

Introduction to Airborne Infection Prevention and Control (IPC) – More than Just TB!

Paul A. Jensen, PhD, PE, CIH



23 June 2020



www.StopTB.org/wg/ett



PANDEMIC AND
EPIDEMIC DISEASES

Infection prevention and control of epidemic- and pandemic-prone acute respiratory infections in health care



World Health
Organization


WHO 2014



**Guidelines on Core Components
of Infection Prevention and Control
Programmes** at the National and Acute
Health Care Facility Level



WHO 2016



**Guidelines on Core Components
of Infection Prevention and Control
Programmes** at the National and Acute
Health Care Facility Level



WHO 2016

MINIMUM REQUIREMENTS for infection prevention and control programmes



The starting point for implementing the World Health Organization core components of infection prevention and control programmes at the national and health care facility level



WHO 2019

WHO guidelines on
tuberculosis infection
prevention and control
2019 update

THE
END TB
STRATEGY



WHO 2014

Please note: This report has been corrected and replaces the electronic PDF version that was published on December 30, 2005.



MMWR™

Morbidity and Mortality Weekly Report

Recommendations and Reports

December 30, 2005 / Vol. 54 / No. RR-17

Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Settings, 2005

INSIDE: Continuing Education Examination

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

CDC 2005/2019



Coronavirus disease (COVID-19) Pandemic

[Public Advice](#)

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technical guidance](#)

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Coronavirus Disease 2019 (COVID-19)

CDC > Coronavirus Disease 2019 (COVID-19) > Healthcare Professionals > Infection Control



🏠 Coronavirus Disease 2019 (COVID-19)

Symptoms

Testing +

Prevent Getting Sick +

If You Are Sick +

Daily Life & Coping +

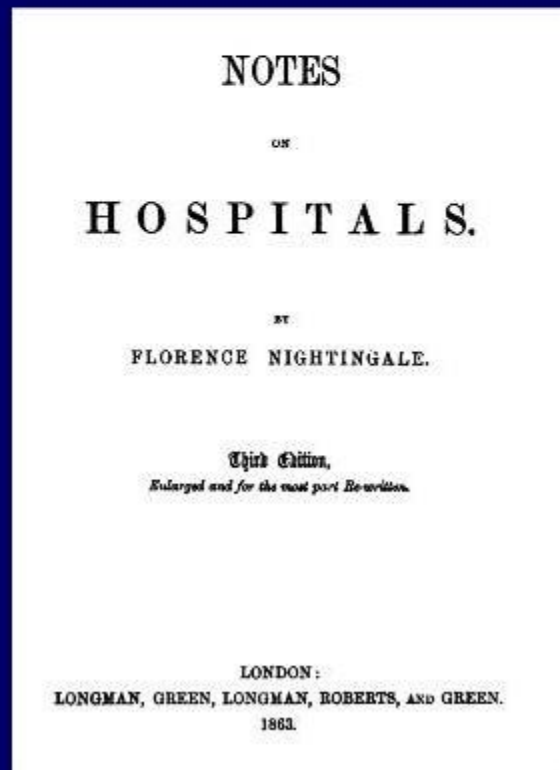
People Who Need Extra
Precautions +

Interim Infection Prevention and Control Recommendations for Patients with Suspected or Confirmed Coronavirus Disease 2019 (COVID-19) in Healthcare Settings

[Print Page](#)

Update May 18, 2020

“It may seem a strange principle to enunciate as the very first requirement of a hospital is that it should do the sick no harm.”



What is Infection Prevention and Control (IPC)?

Prevention of Transmission

Patient to:

Worker
Patient
Visitor
Family

Worker to:

Worker
Patient
Visitor
Family

Visitor to:

Worker
Patient
Visitor
Family

Family to:

Worker
Patient
Visitor
Family

What is airborne IPC?

- **Part of general infection prevention and control!**

First, let's talk about the general IPC!

- **Standard Precautions (formerly known as Universal Precautions)**
- **IPC precautions are based on the transmission method**
 - **Contact**
 - **Large droplet**
 - **Airborne (small droplets)**

How do we reduce risk?



How do we reduce risk?



Excess Occupational Risk

| Work Location | TB Incidence Rate Ratio Relative to General Population TB Incidence Rate |
|-----------------------|--|
| Outpatient Facilities | 4.2 – 11.6 |
| General Medical Wards | 3.9 – 36.6 |
| Inpatient Facilities | 14.6 – 99.0 |
| Emergency Departments | 26.6 – 31.9 |
| Laboratories | 42.5 – 135.3 |

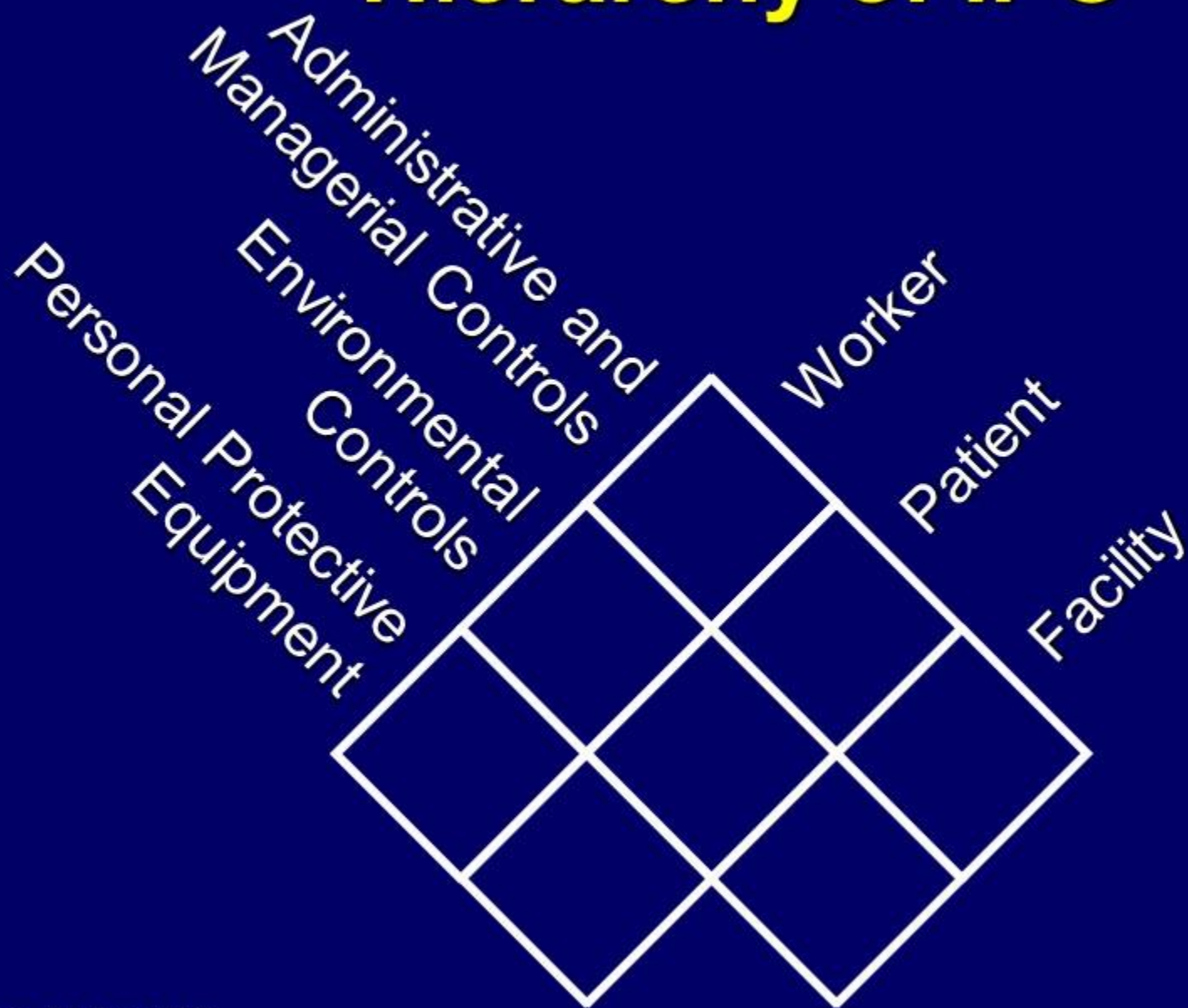
Joshi R, Reingold AL, Menzies D, Pai M [2006]. Tuberculosis among health-care workers in low- and middle-income countries: a systematic review. *PLoS Med* 3(12): e494.

Menzies D, Joshi R, Pai M [2007]. Risk of tuberculosis infection and disease associated with work in health care settings. *Int J Tuberc Lung Dis* 11(6): 593-605.

