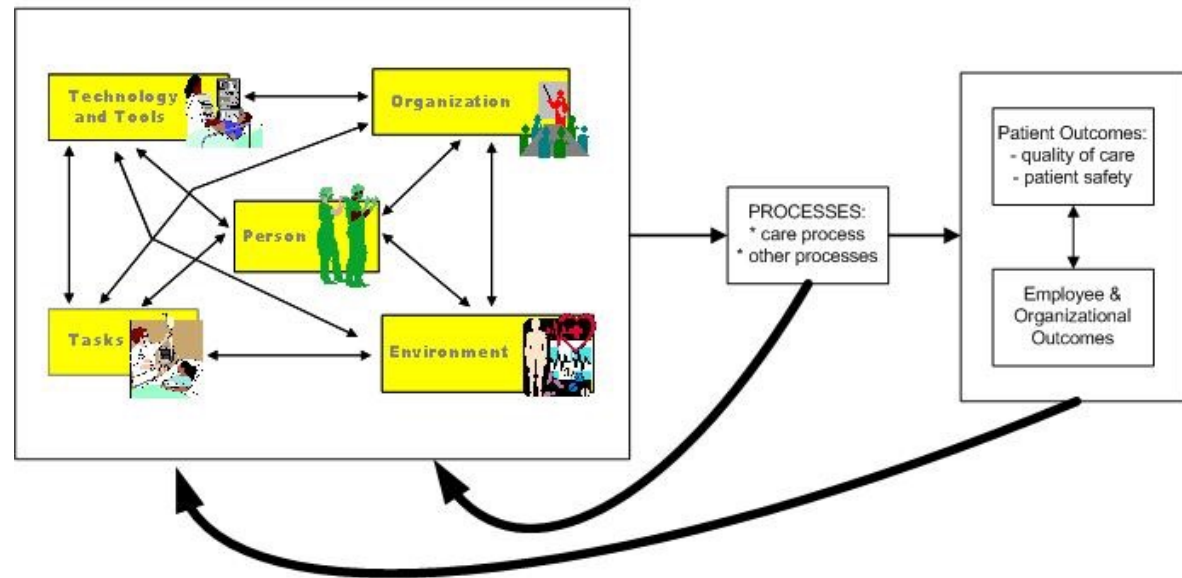
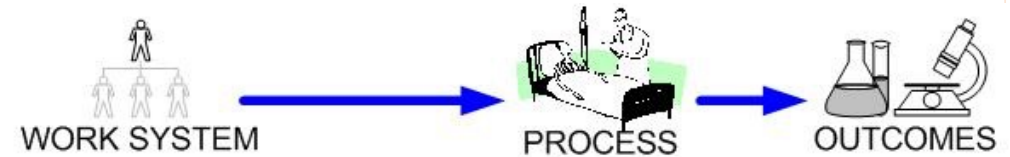
www.hopkinsmedicine.org/armstrong/humanfactors

Center for Health Care Human Factors



Wir bieten einen wissenschaftlichen Ansatz für die Umgestaltung von Gesundheitssystemen und -prozessen, um medizinische Fehler zu vermeiden und eine evidenzbasierte Versorgung zu gewährleisten.

Human Factors und systematischer Ansatz für Patientensicherheit und Sicherheit von Gesundheitsfachkräften



Ansatz der menschlichen Faktoren

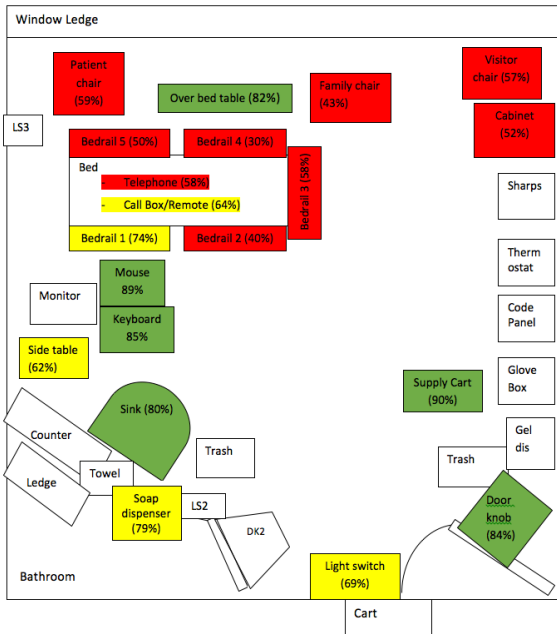
"Machen Sie es leicht, das Richtige zu tun, und schwer, das Falsche zu tun".

Systems Engineering Initiative for Patient Safety (SEIPS)

HFE-Projekte zur Verbesserung der Infektionsprävention entlang des Versorgungskontinuums



Sample HFE Projects in Infection Prevention



NO MORE CART PROBLEMS!

At the beginning of your shift

Check iPod Out and pick up matching cart.

At the end of your shift

Check iPod In and return matching cart.

Restock your cart at the end of your shift. No hoarding supplies.

If you are missing supplies, check with your supervisor at the start of the shift.

Get to know your associate for the next shift.



JOHNS HOPKINS MEDICINE

Bed Cleaning

1. Bed Area

Before Entering Patient Room

- Handwash hands with soap and water.
- Put on required PPE as instructed by door sign.

On Entering Patient Room

Introduction

- Knock on the door, "May I come in?"
- "My name is _____, I am the EVC Associate."
- "I am here to perform a daily scheduled cleaning."
- "Our goal is to keep the environment safe and germ free."
- Visual inspection of room.
- "Are there any areas that you are concerned about?"
- Report to charge nurse if patient refuses to allow cleaning.

Preparation to Clean

- Scan barcode.
- Remove waste, dirty linen bag, and bathroom trash.
- Turn on all sink/shower faucets (hot and cold) for 30 seconds and sign water flush log.
- "I am turning on the water faucets to flush your water pipes."

Things to Watch While Cleaning

- Neatly organize medical supplies, patient belongings (in main room and bath supplies in bathroom).
- Position furniture and remote controls for ease of use by patient.
- If you experience any interruptions while cleaning.

1. Bed Area

Dirty

- Explain why starting with bed area.
- "I will be cleaning the area closest to you first to keep it as clean and germ free as possible."
- "I hope if I move your belongings as I clean."

