

# Innovations based on human ergonomics for infection control

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# Nosocomial infection globally

As per WHO

**7% - 12%**

**Hospitalised patients get  
Nosocomial Infection**

# Nosocomial Infection in India

In India

**11% to 83%**

**Hospitalised patients are prone for different kind of Nosocomial Infections**

V Ramasubramanian, Vivek Iyer, Sandeep Sewlikar, Anish Desai. Epidemiology of healthcare acquired infection – An Indian perspective on surgical site infection and catheter related blood stream infection; Indian Journal of Basic and Applied Medical Research; September 2014: Vol.-3, Issue- 4, P. 46-63



**Around**

**30%**

**people die after acquiring  
Nosocomial Infection**

# Impact of Nosocomial Infection

- More than **3,50,000 life** per year are lost annually.
- The estimated added expenditure is in excess of **\$200,00,00,000** per year.

Helen W. Boucher, et al. Bad Bugs, No Drugs: No ESKAPE! An Update from the Infectious Diseases Society of America -IDSA Report on Development Pipeline. Clin Infct Dis 2009;48:1-12.

# Whom to blame.....

Approx **27%**

**Adverse events are due to  
negligence**

Brennan TA, Leape LL, Laird NM, et al. Incidence of adverse events and negligence in hospitalized patients: results of the Harvard Medical Practice Study I. *N Engl J Med* 1991; 324: 370-6