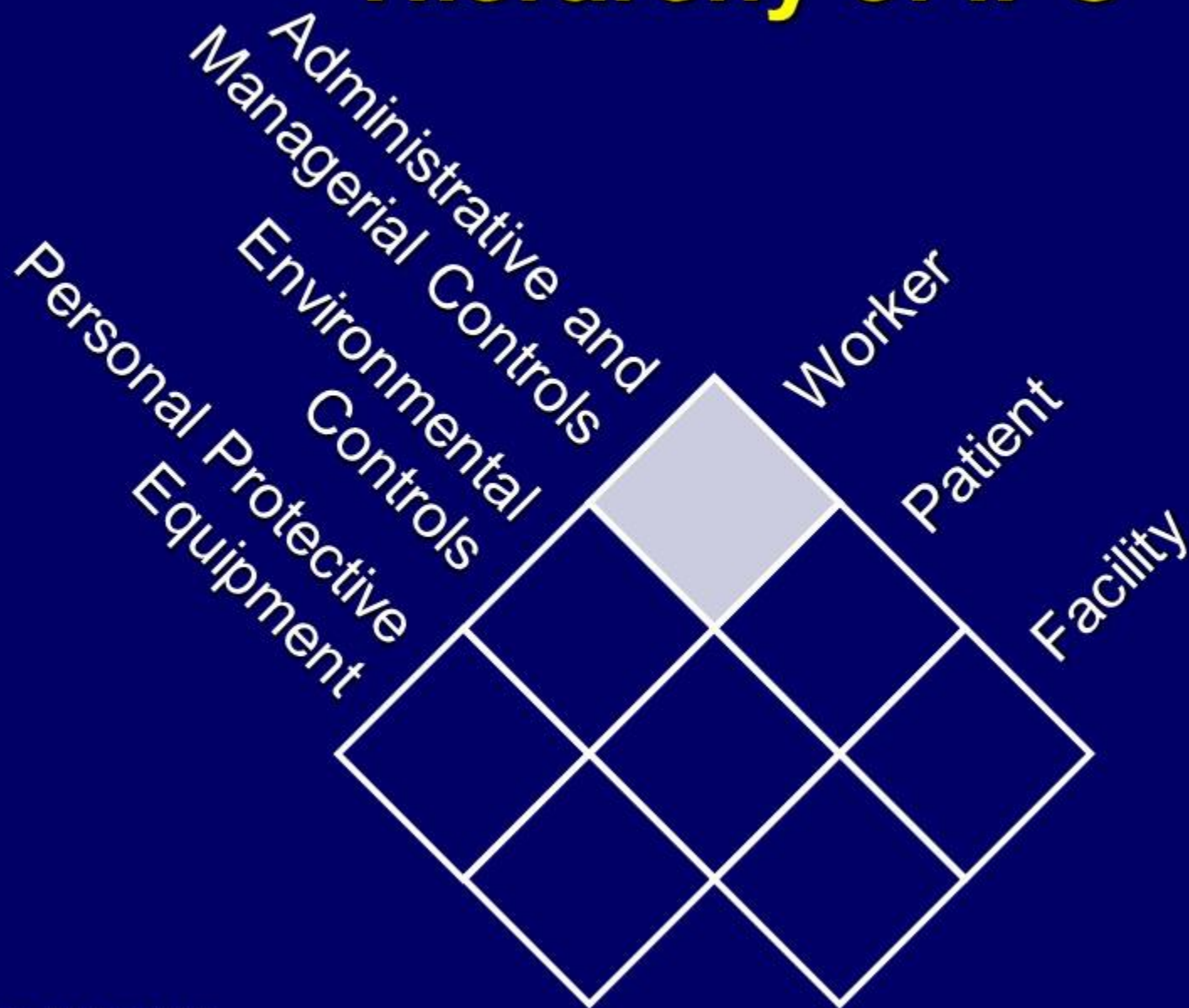
Hierarchy of IPC

- **Administrative Controls** – Reduce risk of exposure, infection, and disease through policies and practices
- **Environmental Controls** – Reduce concentration of infectious bioaerosols in areas where contamination of air is likely
- **Personal Protective Equipment** – Protect personnel who must work in environments with contaminated air, surfaces, patients, specimens, *etc.*