Wet surfaces

- Over bed table (in, out and base)
- Bed side table
- Telephone (receiver, cords, base and dial pad), Health call cards
- Remote
- Bed rails (including 4 side rails, headboard and footboard)
- Strip dust bed frame (joints/under the bed)

M/W only

- Yellow Pledge Cloth on shelfier stick
- Door frame, hinges, top/edges of door
- Vents. Start on door side without light switch.
- Alarm clock
- TV set & base
- Ledges above room sink and sink pipes
- Wipe window sills and counter tops
- Bedboards and corners

Last Updated 9/13/18



Nicht alle Interventionen sind gleichwertig

Schwächere Interventionen

- Warnings & Beschriftung
- Neue Vorschriften
- Training
- Dopplete Checks

Mittlere Interventionen


- Checklisten
- Mehr Besprechungen
- Reduzierung von Ablenkungen

Bessere Interventionen

- Echte Beteiligung der Führung
- Robuste Prozess(neu)gestaltung
- Geräte zur Fehlervermeidung

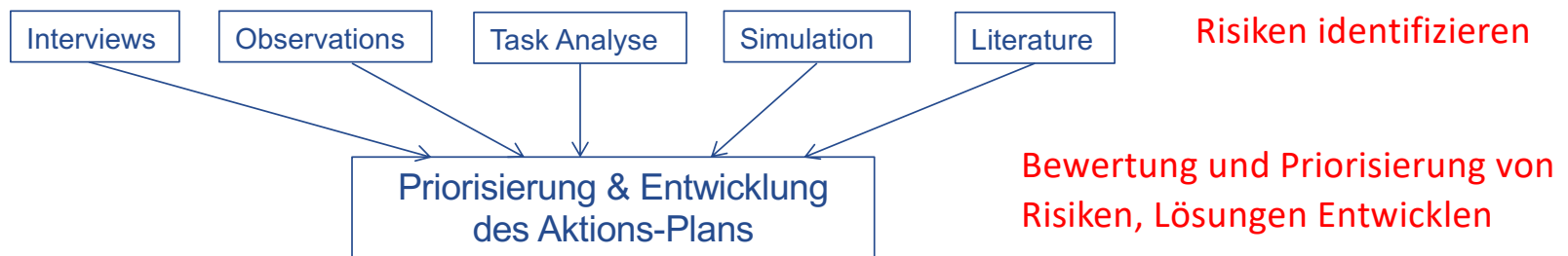


Mehrere Methoden von HFE

- Interviews
 - Beobachtungen/Schattenbildung
 - Gebrauchstauglichkeitsbewertung von Informationstools/Technologien
 - Simulation
 - Kognitive Begehungen
 - **Proaktive Risikobewertung**
 - **Barrierenidentifikation und -minderung (BIM) Werkzeug (Gurses et al, 2009)**
 - Gesundheitsversagen Modus und Auswirkungsanalyse (HFMEA)
 - Andere
- 

Ansatz für proaktives Risikomanagement (z. B. BIM)

1. Proaktives Risiko-Assesment



2. Partizipativer und iterativer Charakter der Studie und der Interventionen

Multi-dimensionale Verbesserung durch proaktives Risiko-Assessment



Partizipative Ergonomie



- Nurse- Environmental Care Relations
- Safety Culture
- Training/ Coaching für Verbesserung
- Engagement mit Patient und Familien
- Etc.

Human-Centered Design Approach für Checklisten Entwicklung

JOHNS HOPKINS MEDICINE

Main Room

Before Entering Patient Room

- Handwash hands with soap and water
- Put on required PPE as instructed by door sign

On Entering Patient Room

- Introduction
 - Knock on the door, "May I come in?"
 - "My name is _____ I am the EVC Associate."
 - Turn here to perform daily detailed cleaning.
- "Our goal is to keep the environment safe and germ free."
- Visual inspection of room
- "Are there any areas that you are concerned about?"
- Report to charge nurse if patient refuses to allow cleaning.

Preparation to Clean

- Scan barcode
- Remove waste, dirty linen bag, and bathroom trash
- Turn on all sink/shower faucets (hot and cold) for 5 minutes and sign water flush log.
- "I'm turning on the water faucets to flush your water pipes."

Things to Watch While Cleaning

- Neatly organize medication supplies, patient belongings in main room and both supplies in bathrooms.
- Position furniture and remote controls for ease of use by patient.
- If you experience any interruptions while cleaning.

Bathroom

Bed Cleaning

I. Bed Area

Daily

- Explain why starting with bed area
 - "It will be cleaning the area closest to you first to keep it as clean and germ free as possible."
 - "It's okay if I move your belongings as I clean."
- Wipe poles
- Over bed table (in, out and base)
- Bed side table
- Telephone (receiver, cords, base and dial pad), Health call cord.
- Remote
- Bed rails (including 4 side rails, headboard and footboard)
- Comp dust bed frame (underneath the bed)

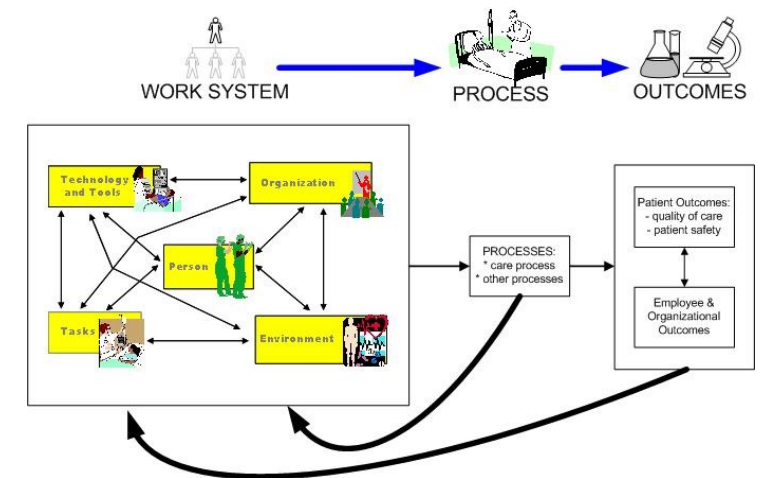
M/W only

- * Yellow Pledge Cloth on Swiffer Stick
- Door frame, hinges, top/sides of door
- Vents. Start on door side without light switch.
- Around clock
- TV set & base
- Ledges above room sink and sink pipes
- Wipe window sills and counter tops
- Baseboards and corners

Last Updated 9/13/18

Compliance mit evidenzbasierten Leitlinien

- Die konsequente Einhaltung evidenzbasierter Leitlinien ist eine Herausforderung, aber entscheidend für die Patientensicherheit.
- Notwendigkeit eines interdisziplinären **Ansatzes zur Verbesserung der Compliance**
- Vom Standpunkt der menschlichen Faktoren aus betrachtet: Compliance als "Systemeigenschaft".