Doctors Are  
**AWESOME**

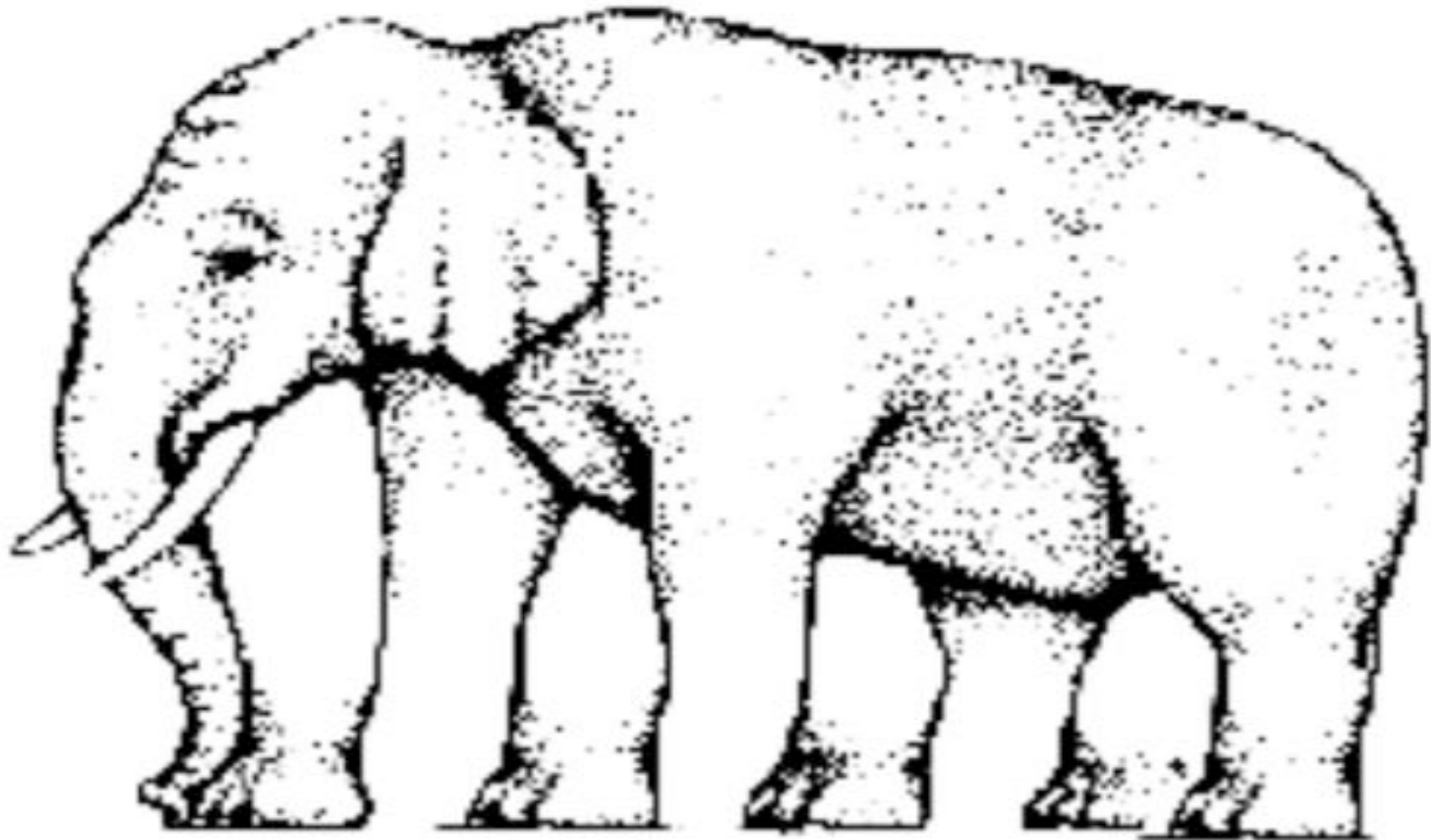


**AGREE or DIE**

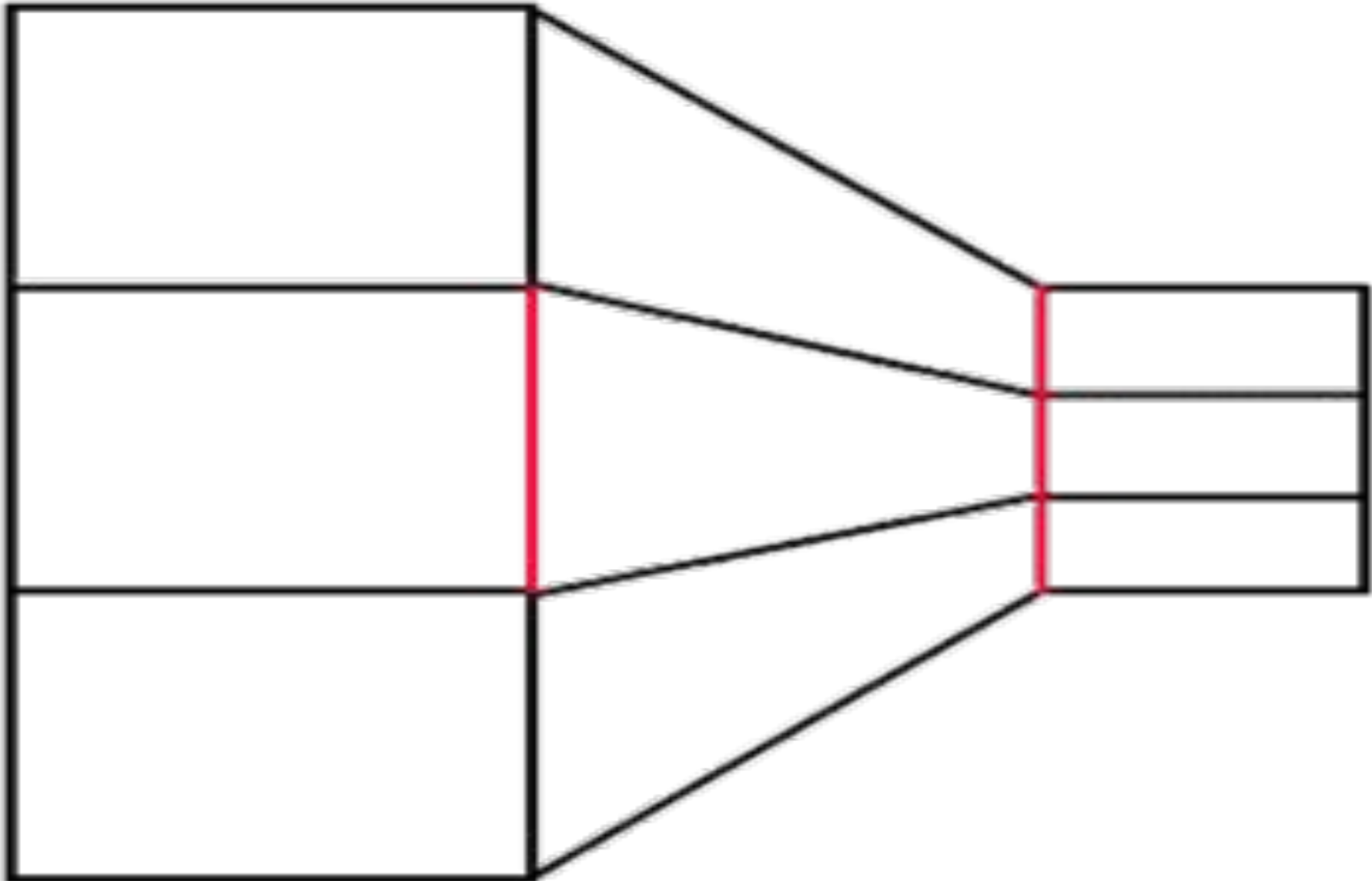
A black and white close-up portrait of Albert Einstein, showing his characteristic wild, wavy hair and a full, white beard. He is looking directly at the camera with a slight, thoughtful expression. The background is dark and out of focus.