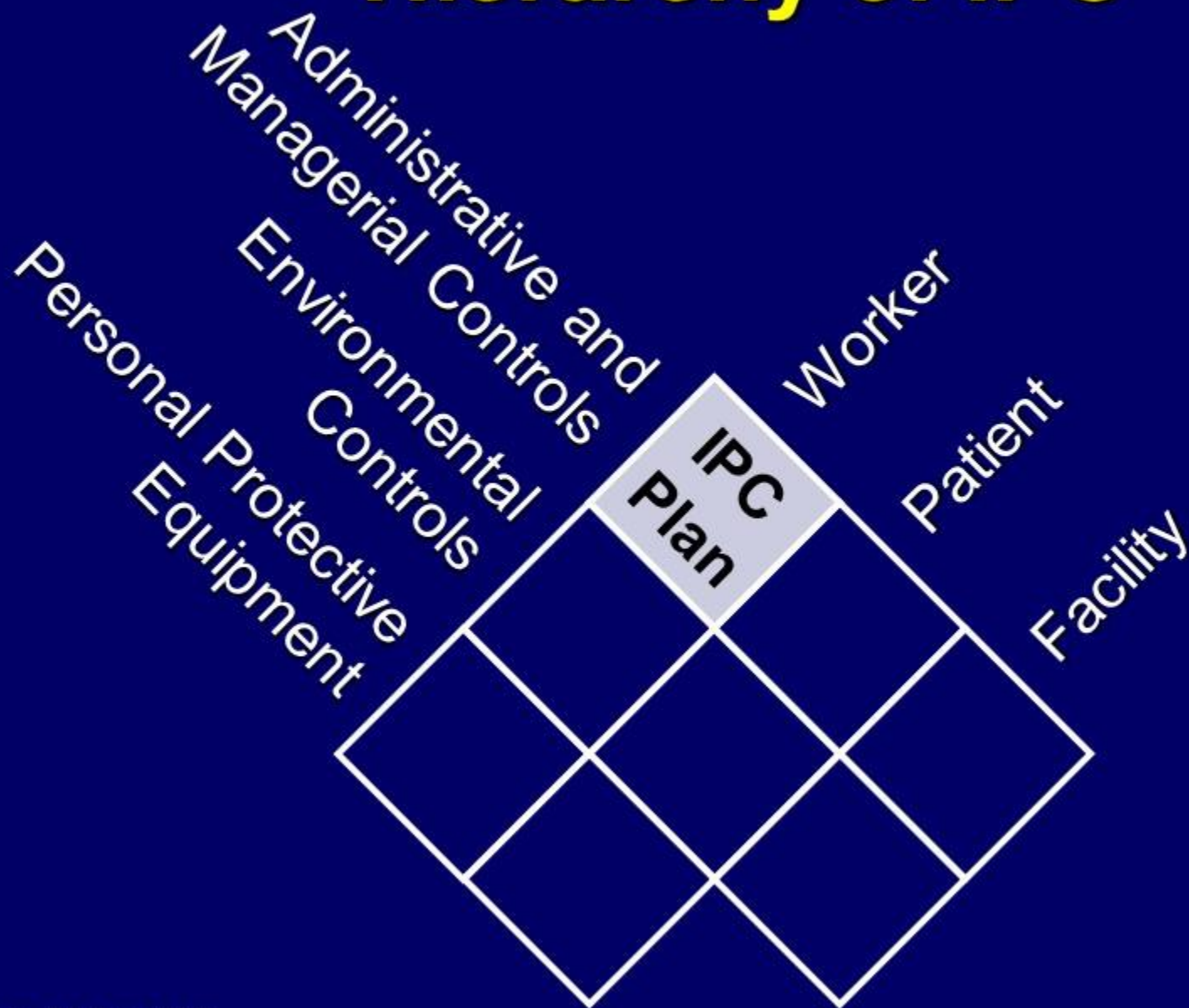
Hierarchy of IPC



Hierarchy of IPC



Hierarchy of IPC



Written IPC Plan



Fundamental Principles of IPC



Facility IPC Assessment



Education and Training



Surveillance and Reporting



Standard Precautions



Transmission-based Precautions



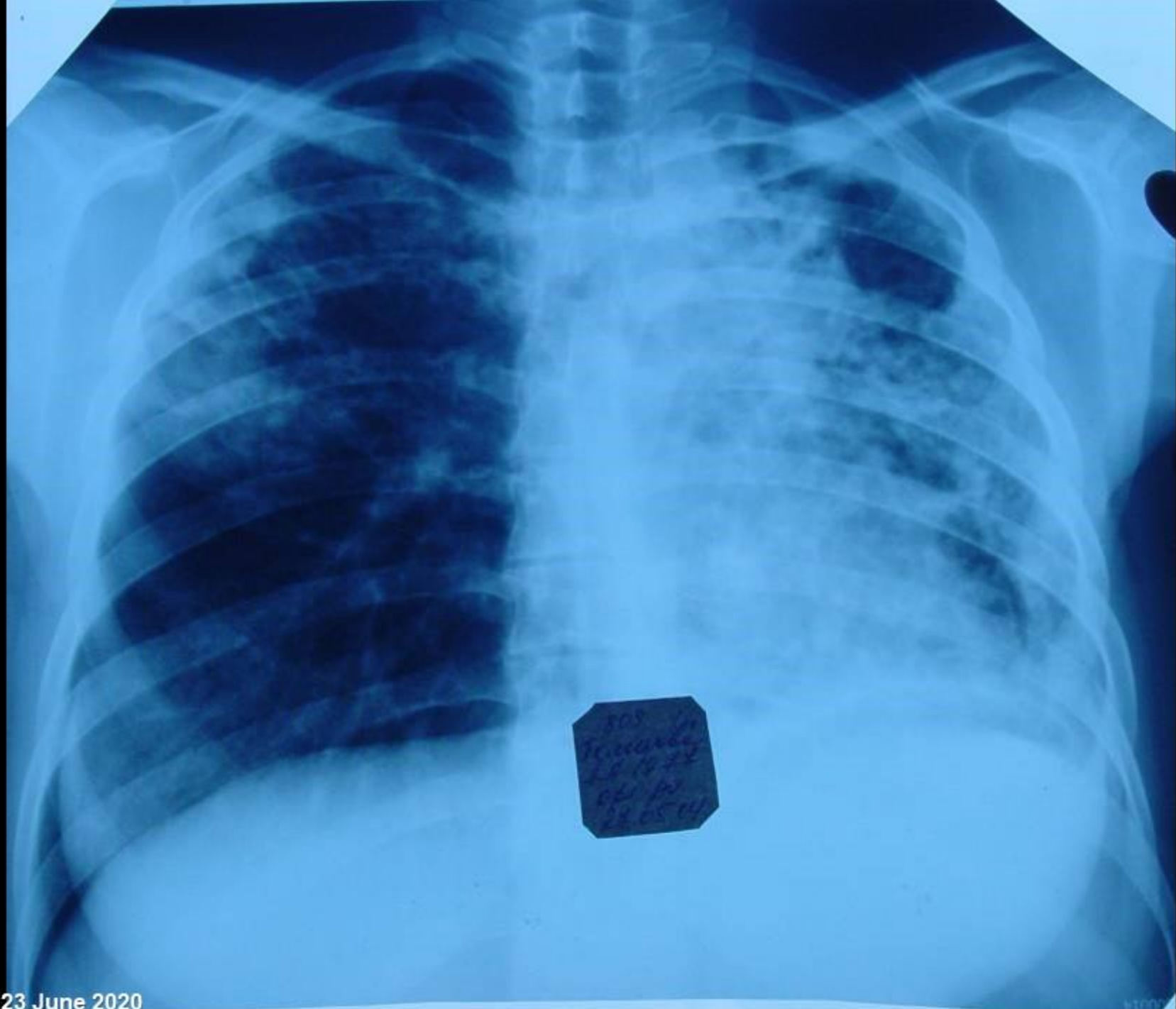
Performance Improvement



Emergency Management Planning

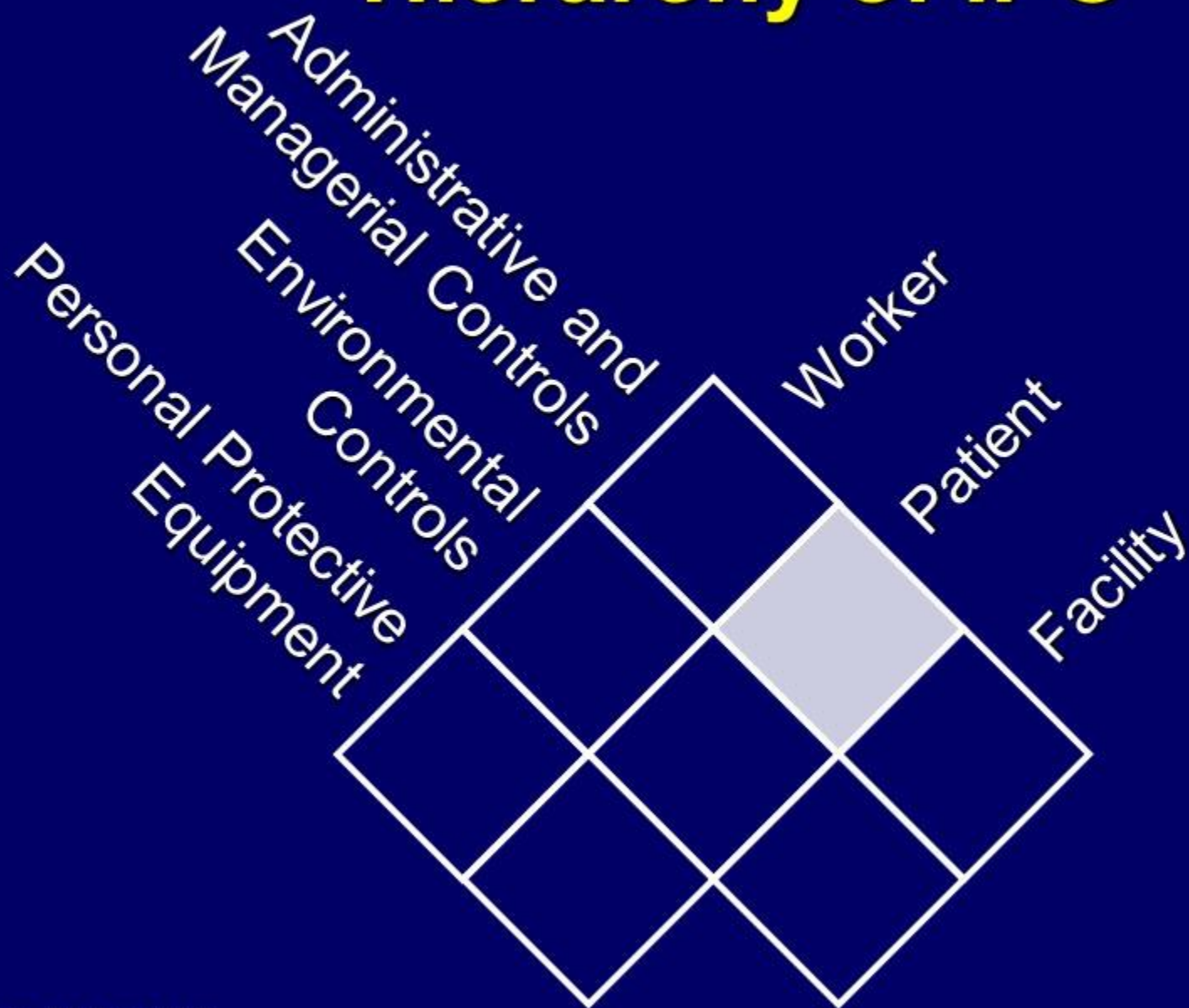


Annual Evaluation

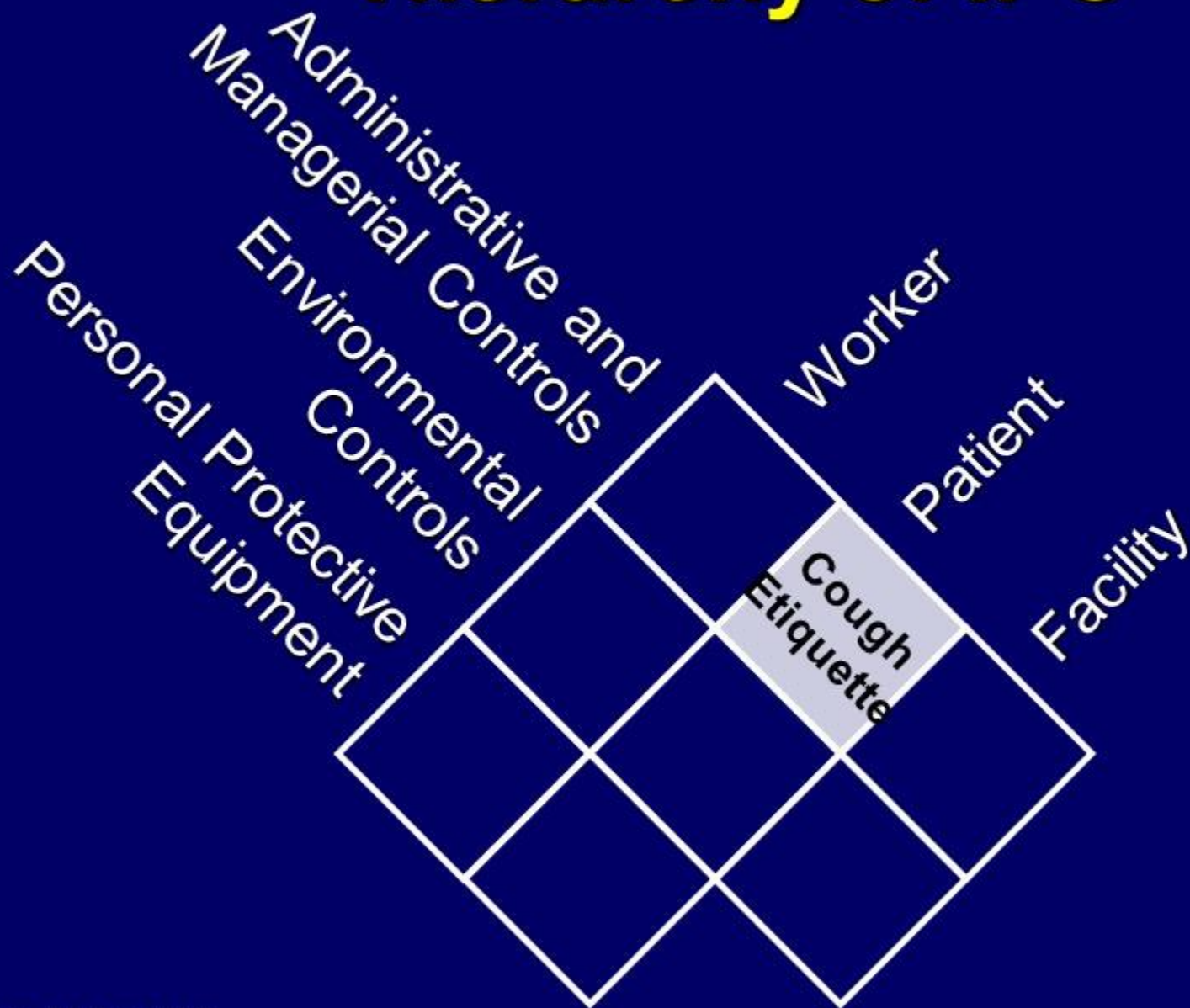




Hierarchy of IPC



Hierarchy of IPC







Source Control

Cough Etiquette and Respiratory Hygiene



Macau, China, 2003. Photo: C Murphy.

IMPORTANT NOTICE TO ALL PATIENTS

Please tell staff immediately if you have flu symptoms

Por favor, informe imediatamente aos funcionários se tiver sintomas de gripe, tosse, espirros ou febre, e se tiver sintomas em qualquer parte do corpo.



1

Cover Your Cough and Sneeze

- Use a tissue to cover your mouth and nose when you cough or sneeze.
- Drop your used tissue in a waste basket.
- You may be asked to wear a mask if you are coughing or sneezing.

and

2

Clean Your Hands

- Wash your hands with soap and warm water or clean with gels or wipes with alcohol.
- Cleaning your hands often keeps you from spreading germs.



Cough etiquette and respiratory hygiene

Cover your cough



- When coughing or sneezing, use a tissue to cover your nose and mouth
- Dispose of the tissue afterwards
- Wear a surgical mask, if possible

Wash your hands



- After coughing, sneezing or blowing your nose, wash your hands with soap and water
- Use alcohol-based liquids, gels or wipes if you do not have access to soap and water

Remember hand washing is the single most effective way to reduce the spread of germs that cause respiratory disease.

People with signs and symptoms of a respiratory infection, especially if the illness starts in the face, should wear a mask when coughing or sneezing, and should use tissues to cover their nose and mouth. Always wash your hands with soap and water after coughing or sneezing.