Barrierenidentifikation und -minderung (BIM) Werkzeug*

The Joint Commission Journal on Quality and Patient Safety

Tool Tutorial

A Practical Tool to Identify and Eliminate Barriers to Compliance with Evidence-Based Guidelines


Readers may submit Tool Tutorial inquiries and submissions to Steven Berman at sberman@jcrinc.com.

Ayse P. Gurses, Ph.D.; David J. Murphy, M.D.; Elizabeth A. Martinez, M.D., M.H.S.; Sean M. Berenholtz, M.D., M.H.S.; Peter J. Pronovost, M.D., Ph.D.

***Ähnlich wie HFMEA oder proaktiver Risikobewertungsansatz**



Evidenzbasiertes Verhalten zur Verhinderung von CLABSI

- Entfernung unnötiger Leitungen
 - Händehygiene vor dem Eingriff
 - Maximale Barrierevorsichtsmassnahmen
 - Hautreinigung mit Chlorhexidin
 - Vermeidung von inguinaler Einlage
- 

Interventionen zur Reduzierung von CLABSI

- Bildungsintervention zur Sensibilisierung der Ärzte für evidenzbasierte Infektionskontrollpraktiken
- Zentraler Katheter-Einschubwagen
- Tägliche Ziele für die Runden
- Checkliste für die Pflegekraft am Bett
- Ermächtigung der Krankenschwestern, Eingriffe zu stoppen, wenn die Richtlinien nicht eingehalten werden



Steps of Barrier Identification and Mitigation Tool (BIM)*

- Schritt 1: Bilden Sie das interdisziplinäre Team
- Schritt 2: Identifizieren Sie Hindernisse
 - Beobachten Sie den Prozess.
 - Gehen Sie den Prozess durch.
 - Fragen Sie nach dem Prozess.
- Schritt 3: Fassen Sie Hindernisse in einer Tabelle zusammen
- Schritt 4: Priorisieren Sie Hindernisse
- Schritt 5: Erstellen Sie einen Aktionsplan für jedes priorisierte Hinderniss

* Gurses et al. (2009) A practical tool to identify and eliminate barriers to evidence-based guideline compliance. [Joint Commission Journal on Quality and Patient Safety 35\(10\):526-532](#)



Schritt 2: Hindernisse identifizieren

- Den Prozess beobachten
 - Einbeziehung verschiedener Sichtweisen - Pflegende, Spitalhygiene, Human Factors/ QI-ExpertIn, der Beobachtungen durchführt
 - Warum ist es schwierig, die Vorschriften einzuhalten?
 - Übersprungene Schritte, Work-arounds



Step 2: Hindernisse identifizieren

- Fragen Sie nach dem Verfahren: Fragen Sie das Personal...
 - ob sie die Leitlinie kennen bzw. mit ihr einverstanden sind
 - welche Probleme und Hindernisse es in ihrer Abteilung gibt, die die Einhaltung dieser Leitlinie behindern könnten?
 - Haben Sie Vorschläge zur Verbesserung der Einhaltung der Leitlinie?
 - Spezifische Fragen (z. B. Wie finden Sie das Datum heraus, an dem ein zentraler Venenkatheter bei einem Patienten eingeführt wurde?)
- Gehen Sie den Prozess durch:
 - Versuchen Sie, die Leitlinie in einer Simulation oder ggf. unter realen Bedingungen einzuhalten.
 - Übersetzt mit www.DeepL.com/Translator (kostenlose Version)

Hindernis-Typen

- **Fachkräfte**

- Wissen, Einstellung
- Derzeitige Praxisgewohnheiten

- **Guideline-bezogen**

- Anwendbarkeit auf die Patientenpopulation
- Evidenz zur Unterstützung der Leitlinie
- Leichte Einhaltung

- **System**

- Unzureichende oder schlecht konzipierte Instrumente und Technologien
 - Unzureichende Organisationsstruktur (z. B. Personalausstattung, Richtlinien)
 - Unzureichende Unterstützung durch die Führung
 - Abteilungs-/Spitalkultur
 - Unzureichende Feedback-Mechanismen
 - Unklarheiten im System
- **Andere**

Mehrdeutigkeit der Systeme* als Hindernis für die Einhaltung von Richtlinien

Mehrdeutigkeitstypen

- Aufgabe
- Verantwortung
- Erwartung
- Methode
- Ausnahme

* Gurses AP, et al. Systems ambiguity and guideline compliance: A qualitative study of how intensive care units follow evidence-based guidelines to reduce healthcare-associated infections. Quality and Safety in Health Care, 2008; 17(5):351-59.

Mehrdeutigkeit der Methode

- Die Komplexität einiger Leitlinien und das anspruchsvolle Arbeitsumfeld der Intensivstationen

"Das strenge Glukoseprotokoll ist sehr wortreich, und ich habe nicht genug Zeit, es durchzulesen... Ich habe meine eigene Methode entwickelt, um das zu verabreichende Insulin zu berechnen. Ich habe diesen Job oft genug gemacht, so dass ich anhand von Trends [im Zustand des Patienten] abschätzen kann, wie viel Insulin ich geben muss... Ich habe das Gefühl, dass es [die Befolgung des TGC] mehr Zeit in Anspruch nehmen wird, um das Ziel zu erreichen, als ich bereits [mit meiner eigenen Methode] erreichen konnte."

- Die Möglichkeit, die benötigten Materialien schnell und ohne langes Suchen zu finden, wurde als Schlüsselfaktor für die Einhaltung einiger Leitlinien genannt

"Es ist wirklich einfach, die Richtlinien für das Einführen eines zentralen Venenkatheters (ZVK) in dieser Einheit einzuhalten, weil alles, was man braucht, auf dem Wagen [für das Einführen eines ZVK] vorhanden ist."