How **Smart** Are You?

**Count the legs of this elephant**

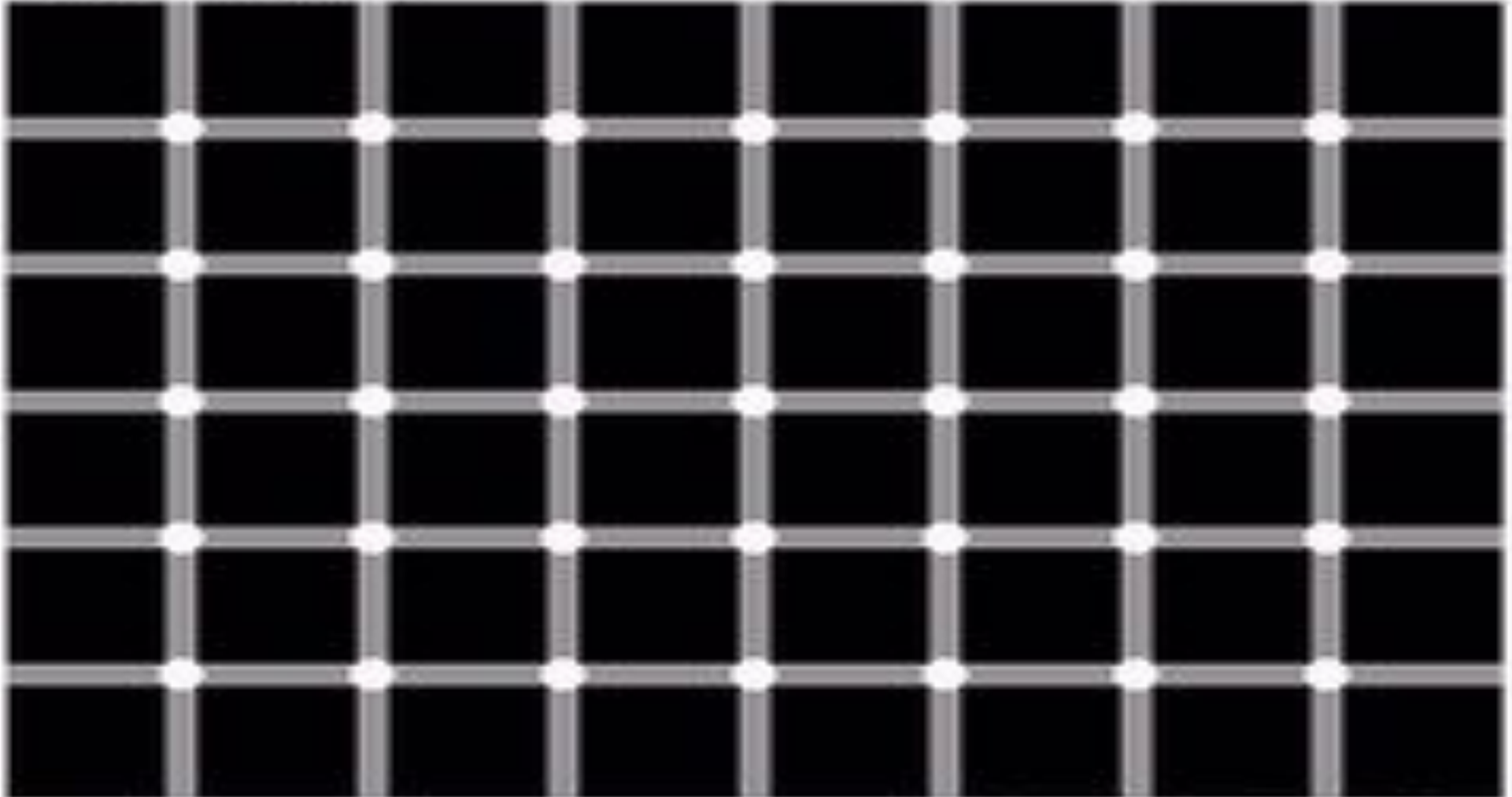


**Are Red line of same length ?**



# Count the black dots in this picture

Count those black dots!



<http://listen.torvalds.org/headbuff>

**Human Brain do have limits ....**



NO



SOMKING





tricot

159

99

# Complexity in Healthcare





**SOLUTION**



# What is human Ergonomics

*"Ergonomics (or human factors) is the scientific discipline concerned with the understanding of the **interactions among humans and other elements of a system**, and the profession that applies theoretical principles, data and methods to design in order to optimize human well-being and overall system performance."*

International Ergonomics Association (2000)

# Human Ergonomics in Infection control

control  
Infection  
care  
PCA  
gloves  
HandWashing  
Standard  
Safety  
Precautions  
rules  
personal  
Germs

Infection  
Prevention  
and You



# Impact of hand hygiene on infection control

Only Proper Hand wash by clinical staff can reduce the Nosocomial infection by more than

50%





# Major factors in Human Ergonomics

- **Organisational factors**
- **Environmental factors**
- **Personal factors**
- **Latent Factors**

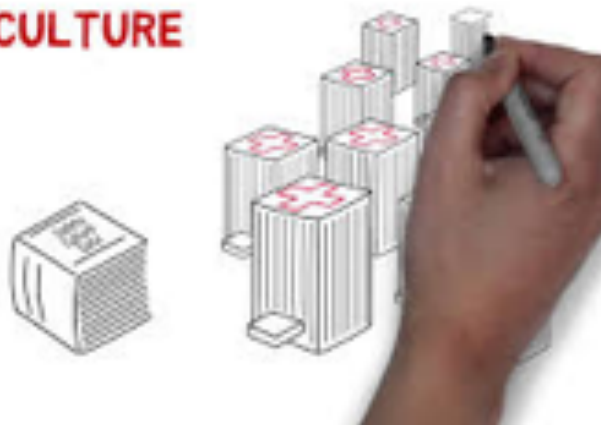
# Organisational Factor



# Organisational factor



**SAFETY CULTURE  
DEBRIEF**



## **POLICY**

### **Guidance**

- Underpinning principles and values
- Goals and objectives

### **Information**

- Strategies to achieve objectives
- Specific actions to be taken
- Desired outcomes
- How the policy should be reviewed

# Organisational factor



## Evidence-Based Practices



# Environmental Factor

SPIDERMAN IN UNITED STATES:

I WILL HELP U

A Spider-Man figure is shown in a crouching position on a rooftop in a city. The background shows a dense urban landscape with tall buildings under a clear sky. The figure is in a ready-to-act pose.

SPIDERMAN IN INDIA:

HELP ME.....!!!!

A Spider-Man figure is shown lying face down on a rooftop in a city. The background shows a dense urban landscape with tall buildings and a sky filled with a complex network of power lines. The figure is in a state of helplessness.