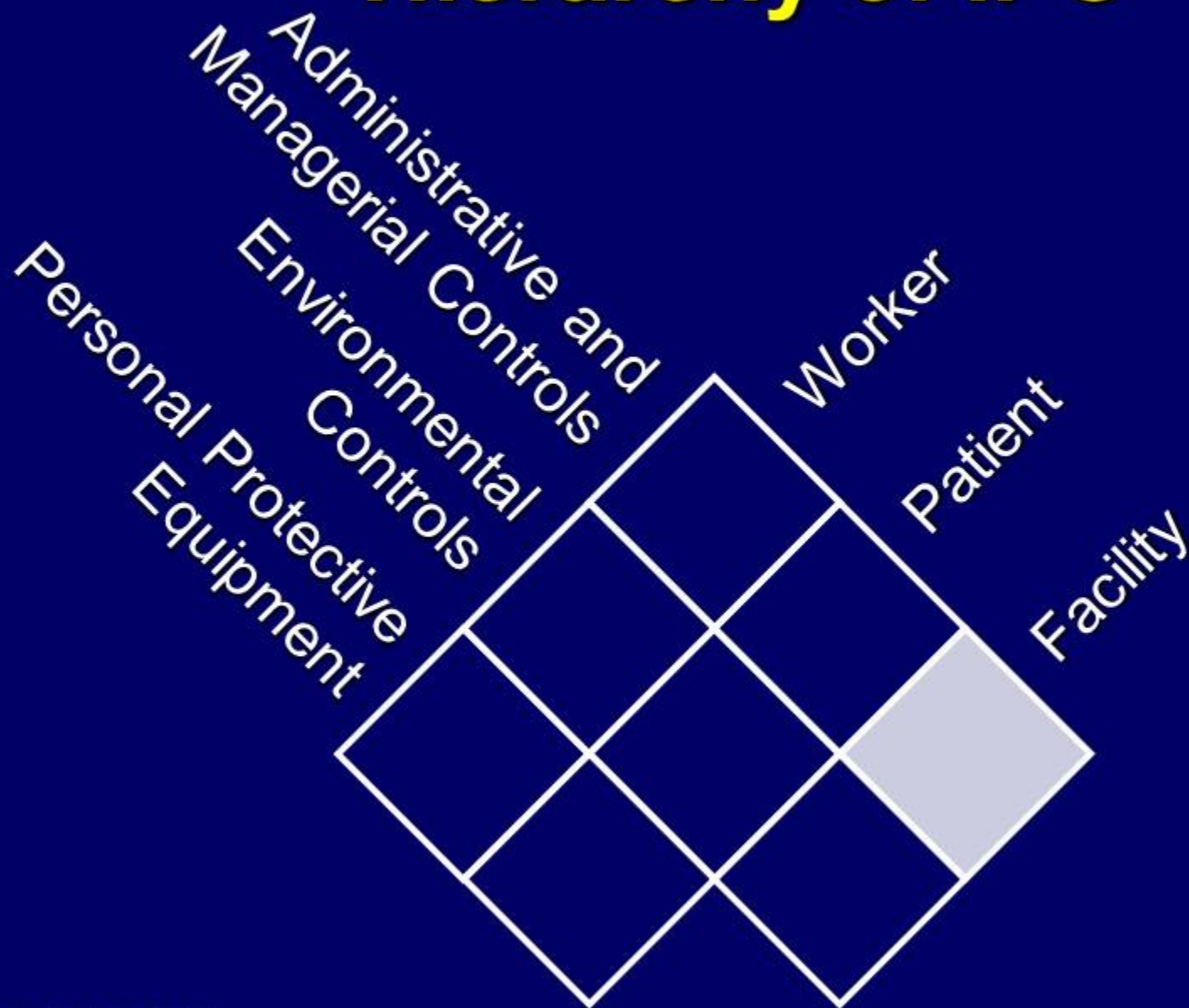




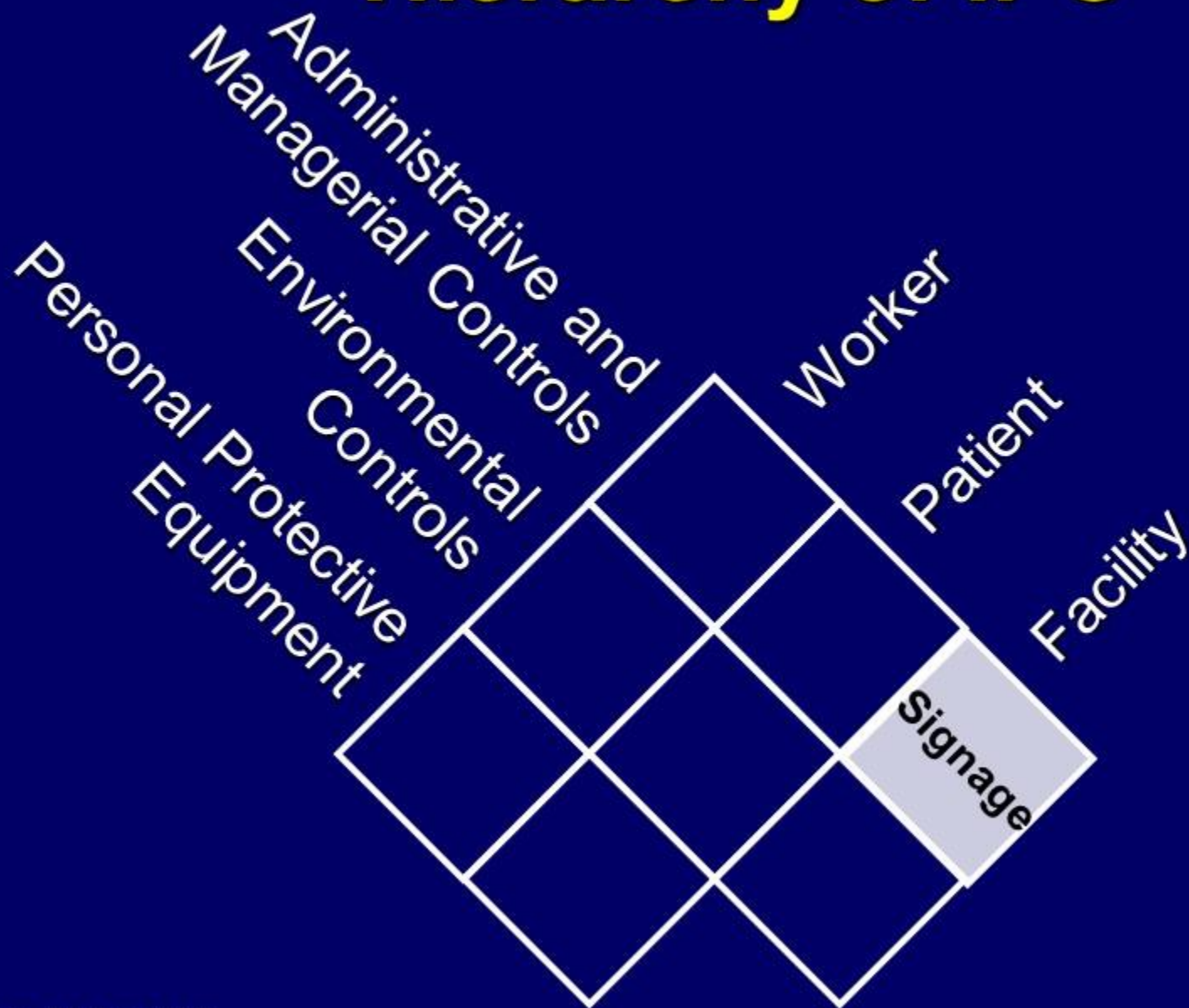
PA Jensen - 23 June 2020

Tullberg

Hierarchy of IPC



Hierarchy of IPC



КОМНАТА ЗАБОРА МОКРОТЫ

РЕЖИМ РАБОТЫ

7.00 – 7.15 – ЛТО-3

7.15 – 7.30 – ЛТО-1

7.30 – 7.45 – ЛХО

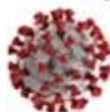
7.45 – 8.00 – ЛТО-2

ВНИМАНИЕ !
ЗОНА ВЫСОКОГО
РИСКА ЗАРАЖЕНИЯ !
ПОЛЬЗУЙТЕСЬ
РЕСПИРАТОРОМ !



PA Jensen – 23 June 2020

Mambo unayopaswa kujua kuhusu COVID-19 ili kujilinda mwenyewe na wengineo



Fahamu kuhusu COVID-19

- Virusi vya Corona (COVID-19) ni ugonjwa unaosababishwa na virusi ambavyo vinaweza kuenea kutoka kwa mtu mmoja hadi kwa mwingine.
- Virusi ambavyo husababishwa COVID-19 ni virusi vipya ambavyo vimeenea kote ulimwenguni.
- Dalili za COVID-19 zinaweza kuwa tofauti kuanzia tulivu (au bila dalili) hadi kwa kuwa mgonjwa vibaya kabisa.



Fahamu jinsi COVID-19 husambazwa

- Unaweza kuambukizwa kwa kutangamana kwa karibu (kama futi 6 au upana wa mikono miwili) na mtu aliyenaye COVID-19. COVID-19 kwa kimsingi husambazwa kutoka kwa mtu mmoja hadi kwa mwingine.
- Unaweza kuambukizwa kutoka kwa vitone vidogo vya hewa ya kupumua pale ambapo mtu aliyekambukizwa ameko hapa, kupiga chafya, au kuongea.
- Pia unaweza kupata kwa kushika sakafu au kifaa ambacho kina virusi hivyo, na kisha kushika mdomo wako, mapua au macho.



Jilinde mwenyewe na wengineo kutokana na COVID-19

- Kwa sasa hakuna chanjo ya kinga dhidi ya COVID-19. Njia bora zaidi ya kujilinda ni kutojiweka wazi kwa virusi hivi vinavyosababisha COVID-19.
- Kaa nyumbani kadiri ziadi iwezekanavyo na uepoke utangamano wa karibu na watu wengineo.
- Vaa kitambaa cha usoni ambacho kinafunika mapua na mdomo wako katika maeneo ya umma.
- Safisha na uwe viini kwenye sakafu zinazoguswa mara kwa mara.
- Osha mikono yako mara kwa mara kwa sabuni na maji kwa angalau sekunde 20, au tumia sanitaiza ya mikono yenye alcohol ambayo ina angalau asilimia 60 ya alcohol.



Zingatia Kukaa mbali na wengineo

- Fanya ununuzi wa mboga na dawa, kuona daktari, na kufanya shughuli za kibenki mtandaoni inapowezekana.
- Ikiwa ni lazima ujifikishe huko wewe kibinafi, kaa angalau futi 6 mbali na wengineo na uwe viini kwenye vifaa ambavyo ni lazima uvishike.
- Pokea bidhaa za kuagiza na vyakula vya kuagiza, na upunguze utangamano wako na wengineo kwa kadiri iwezekanavyo.