Mehrdeutigkeit der Aufgabe

Mangelnde Klarheit des Ziels

"Oftmals geben [die Mitarbeiter der Nachtschicht] den Patienten weiterhin Sedierungsmittel, um sie daran zu hindern, sich zu bewegen und sich selbst zu extubieren... Sie müssen alle Anordnungen aufheben, denn wenn Sie PRN-Anordnungen erteilen, werden die Patienten diese in der Nacht erhalten. Man muss wirklich ein klares Ziel vor Augen haben, was der Patient braucht, und die Nachtschicht muss das verstehen... Sonst kommt man morgens auf die Station und stellt fest, dass der Patient nicht wach ist und deshalb nicht an der Entwöhnungsstudie teilnehmen kann."

Strategien zur Verringerung der Mehrdeutigkeit von Aufgaben: Visuelle Anhaltspunkte, klare Angaben darüber, was für den Patienten zu tun ist, und Standardisierung der Prozesse

"Bei aspirationsgefährdeten Patienten, wie HNO-Patienten, geben die Ärzte die Anweisung [Kopfteil des Bettes >30°] in den Computer ein. Die Stationssekretärin druckt diese Anweisung dann in großen, fetten Buchstaben aus und hängt sie im Patientenzimmer auf."

Barrier Identification Form

BEITRAGENDE FAKTOREN	Hindernis(se)	Mögliche Intervention
Pflegende/Ärztinnen		
Aktuelle Praxisgewohnheiten: Was machen Sie derzeit (oder nicht)?	Katheter werden bei den täglichen interdisziplinären Runden selten besprochen	Katheter zum Visiten-Formular hinzufügen.
Guideline		
Einfachheit der Einhaltung der Leitlinie Wie wirkt sich diese Leitlinie auf die Arbeitsbelastung aus?		
System		
<u>Werkzeuge & Technologien</u> Sind notwendige Materialien und Ausrüstungen verfügbar und werden sie angemessen genutzt?	Materialien (komplette Tücher) fehlten im Linienwagen für ein Nachmittagsverfahren (Wagen wird nachts aufgefüllt).	
<u>Physische Umgebung</u> Wie beeinflusst das Layout der Einheit die Einhaltung?	Arzt ging durch belebten Flur, um Hände am nächsten Waschbecken vor dem Eingriff zu waschen.	Zugang zu Waschbecken bequemer gestalten?
<u>Performance Monitoring und Feedback-Mechanismus</u> Wie weiß die Abteilung, dass sie die Leitlinie konsequent (und angemessen) anwendet?	Kein Mechanismus zur Überwachung des Zentralvenenkatheters und zur Rückmeldung vorhanden	Überprüfung der Nutzung von Zentralvenenkathetern bei monatlichen Abteilungstreffen.
Andere?		

Zusammenfassung und Priorisierung von Hindernissen

Hindernis	Bezug zur Richtlinie	Quelle	Wahrscheinlichkeitsscore*	Schweregrad Score†	Hindernis-Prioritätsscore‡	Ziel für diesen QI-Zyklus?
Schwierig für Operateur, Hände vor dem Einsetzen eines Zentralvenenkatheters zu reinigen	Händehygiene	Beobachtung Interview	4	3	12	Ja
Im Zentralvenenkatheter-Wagen fehlen Gegenstände (insbesondere am späten Nachmittag)	Vollständige Asepsistechnik und Haut mit Chlorhexidin reinigen	Beobachtung Begehung	3	3	9	Ja

***Wahrscheinlichkeitsscore: Wie wahrscheinlich wird ein Arzt diese Barriere erleben?**

Selten 2. Gelegentlich 3. Wahrscheinlich 4. Häufig

†Schweregrad-Score: Wie wahrscheinlich führt das Erleben einer bestimmten Barriere zur Nichteinhaltung der Richtlinie?

Selten 2. Gelegentlich 3. Wahrscheinlich 4. Häufig

‡Barriere-Prioritätsscore = Wahrscheinlichkeitsscore X Schweregrad-Score

Entwicklung eines Aktionsplans

Priorisiertes Hindernis	Potenzielle Maßnahmen	Quelle	Punktzahl Auswirkung [*]	Feasibility Score [†]	Action Priority Score [‡]	Dieser QI-Zyklus?	Leiter der Maßnahme	Performance Metrik (Methode)	Kontroll-Datum
Schwierigkeiten für Anbieter, ihre Hände vor der Durchführung einer zentralen Venenkatheter-Einführung zu reinigen.	Waschbecken in den Zimmern installieren	Beobachtung	3	0	0	Nein			
	Alkoholbasierte Händedesinfektionsmittel in den Zimmern platzieren	Beobachtung Interview	4	4	16	Ja	KM	Einhaltung der Händehygiene (Beobachtung)	2 Monate

***Potenzielle Auswirkungsbewertung:** Welche potenzielle Auswirkung hat die Intervention auf die Verbesserung der Leitlinien-treue?

0. Keine Auswirkung 1. Gering 2. Mittelmäßig 3. Hoch 4. Sehr hoch

†Machbarkeitsbewertung: Wie machbar ist es, die vorgeschlagene Maßnahme umzusetzen?

0. Nicht machbar 1. Gering 2. Mittelmäßig 3. Hoch 4. Sehr hoch

‡Prioritätsbewertung für Maßnahmen = Potenzielle Auswirkungsbewertung X Machbarkeitsbewertung

Schlussfolgerungen

- Innovative Ansätze sind notwendig für Patientensicherheit und Prävention
- Die HFE/Systemperspektive ist wichtig, um
 - Probleme systematisch zu identifizieren und zu priorisieren
 - effektive, nachhaltige Lösungen zu entwickeln
- Diese HFE/Systemansätze können angepasst und auf viele Probleme in verschiedenen Versorgungseinstellungen angewendet werden.

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Fragen / Kommentare?