# Environmental Factor



# Environmental Factor



# Environmental Factor

Hand gels are available to use on all wards and at each main entrance



Help us keep our hospitals safe  
Working together to control infection

The Royal West Berkshire and ICGH  
Infection Control Group



Important Notice for all Visitors

Please help reduce the spread of infections  
Please sanitise your hands when ENTERING or LEAVING this area

Thank you

www.drlgroup.com

# Environmental Factor

**NHS**

## Hand-washing technique with soap and water

1. Wet hands with water
2. Apply enough soap to cover all hand surfaces
3. Rub hands palm to palm
4. Rub back of each hand with palm of other hand with fingers interlaced
5. Rub palm to palm with fingers interlaced
6. Rub with back of fingers to opposite palm with fingers interlocked
7. Rub each thumb clasped in opposite hand using a rotational movement
8. Rub tips of fingers in opposite palm in a circular motion
9. Rub each wrist with opposite hand
10. Rinse hands with water
11. Use elbow to turn off tap
12. Dry thoroughly with a single use towel
13. Hand washing should take 11-30 seconds

**cleanwaterworks**

**NHS**  
National Patient Safety Agency

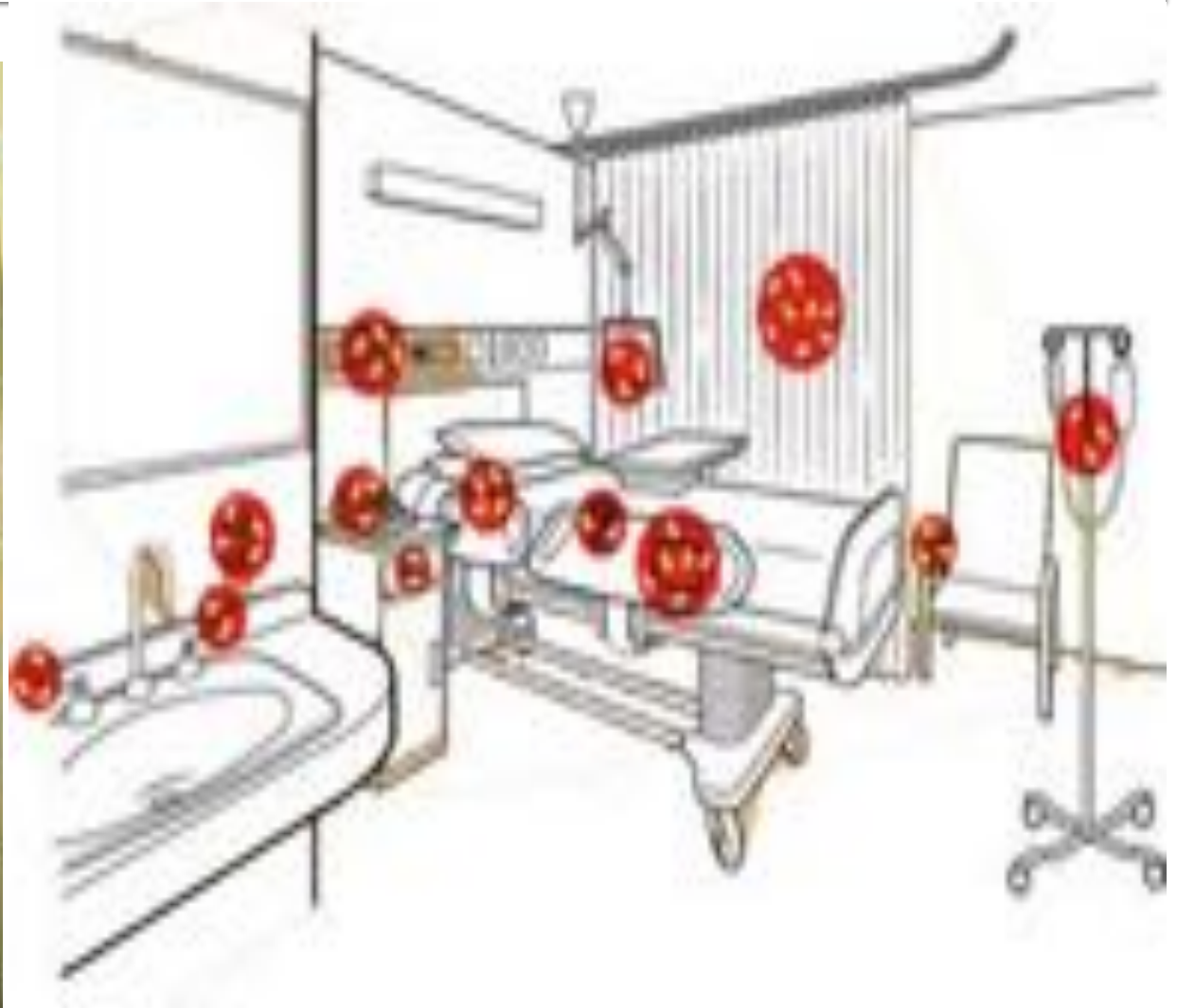
# STOP

## Did you wash your hands?

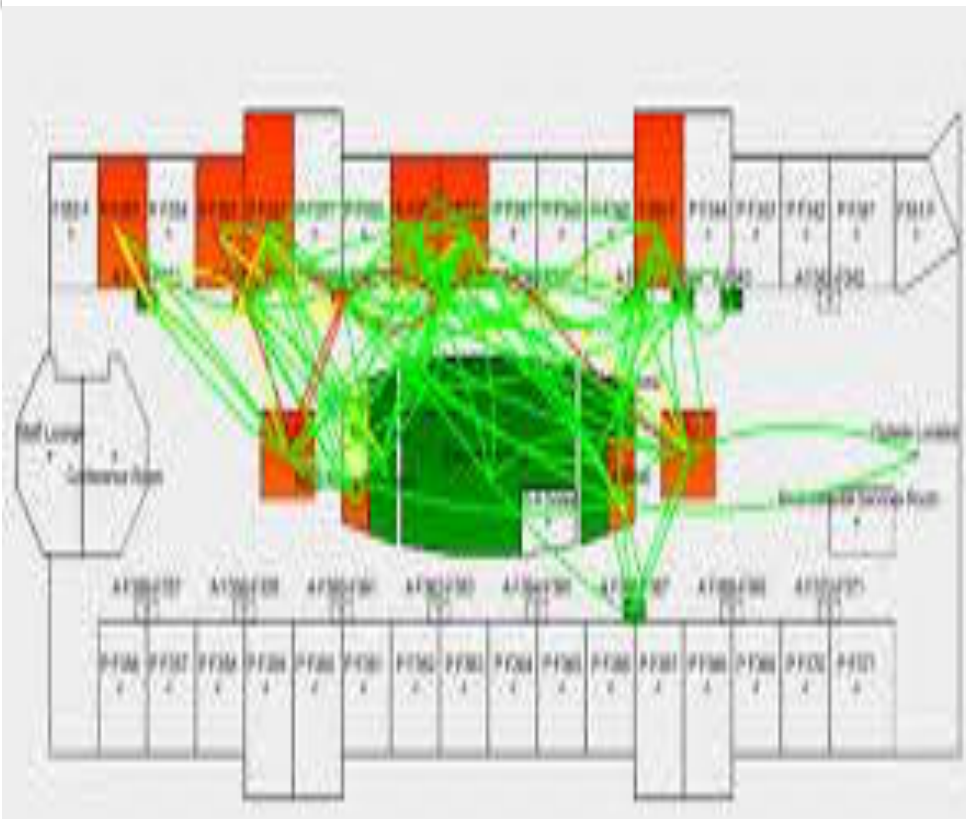
Clean hands reduce the spread of germs.

© The NHS (UK) (2006-2012) www.nhs.uk

# Environmental Factor



# Environmental Factor



# Personal Factors



# Personal Factors



# Personal Factors



# Personal Factors



Survey:  
Excellent:   
Good:   
Fair:   
Poor:

# Personal Factors



# Patient Involvement for Personal Factor



# Involving Patients

- Hand Hygiene compliance Increased to **90%** when patients were directly involved in monitoring.

(Allegranzi et al, 2009)

# Latent Factors



# Latent Factors



# Latent Factors

Near Misses & Close Calls

Proactive  
~~Reactive~~



**THANK YOU EVERYONE!**