Zuia kusambaa kwa COVID-19 ikiwa uko mgonjwa

- Kaa nyumbani ikiwa uko mgonjwa, isipokuwa iwe unaenda huduma ya matibabu.
- Epuka kutumia usafiri za umma, kushiriki usafiri, au teksi.
- Jitenge na watu wengineo na wanyama walio nyumbani kwako.
- Hakuna matibabu mahususi ya COVID-19, lakini unaweza kutafuta uuguzi wa kimatibabu ili kusaidia kupunguza dalili zako.
- Ikiwa unahitaji msaada wa kimatibabu, piga simu kabla.



Fahamu hatari zako za kuwa mgonjwa vibaya zaidi

- Kila mtu yuko katika hatari ya kupata COVID-19.
- Watu wazima waliokomaa na watu wa umri wowote ambao wana hali zingine za kimatibabu zinazowasumbua huenda wakawa katika hatari kubwa zaidi ya kuzidwa na ugonjwa huu vibaya zaidi.



cdc.gov/coronavirus

REDUCE YOUR RISK OF CORONAVIRUS INFECTION



Clean hands with soap and water or alcohol-based hand rub



Cover nose and mouth when coughing with tissue or flexed elbow



Avoid close contact with anyone with cold or flu-like symptoms



Thoroughly cook meat and eggs



Avoid contact with wild or live farm animals



MINISTRY OF HEALTH & WELLNESS

808-ONE-LOVE (863-5683) | www.moh.gov.jm



#ProtectYourselfFromCoronavirus
#StayCoronavirusFree #KeepHealthy

TB AND COVID-19

#ItsTimetoEndTB

#FightCOVID19



GUIDELINES *for*
THE PREVENTION
of
TUBERCULOSIS



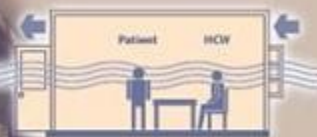
IN HEALTH CARE FACILITIES
IN RESOURCE-LIMITED SETTINGS



WORLD HEALTH ORGANIZATION

WHO 1999

TUBERCULOSIS INFECTION-CONTROL IN THE
ERA *of* EXPANDING HIV CARE AND TREATMENT



Addendum to WHO
*Guidelines for the Prevention of Tuberculosis in
Health Care Facilities in Resource-Limited Settings, 1999*



WHO 2007

Five Steps for Patient Management to Prevent Transmission of TB in HIV Care Settings

| Step | Action | Description |
|----------|------------------------------------|--|
| 1 | Screen | Early recognition of patients with suspected or confirmed TB disease is the first step in the protocol. It can be achieved by assigning a staff member to screen patients for prolonged duration of cough immediately after they arrive at the facility. Patients with cough of more than two weeks duration, or who report being under investigation or treatment for TB*, should not be allowed to wait in the line with other patients to enter, register, or get a card. Instead, they should be managed as outlined below. |
| 2 | Educate | Instructing the above mentioned persons identified through screening in cough hygiene . This includes instructing them to cover their noses and mouths when coughing or sneezing, and when possible providing face masks or tissues to assist them in covering their mouths. |
| 3 | Separate | Patients who are identified as TB suspects or cases by the screening questions must be separated from other patients and requested to wait in a separate well-ventilated waiting area, and provided with a surgical mask or tissues to cover their mouths and noses while waiting. |
| 4 | Provide HIV Services | Triaging symptomatic patients to the front of the line for the services they are seeking (e.g. voluntary HIV counseling and testing, medication refills), to quickly provide care and reduce the amount of time that others are exposed to them is recommended. In an integrated service delivery setting, if possible, the patient should receive the HIV services they are accessing before the TB investigation. |
| 5 | Investigate for TB or Refer | TB diagnostic tests should be done on site or, if not available onsite, the facility should have an established link with a TB diagnostic center to which symptomatic patients can be referred . Also, each facility should have a linkage with a TB treatment center to which those who are diagnosed with TB can be referred . |

WHO 2007



FAST

A Tuberculosis Infection Control Strategy



USAID
FROM THE AMERICAN PEOPLE



TB CARE II

FIRST EDITION: MARCH 2013

This handbook is made possible by the support of the American people through the United States Agency for International Development (USAID). The contents of this handbook are the sole responsibility of TB CARE II and do not necessarily reflect the views of USAID or the United States Government.

TB CARE 2011

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- Find cases Actively
- Separate
- Treat effectively

TB CARE 2011

Test, Trace and Treat:

Partnership to Accelerate
COVID-19 Testing (PACT)
in Africa



TEST

to diagnose cases



TRACE

to identify cases and
their contacts

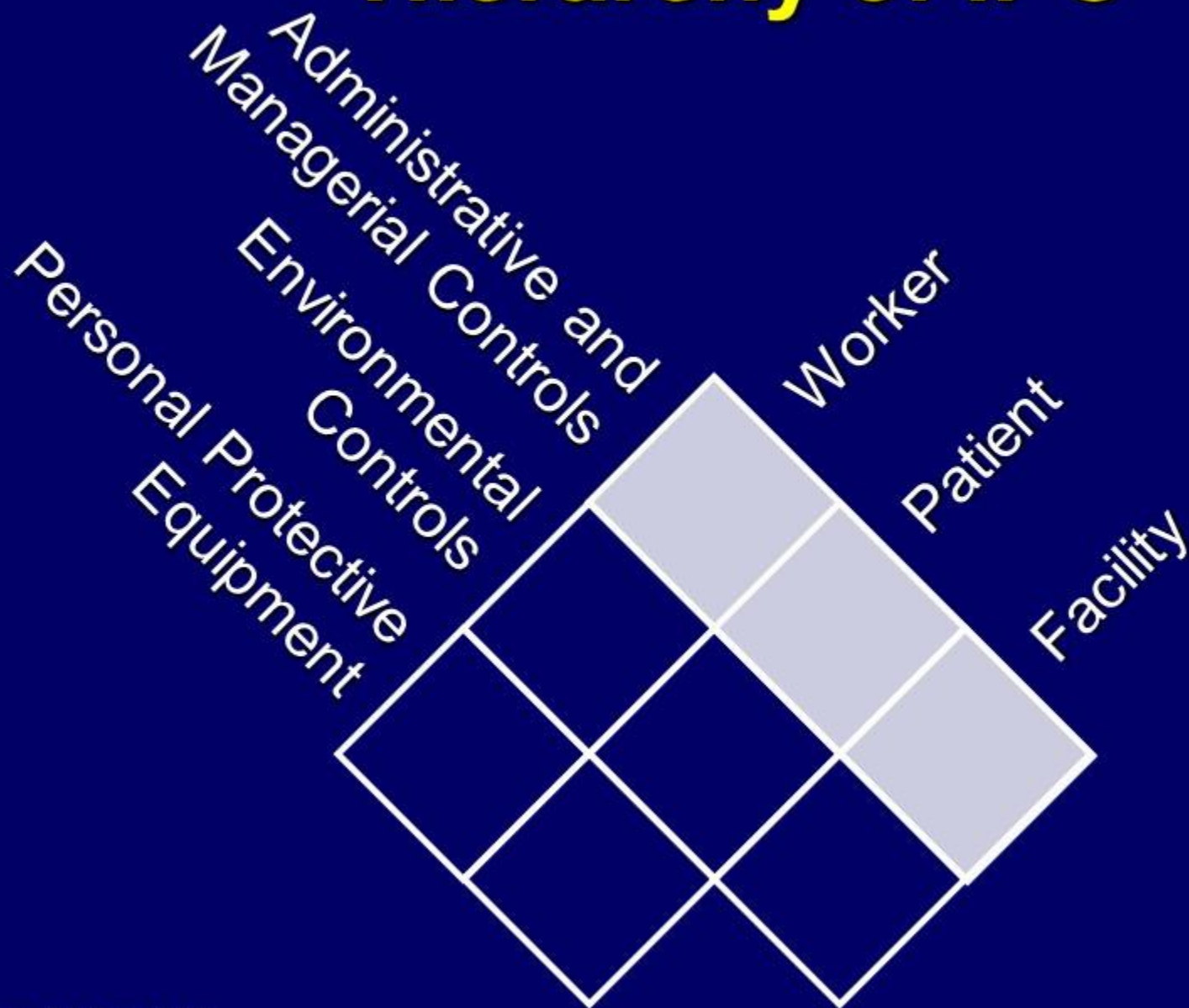


TREAT

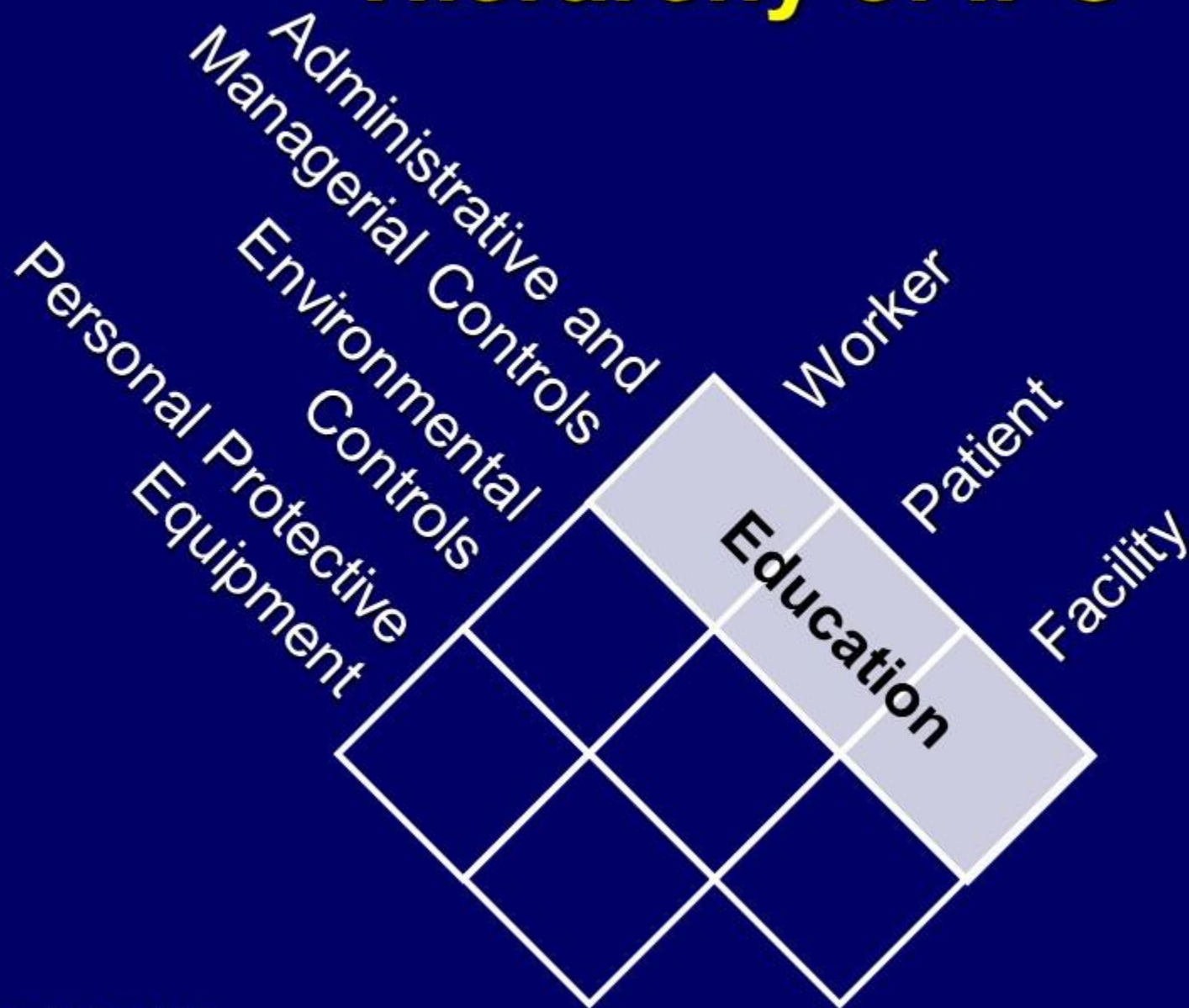
to provide supportive care
in symptomatic cases