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Conception de systèmes pour la prévention des infections

www.hopkinsmedicine.org/armstrong/humanfactors

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Director, Armstrong Institute Center for Health Care Human Factors

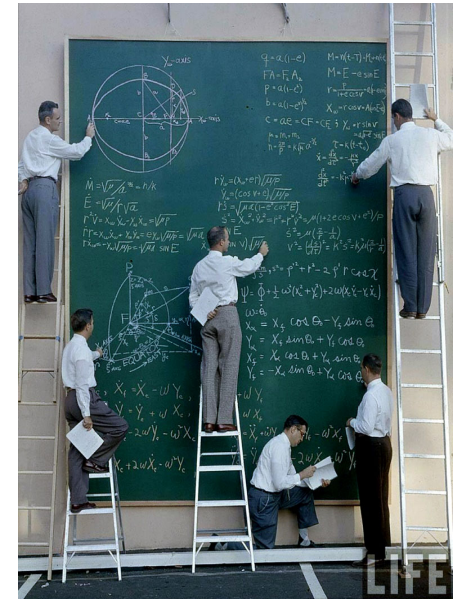
Professor, Schools of Medicine, Bloomberg Public Health, Whiting Engineering

Johns Hopkins University

Qu'est-ce que Human Factors/Ergonomics (HFE)?

„... la discipline scientifique qui s'attache à comprendre les interactions [entre] les êtres humains et les autres éléments d'un système... Cette discipline applique la théorie, les principes, les données et les méthodes de conception afin d'optimiser le bien-être humain et les performances générales du système.“

International Ergonomics Association, 2003



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Armstrong Institute Center for Health Care Human Factors

The Armstrong Institute's Center for Health Care Human Factors is dedicated improving the way that people — health care professionals, patients and families — interact with care systems so that they are safer, high performing and patient-centered. We bring a scientific approach to reengineering health care systems and processes so that medical errors are "designed out" and evidence-based care is built in.

The center brings together experts in human factors and organizational psychology with an interdisciplinary group of researchers, practitioners and educators who want to design health care systems and technologies that work for people, rather than set them up for mistakes and inefficiencies.

[Contact us](#) with any questions about our work and how we may be able to collaborate with your team to reduce preventable harms, enhance patient outcomes and experiences, and reduce waste in care delivery.



Human Factors in Health Care

The science of human factors accepts that health care professionals, like all humans, make errors. Human factors experts focus on designing systems that make it "easy to do things right and hard to do things wrong." See why our scientific methods have promise to move the needle on stubborn patient safety and health care quality problems.

[Learn more.](#)



Our Projects

The center's investigators lead and collaborate on projects that aim to make health care safer, more productive and more patient-centered. These efforts have been funded by the Agency for Healthcare Research and Quality, the Centers for Disease Control and Prevention, National Institutes of Health, NASA and foundations.

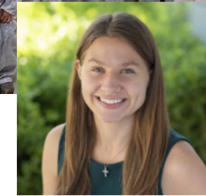
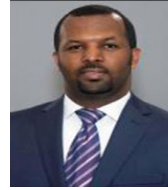
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Our Team

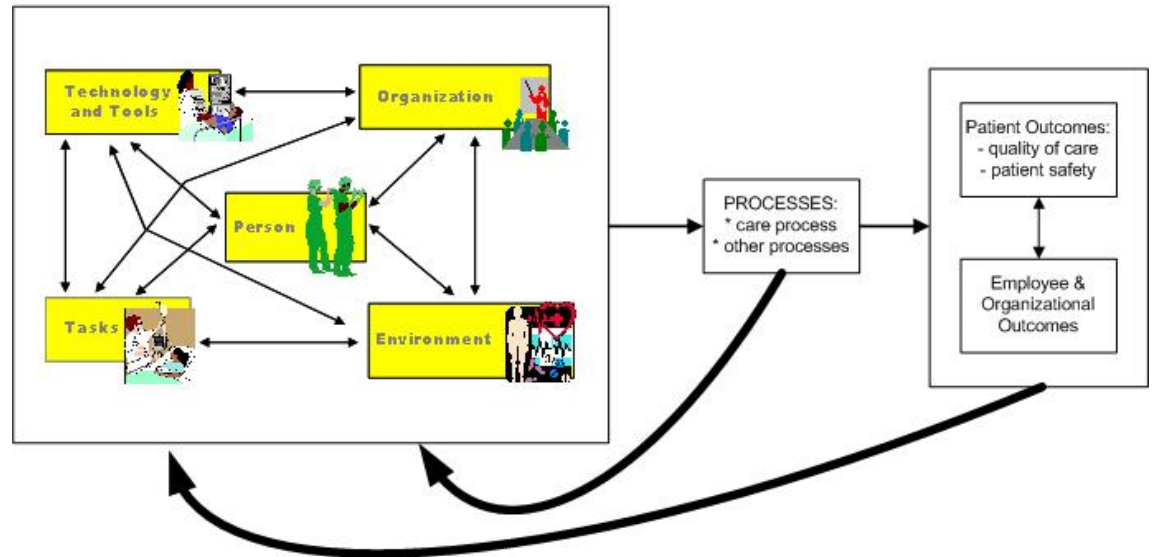
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Center for Health Care Human Factors



Nous apportons une approche scientifique à la transformation des systèmes et des processus de santé afin d'éviter les erreurs médicales et de garantir des soins fondés sur des preuves..

Facteurs humains et une approche systématique de la sécurité des patients et des professionnels de la santé



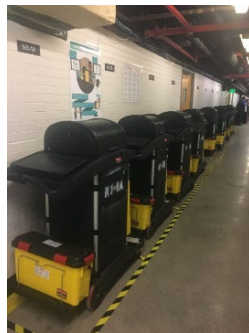
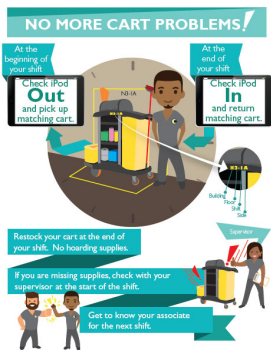
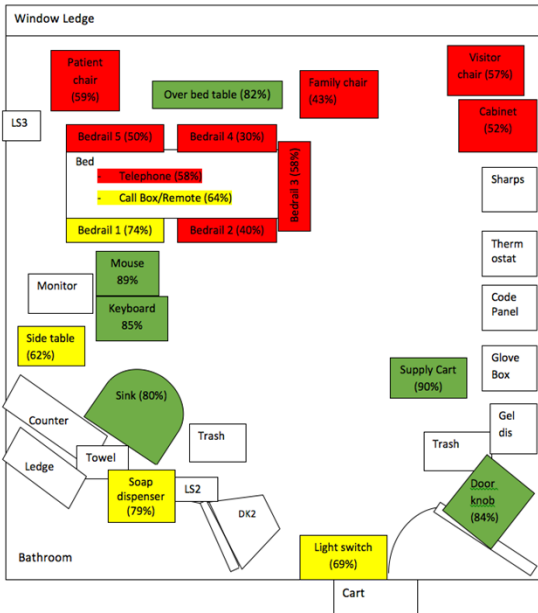
Approche des facteurs humains "Faites en sorte qu'il soit facile de faire ce qui est juste et difficile de faire ce qui ne l'est pas".