Africa CDC 2020

Hierarchy of IPC



Hierarchy of IPC





**Medidas de Control
Ambiental:**

**Irradiación Germicida
Ultravioleta (UVGI)**



28 апреля 2003 года
в России объявлен
Днем "Белого цветка"
(Белый Розовик!)

ШКОЛЬНИКУ О ТУБЕРКУЛЕЗЕ



Туберкулез – опасная болезнь. Чтобы предотвратить ее, от школьнику необходимо соблюдать следующие правила гигиены. Всегда мойте руки с мылом и мыть необходимо эти процедуры

Как передается туберкулез?

Туберкулез передается от больного, когда кашляет. Так же, чихая, смеясь, крича или при разговоре. Туберкулез передается в виде мельчайших капель слюны, мокроты. В них бактерии могут находиться до недели, находясь в состоянии покоя. Туберкулез передается воздушно-капельным путем. Если больной не кашляет и не чихает, туберкулез передается еще одним путем, не менее опасным, – при контакте с туберкулезом. При кашле и чихании в воздух попадают в воздух. При кашле и чихании, особенно в закрытых помещениях, туберкулез передается.

В туберкулез передается через воду, воздух, продукты, пищу. Туберкулез передается, так же, при тесном контакте с больным – через одежду, игрушки.

В организме туберкулез передается туберкулезом. Если человек кашляет и чихает, туберкулез передается, так же, как и при кашле и чихании.

Туберкулез передается воздушно-капельным путем.

Не забывайте мыть руки с мылом и мыть!

Ученые считают, что туберкулез передается воздушно-капельным путем.

Что нужно делать, чтобы избежать себя от заражения туберкулезом?

Поддерживайте чистоту в комнате, где вы живете. Чаще проветривайте помещение. В туберкулезе важно избегать контакта с больными. Не ходите в места скопления людей.

Поддерживайте чистоту в комнате, где вы живете.

Чаще мойте руки с мылом.

При кашле и чихании закрывайте рот и нос платком. Не пейте из чужих стаканов, не пользуйтесь чужими предметами личной гигиены.

Избегайте тесного контакта с больными.

Не ходите в места скопления людей. Если вы кашляете и чихаете, закрывайте рот и нос платком.

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ШКОЛЬНИКИ, ПОМНИТЕ, ТУБЕРКУЛЕЗ ИЗЛЕЧИМ!

БЕДА ЧУЖОЙ НЕ БЫВАЕТ!



ТУБЕРКУЛЕЗ – « БОЛЕЗНЬ СОЦИАЛЬНЫХ СУМЕРЕК »

Детское отделение РПТД

Precaução Respiratória por Aerossol

A disseminação aérea ocorre por via respiratória, através de aerossol disperso pelo ar.



- ☞ Quarto privativo - manter a porta fechada e a janela aberta.
- ☞ Máscara: filtro especial (vestir antes de entrar no quarto).
- ☞ Transporte: o paciente deve usar máscara cirúrgica.

HUCFF/UFRJ

Coordenação de Controle de Infecção Hospitalar

Cough Hygiene



Cover your mouth and nose when you cough. There are three ways of doing this:

Use your upper arm

Use a tissue

Use a surgical mask

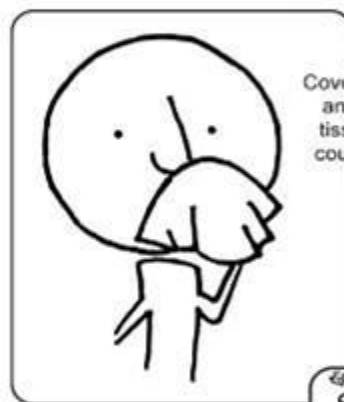


If you have any more questions – talk to people at your closest clinic.



Stop the spread of germs that make you and others sick!

Cover your Cough



Cover your mouth and nose with a tissue when you cough or sneeze or cough or sneeze into your upper sleeve, not your hands.



cough or sneeze into your upper sleeve, not your hands.

Put your used tissue in the waste basket.



You may be asked to put on a surgical mask to protect others.

Clean your Hands

after coughing or sneezing.



Wash with soap and water or clean with alcohol-based hand cleaner.



Minnesota Department of Health
635 S. Robert Street, 100 West Center
St. Paul, MN 55155-1010
651.201.4600 TDD/TTY: 651.201.4607
www.health.state.mn.us



APIC

Association for Professionals in Infection Control and Epidemiology, Inc.

9/10/10

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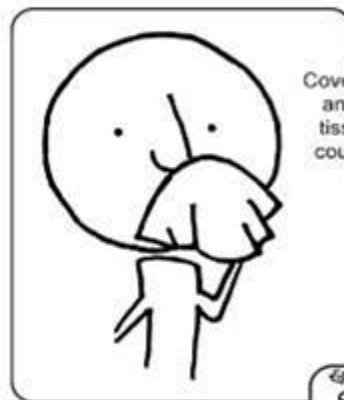


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Minnesota State Board of Health
635 S. Robert Street, 5th Floor 55415
St. Paul, MN 55154-2515
651.224.6464 TDD/TTY: 651.224.4267
www.health.state.mn.us



APIC

Association for Professional Infection Control and Prevention

2020-006

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Ministry of Health
401 O'Robert Street, PO Box 6870
Cape Town 7801
Tel: +27 (0) 21 914 2015
Email: info@mdh.gov.za
www.health.gov.za



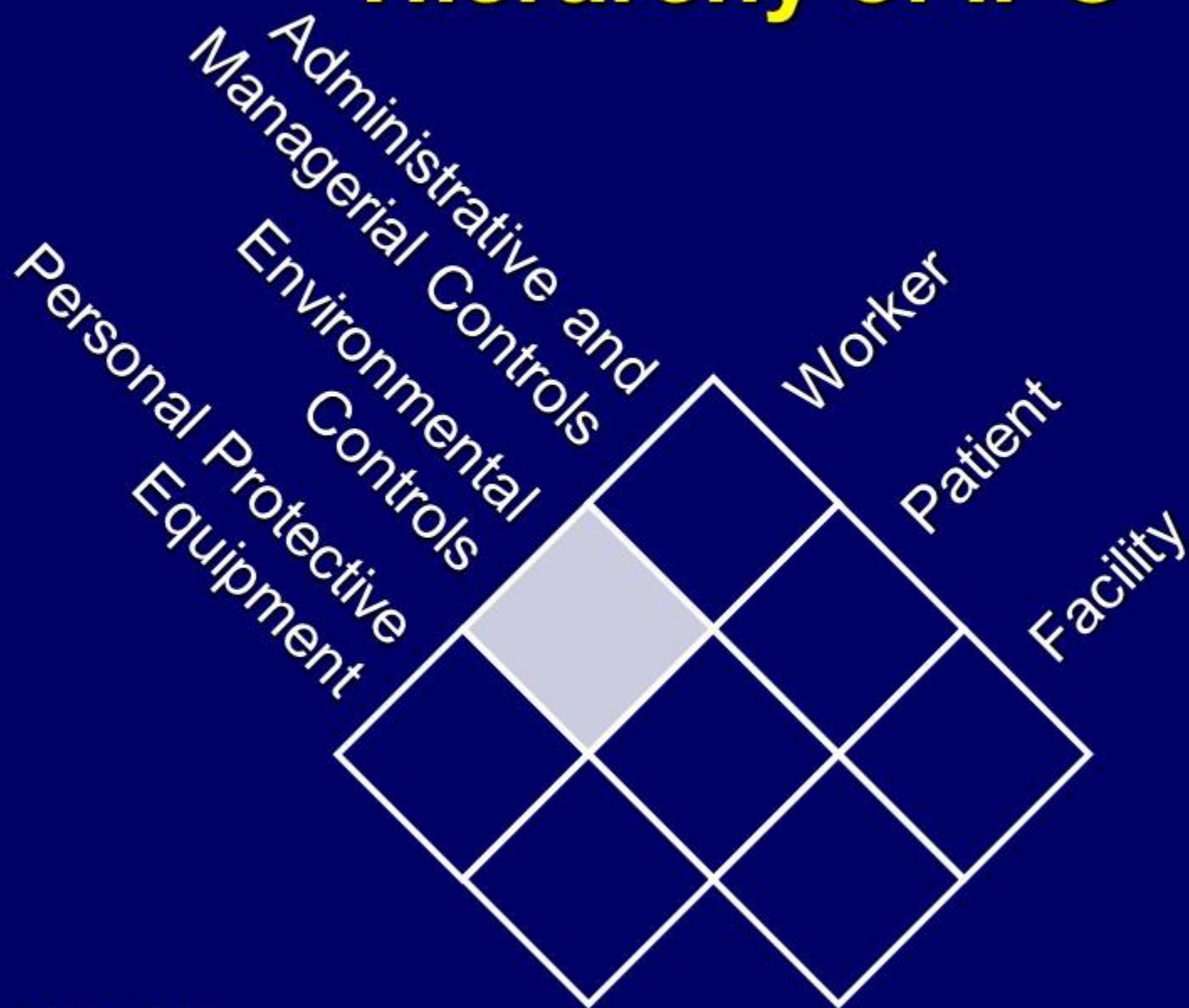
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ASSOCIATION OF PUBLIC HEALTH INFECTION CONTROL

2020-06-23

Hierarchy of IPC



Environmental Controls

What should be thought of first?

Risk ! ! !

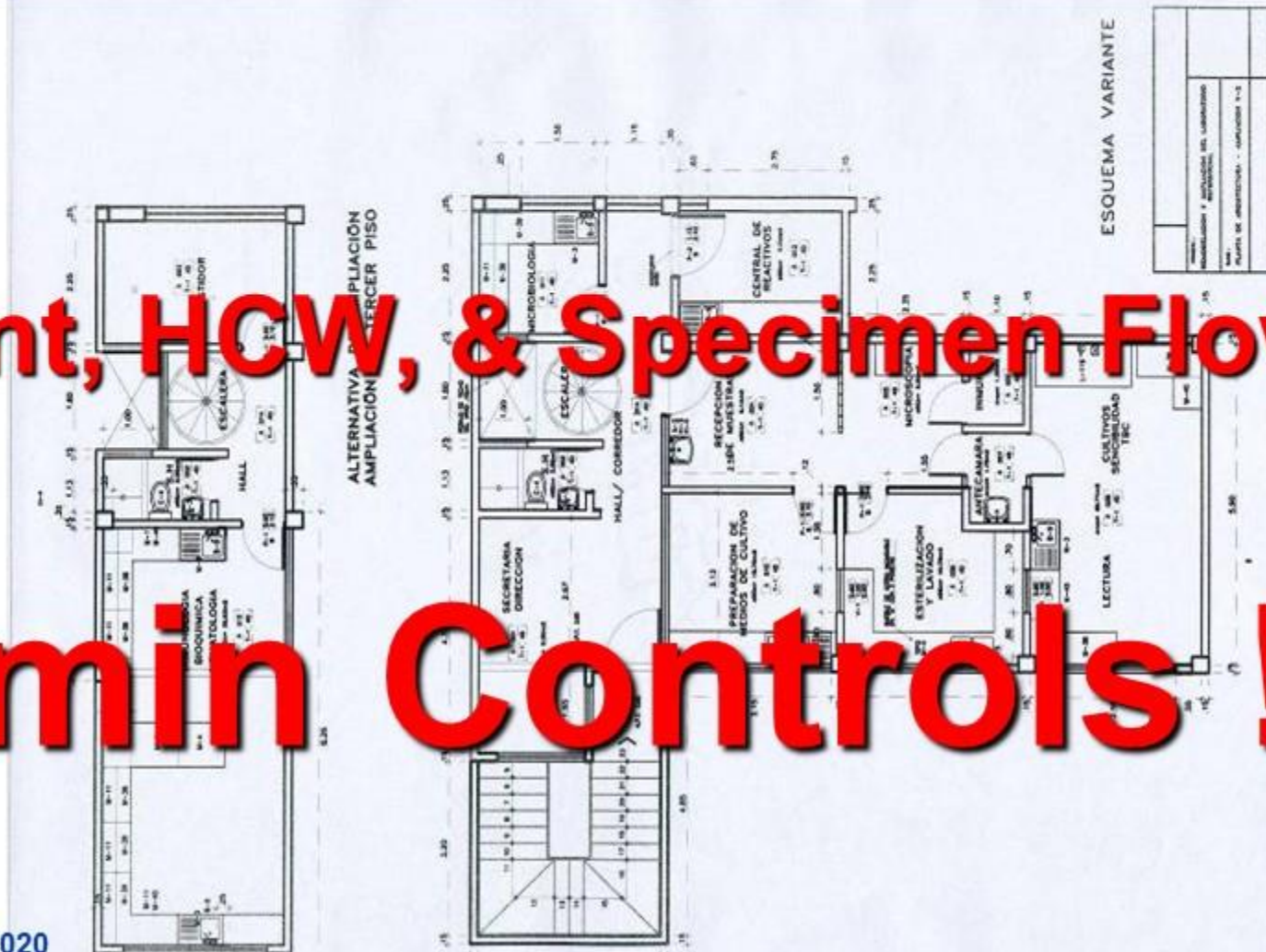
Admin Controls ! ! !

Environmental Controls

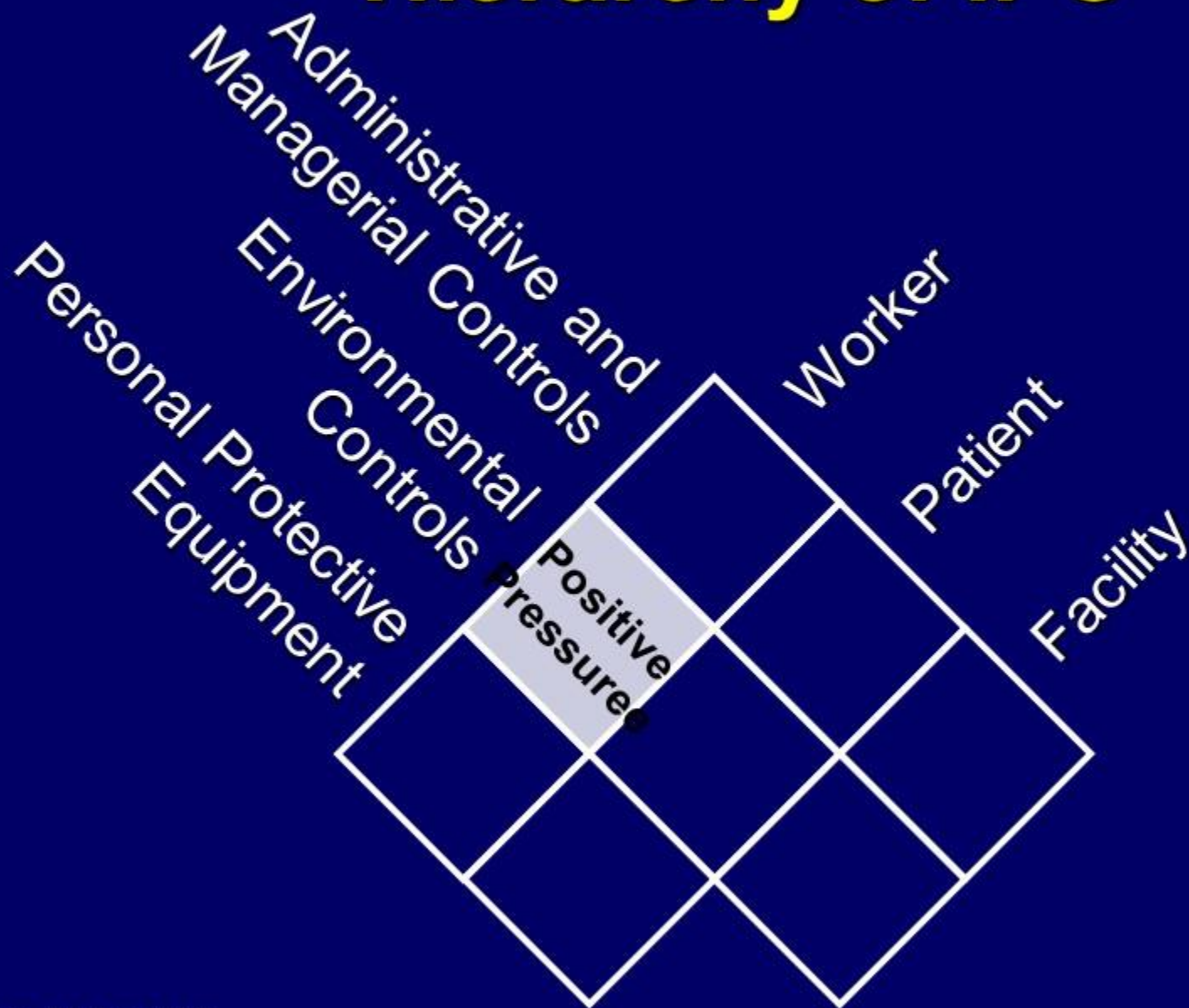
What should be thought of next?

Patient, HCW, & Specimen Flow ! ! !

Admin Controls ! ! !