Systems Engineering Initiative for Patient Safety (SEIPS)

Projets HFE visant à améliorer la prévention des infections tout au long du continuum de soins



Sample HFE Projects in Infection Prevention



Main Rooms

1. Introduction
2. Knock on the door, "May I come in?"
3. "My name is... I'm the EIC Associate."
4. I am here to perform a daily detailed cleaning.
5. "Our goal is to keep the environment safe and germ-free."
6. Visual inspection of room.
7. "Are there any areas that you are concerned about?"
8. Repeat to change nurse if patient refuses to allow cleaning.

Bathrooms

9. Visual inspection of room.
10. "Are there any areas that you are concerned about?"
11. Repeat to change nurse if patient refuses to allow cleaning.

Things to Watch While Cleaning

- Neatly organize medical supplies, patient belongings (in main room and bath) supplies in bathrooms.
- Position furniture and remote controls for ease of use by patient.
- If you experience any interruptions while cleaning.

Before Entering Patient Room

- Purify/wash hands with soap and water.
- Put on required PPE as instructed by door sign.

On Entering Patient Room

- Introduction
- Knock on the door, "May I come in?"
- "My name is... I'm the EIC Associate."
- I am here to perform a daily detailed cleaning.
- "Our goal is to keep the environment safe and germ-free."
- Visual inspection of room.
- "Are there any areas that you are concerned about?"
- Repeat to change nurse if patient refuses to allow cleaning.

Preparation to Clean

- Scan barcode.
- Remove waste, dirty linen bag, and bathroom trash.
- Turn on all sink/shower faucets (hot and cold) for 2 minutes and sign water flush log.
- "I am turning on the water faucets to flush your water pipes."

Bed Cleaning

1. Bed Area

Daily

- Explain why starting with bed area
- "I will be cleaning the area closest to you first to keep it as clean and germ free as possible."
- "Is it okay if I move your belongings or clothes?"
- Wipe tables.
- Over bed table (in, out and base)**
- Bed side table**
- Telephone (receiver, cords, base and dial pad), Neatly coil cords.
- Remote**
- Bed rolls (including 4 side rails, headboard and footboard)**
- Empty dust bed frame (underneath the bump).

M/W Only

- * Yellow Pledge Cloth on Swiffer Stick
- Door frame, hinges, top/side of door
- Wheels. Start on door side without light switch.
- Alarm clock
- TV & base
- Legs/feet above room sink and sink pipes
- Wipe window sills and coastertops
- Bedboards and corners

Last Updated 9/3/18



Les interventions ne sont pas toutes équivalentes

Interventions plus faibles

- Avertissements & inscriptions
- Nouvelles dispositions
- Formation
- Chèques doubles

Interventions moyennes


- Check-lists
- Plus de briefings
- Réduire les distractions

Meilleures Interventions

- Véritable participation des cadres
- (Re)conception de processus robustes
- Dispositifs de prévention des erreurs

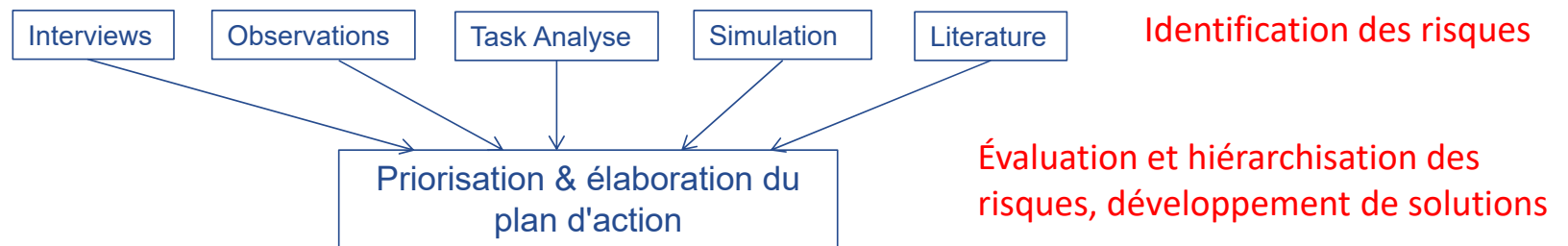


Plusieurs méthodes de HFE

- Interviews
 - Observations/ombres portées
 - Évaluation de l'utilisabilité des outils/technologies d'information
 - Simulations
 - Visites cognitives
 - **Évaluation proactive des risques**
 - **Outil d'identification et de réduction des obstacles (BIM)(Gurses et al, 2009)**
 - Mode d'échec de la santé et analyse d'impact (HFMEA)
 - Autre
- 

Approche pour une gestion proactive des risques (par ex. BIM)

1. Évaluation proactive des risques



2. Caractère participatif et itératif de l'étude et des interventions

Amélioration multidimensionnelle grâce à une évaluation proactive des risques

L'ergonomie participative

Approche de conception centrée sur l'humain pour le développement de listes de contrôle



- Nurse- Environmental Care Relations
- Safety Culture
- Training/ Coaching pour une amélioration
- Engagement avec patients et familles
- Etc.

JOHNS HOPKINS MEDICINE

Before Entering Patient Room

- ☐ Purse/wash hands with soap and water
- ☐ Put on required PPE, as instructed by door sign

On Entering Patient Room

- ☐ Introduction
 - ☐ Knock on the door: "May I come in?"
 - ☐ "My name is ___ I am the EVC Associate."
 - ☐ Turn here to perform a daily detailed cleaning.
- ☐ Our goal is to keep the environment safe and germ free.
- ☐ Visual inspection of room
- ☐ "Are there any areas that you are concerned about?"
- ☐ Report to charge nurse if patient refuses to allow cleaning.

Preparation to Clean

- ☐ Scan barcode
- ☐ Remove waste, dirty linen bag, and bathroom trash
- ☐ Turn on all sink/shower faucets (hot and cold) for 30 seconds and open water flush tap
- ☐ "I am turning on the water faucets to flush your water pipes."

Bed Area

Daily

- ☐ Explain why starting with bed area
 - ☐ It will be cleaning the area closest to you first to keep it as clean and germ free as possible.
 - ☐ "If it's okay I'm moving your belongings as I clean"
- ☐ Roll patient
- ☐ **Over bed table (in, out and base)**
- ☐ **Bed side table**
- ☐ Telephone (receiver, cords, base and dial pad), Health call cord.
- ☐ Remote
- ☐ **Bed rails (excluding 4 side rails, headboard and footboard)**
- ☐ Dangle dual bed frame (underneath the bed)

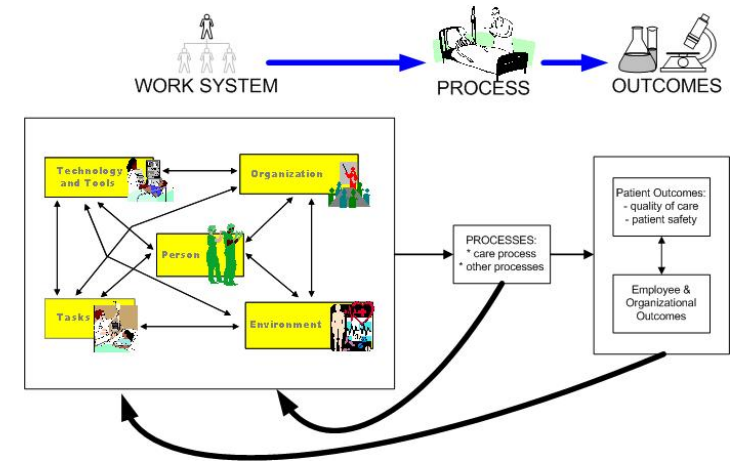
M/W only

- * Yellow Pledge Cloth on Sufferer Stick
- ☐ Door frame, hinges, top/sides of door
- ☐ Yards: Start on door side without light switch
- ☐ Alarm clock
- ☐ TV set & base
- ☐ Ledges above room sink and sink pipes
- ☐ Wide window sills and cross-vents
- ☐ Baseboards and corners

Last Updated 9.13.18

Conformité aux lignes directrices fondées sur des données probantes

- Le respect systématique des directives fondées sur des preuves est un défi, mais il est essentiel pour la sécurité des patients.
- Nécessité d'une **approche interdisciplinaire pour améliorer la compliance**
- Du point de vue des facteurs humains : La conformité comme "propriété du système".



Outil d'identification et de réduction des obstacles (BIM)*

The Joint Commission Journal on Quality and Patient Safety

Tool Tutorial

A Practical Tool to Identify and Eliminate Barriers to Compliance with Evidence-Based Guidelines

Readers may submit Tool Tutorial inquiries and submissions to Steven Berman at sberman@jcrinc.com.

Ayse P. Gurses, Ph.D.; David J. Murphy, M.D.; Elizabeth A. Martinez, M.D., M.H.S.; Sean M. Berenholtz, M.D., M.H.S.; Peter J. Pronovost, M.D., Ph.D.

***Similaire à l'AMDEC ou à l'approche proactive de l'évaluation des risques**

Comportement basé sur des preuves pour prévenir la CLABSI

- Suppression des lignes inutiles
- Hygiène des mains avant l'intervention
- Précautions de barrière maximales
- Nettoyage de la peau avec de la chlorhexidine
- Éviter l'insertion inguinale

Interventions pour réduire le CLABSI

- Intervention éducative visant à sensibiliser les médecins aux pratiques de contrôle des infections fondées sur des données probantes
- Chariot central d'insertion des cathéters
- Objectifs quotidiens pour les tours
- Liste de contrôle pour le personnel soignant au lit
- Autorisation donnée aux infirmières d'arrêter les interventions en cas de non-respect des directives



Étapes de l'outil d'identification et d'atténuation des obstacles (BIM)*

- Étape 1 : Former l'équipe interdisciplinaire
- Étape 2 : Identifier les obstacles
 - Observez le processus
 - Suivez le processus
 - Posez des questions sur le processus
- Étape 3 : Récapituler les obstacles dans un tableau
- Étape 4 : Prioriser les obstacles
- Étape 5 : Créer un plan d'action pour chaque obstacle prioritaire

* Gurses et al. (2009) A practical tool to identify and eliminate barriers to evidence-based guideline compliance. *Joint Commission Journal on Quality and Patient Safety* 35(10):526-532

Étape 2 : Identifier les obstacles

- Surveiller le processus
 - Intégration de différents points de vue - personnel soignant, hygiène hospitalière, facteurs humains/expert QI effectuant des observations
 - Pourquoi est-il difficile de se conformer aux règles ?
 - Étapes sautées, work-arounds

Étape 2 : Identifier les obstacles

- Demandez quelle est la procédure : Demandez au personnel...
 - s'ils connaissent la ligne directrice ou s'ils sont d'accord avec elle?
 - quels sont les problèmes et les obstacles dans votre service qui pourraient entraver le respect de cette ligne directrice ?
 - Avez-vous des suggestions pour améliorer le respect de la ligne directrice ?
 - Questions spécifiques (par exemple, comment trouver la date à laquelle un cathéter veineux central a été introduit chez un patient)
- Suivez le processus :
 - Essayez de respecter la ligne directrice dans une simulation ou, le cas échéant, dans des conditions réelles

Types d'obstacle

- **Professionnels de la santé**

- Connaissance, attitude
- Habitudes de pratique actuelles

- **Relatif aux guidelines**

- Applicabilité à la population de patients
- Preuves à l'appui de la ligne directrice
- Facilité d'adhésion

- **Système**

- Outils et technologies insuffisants ou mal conçus
- Structure organisationnelle inadéquate (par exemple, dotation en personnel, politiques)
- Soutien insuffisant de la direction
- Culture du service/de l'hôpital
- Mécanismes de feedback insuffisants
- Manque de clarté du système

- **Autres**

L'ambiguïté des systèmes*, un obstacle à la conformité

Types d'ambiguïté

- Tâche
- Responsabilité
- Attente
- Méthode
- Exception

* Gurses AP, et al. Systems ambiguity and guideline compliance: A qualitative study of how intensive care units follow evidence-based guidelines to reduce healthcare-associated infections. Quality and Safety in Health Care, 2008; 17(5):351-59.

Ambiguïté de la méthode

- La complexité de certaines lignes directrices et l'environnement de travail exigeant des unités de soins intensifs

"Le protocole strict en matière de glucose est très verbeux et je n'ai pas assez de temps pour le lire... J'ai développé ma propre méthode pour calculer l'insuline à administrer. J'ai fait ce travail assez souvent pour pouvoir estimer la quantité d'insuline que je dois administrer en fonction des tendances [de l'état du patient]... J'ai le sentiment que [suivre le TGC] prendra plus de temps pour atteindre l'objectif que ce que j'ai déjà pu faire [avec ma propre méthode]".

- La possibilité de trouver rapidement le matériel nécessaire sans avoir à le chercher longtemps a été citée comme un facteur clé pour le respect de certaines directives.

"Il est vraiment facile de respecter les directives relatives à l'insertion d'un cathéter veineux central (CVC) dans cette unité, car tout ce dont vous avez besoin est disponible sur le chariot [pour l'insertion d'un CVC]".

Ambiguïté de la tâche

Manque de clarté de l'objectif

"Souvent, [le personnel de l'équipe de nuit] continue à donner des sédatifs aux patients pour les empêcher de bouger et de s'extuber... Vous devez annuler tous les ordres, car si vous donnez des ordres de PRN, les patients les recevront pendant la nuit. Il faut vraiment avoir un objectif clair de ce dont le patient a besoin, et l'équipe de nuit doit le comprendre... Sinon, vous arrivez le matin dans le service et vous constatez que le patient n'est pas réveillé et ne peut donc pas participer à l'étude de sevrage".

Stratégies visant à réduire l'ambiguïté des tâches : Repères visuels, indications claires de ce qui doit être fait pour le patient et standardisation des processus

"Pour les patients présentant un risque d'aspiration, comme les patients ORL, les médecins entrent la consigne [tête de lit >30°] dans l'ordinateur. La secrétaire du service imprime ensuite cette consigne en gros caractères gras et l'affiche dans la chambre du patient".

Barrier Identification Form

Facteurs contributifs	Obstacle(s)	Interventions possibles
Personnel soignant/médecins		
Habitudes actuelles de la pratique : Que faites-vous actuellement (ou pas) ?	Les cathéters sont rarement abordés lors des réunions interdisciplinaires quotidiennes	Ajouter le cathéter au formulaire de visite
Guideline		
Simplicité du respect de la ligne directrice. Quel est l'impact de cette ligne directrice sur la charge de travail ?		
Système		
<u>Outils & technologies</u> Le matériel et l'équipement nécessaires sont-ils disponibles et utilisés de manière appropriée ?	Des matériaux (serviettes complètes) manquaient dans le wagon de ligne pour une procédure de l'après-midi. (le chariot est réapprovisionné la nuit)	
<u>Environnement physique</u> Comment la disposition de l'unité influence-t-elle la conformité ?	Le médecin a traversé un couloir bondé pour se laver les mains au lavabo suivant avant l'intervention	Rendre l'accès aux lavabos plus confortable ?
<u>Suivi des performances et mécanisme de feedback</u> Comment le service sait-il qu'il applique la ligne directrice de manière cohérente (et appropriée) ?	Absence de mécanisme de surveillance du cathéter veineux central et de retour d'information	Examen de l'utilisation des cathéters veineux centraux lors des réunions mensuelles du service
Autres?		

Résumé et priorisation des obstacles

Obstacle	Référence à la directive	Source	Score de probabilité*	Score de gravité†	Score de priorité des obstacles‡	Objectif pour ce cycle QI ?
Difficulté pour le chirurgien de se nettoyer les mains avant d'insérer un cathéter veineux central	Hygiène des mains	Observation Entretien	4	3	12	Oui
Des objets manquent dans le chariot du cathéter veineux central (en particulier en fin d'après-midi)	Technique d'asepsie complète et Nettoyer la peau avec de la chlorhexidine	Observation Visite	3	3	9	Oui

***Score de probabilité : quelle est la probabilité qu'un médecin rencontre cette barrière ?**

Rarement 2. Occasionnellement 3. Probablement 4. Fréquemment

†Score de gravité : quelle est la probabilité que l'expérience d'une barrière particulière entraîne le non-respect de la directive ?

Rarement 2. occasionnellement 3. probablement 4. souvent

‡Score de priorité de la barrière = Score de probabilité

X Score de gravité

Élaboration d'un plan d'action

Obstacle prioritaire	Mesures potentielles	Source	Score Impact*	Faisabilité Score†	Priorité d'action Score‡	Ce cycle QI ?	Responsable de la mesure	Métriques de performance (méthode)	Date de contrôle
Difficultés pour les prestataires à se nettoyer les mains avant de procéder à l'insertion d'un cathéter veineux central.	Installer des lavabos dans les chambres	Observation	3	0	0	Nein			
	Placer des désinfectants pour les mains à base d'alcool dans les chambres	Observation Entretien	4	4	16	Oui	KM	Respect de l'hygiène des mains(Observation)	2 mois

* **Évaluation de l'impact potentiel** : quel est l'impact potentiel de l'intervention sur l'amélioration de l'adhésion aux lignes directrices ?

0. aucun impact 1. faible 2. moyen 3. élevé 4. très élevé

† **Évaluation de la faisabilité** : dans quelle mesure est-il possible de mettre en œuvre l'action proposée ?

0. irréalisable 1. faible 2. moyen 3. élevé 4. très élevé


‡ **Évaluation de la priorité des mesures** = Évaluation de l'impact potentiel X Évaluation de la faisabilité

Conclusions

- Des approches innovantes sont nécessaires pour la sécurité des patients et la prévention
- La perspective HFE/systemique est importante pour
 - d'identifier et de hiérarchiser systématiquement les problèmes
 - de développer des solutions efficaces et durables
- Ces approches HFE/système peuvent être adaptées et appliquées à de nombreux problèmes dans différentes configurations de soins

Références

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Des questions / commentaires ?

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