Hierarchy of IPC







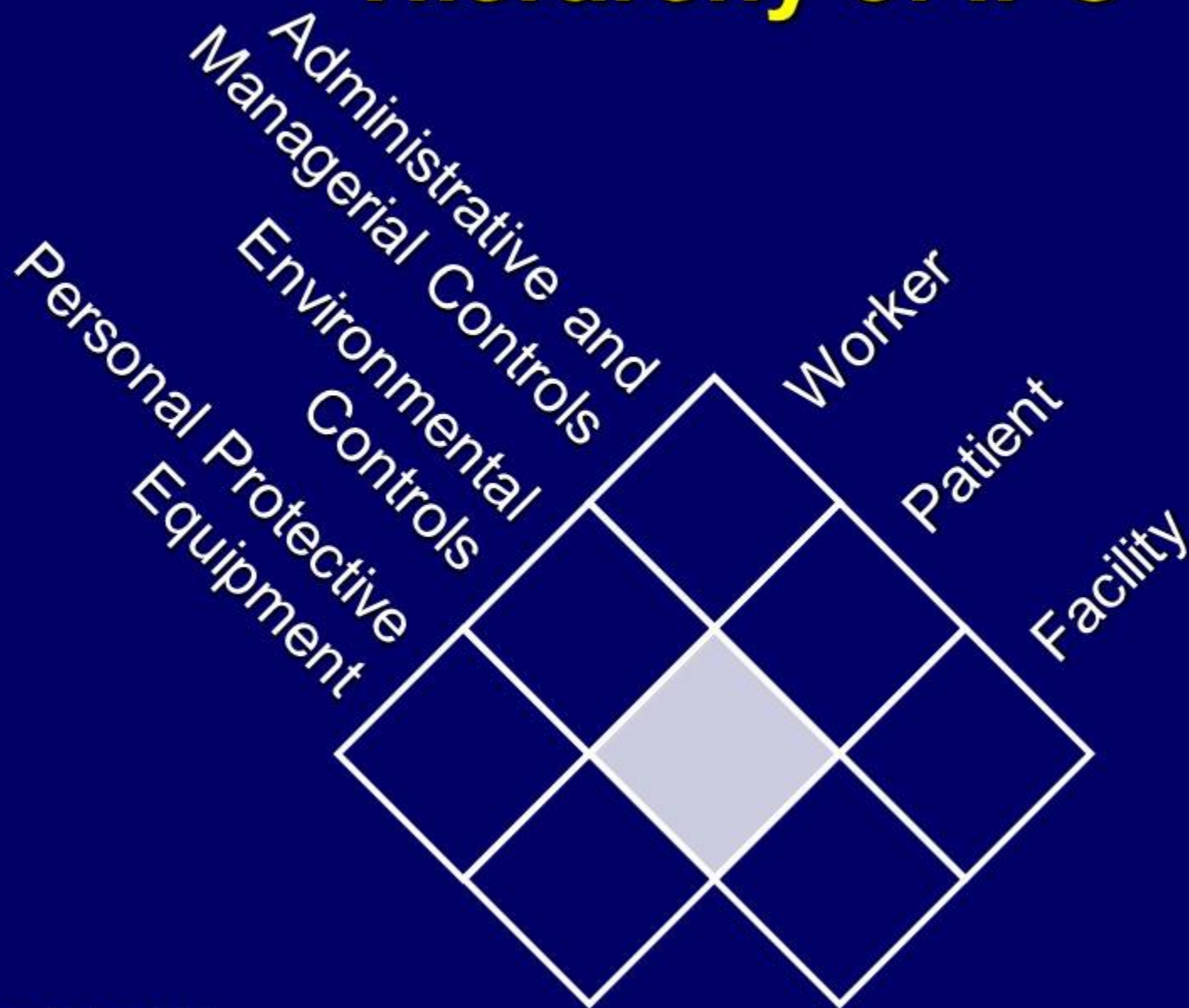
PA Jensen – 23 June 2020



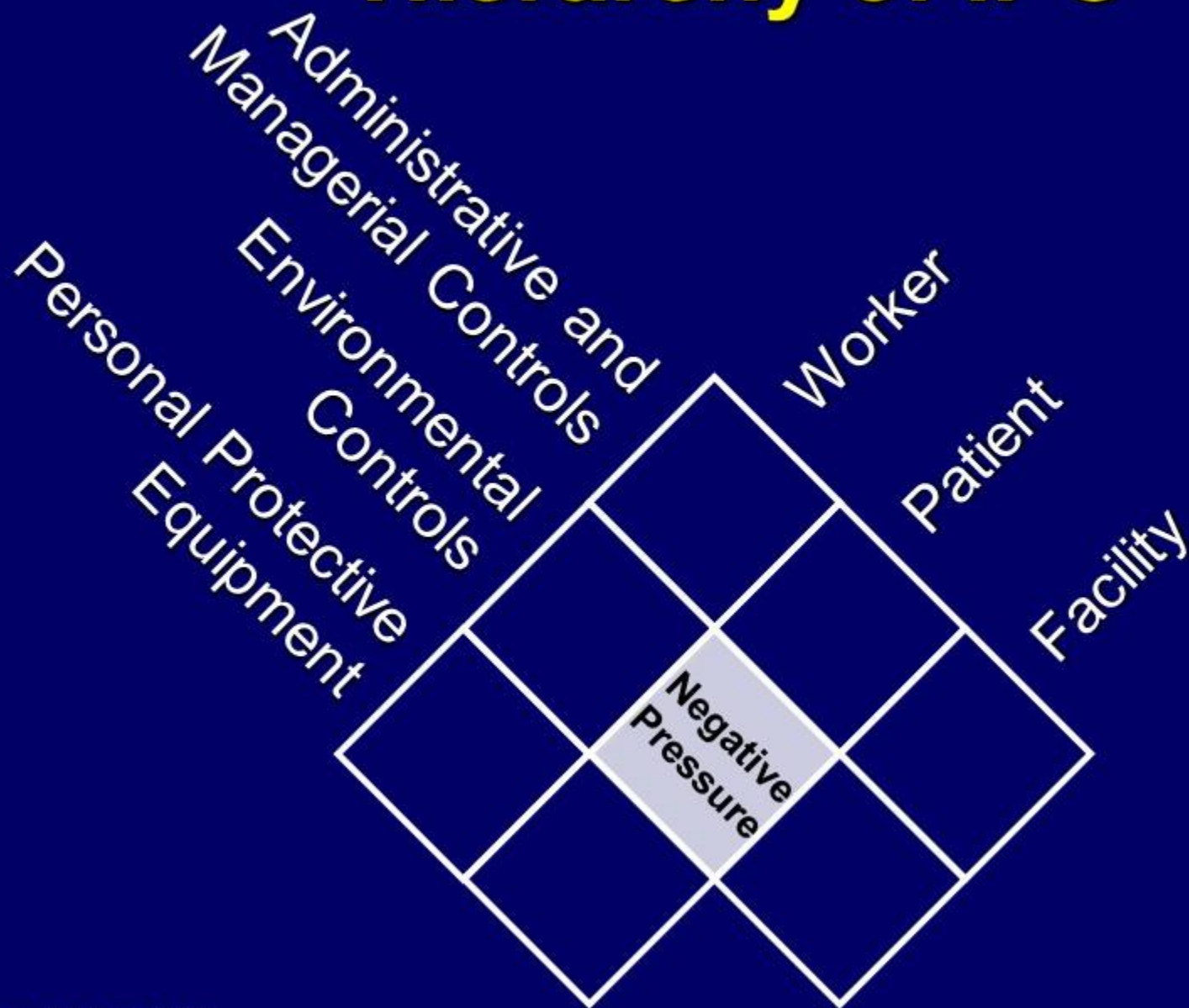
Is this room positive pressure or negative pressure?



Hierarchy of IPC

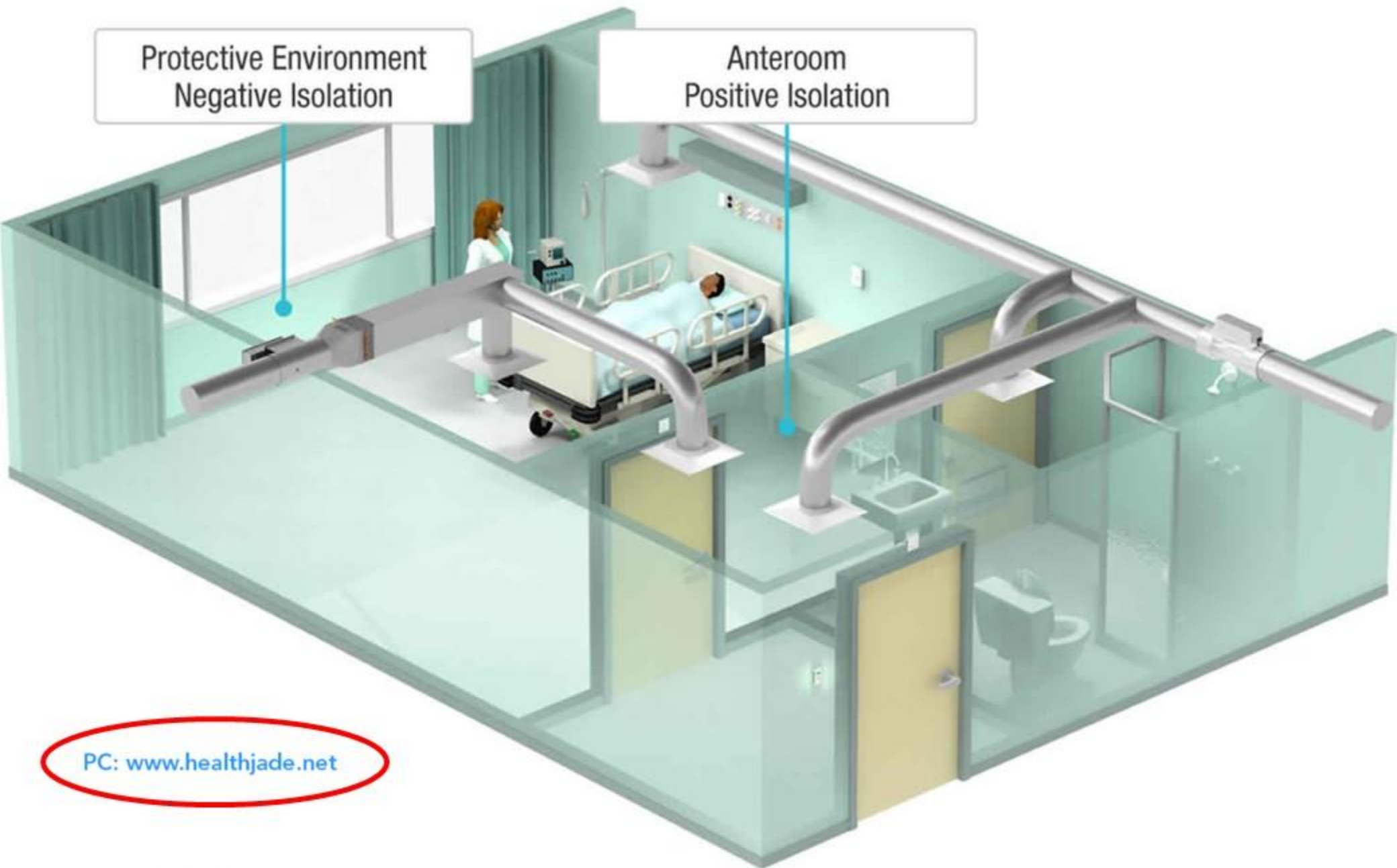


Hierarchy of IPC



Protective Environment
Negative Isolation

Anteroom
Positive Isolation



PC: www.healthjade.net



Upper-Room UVGI

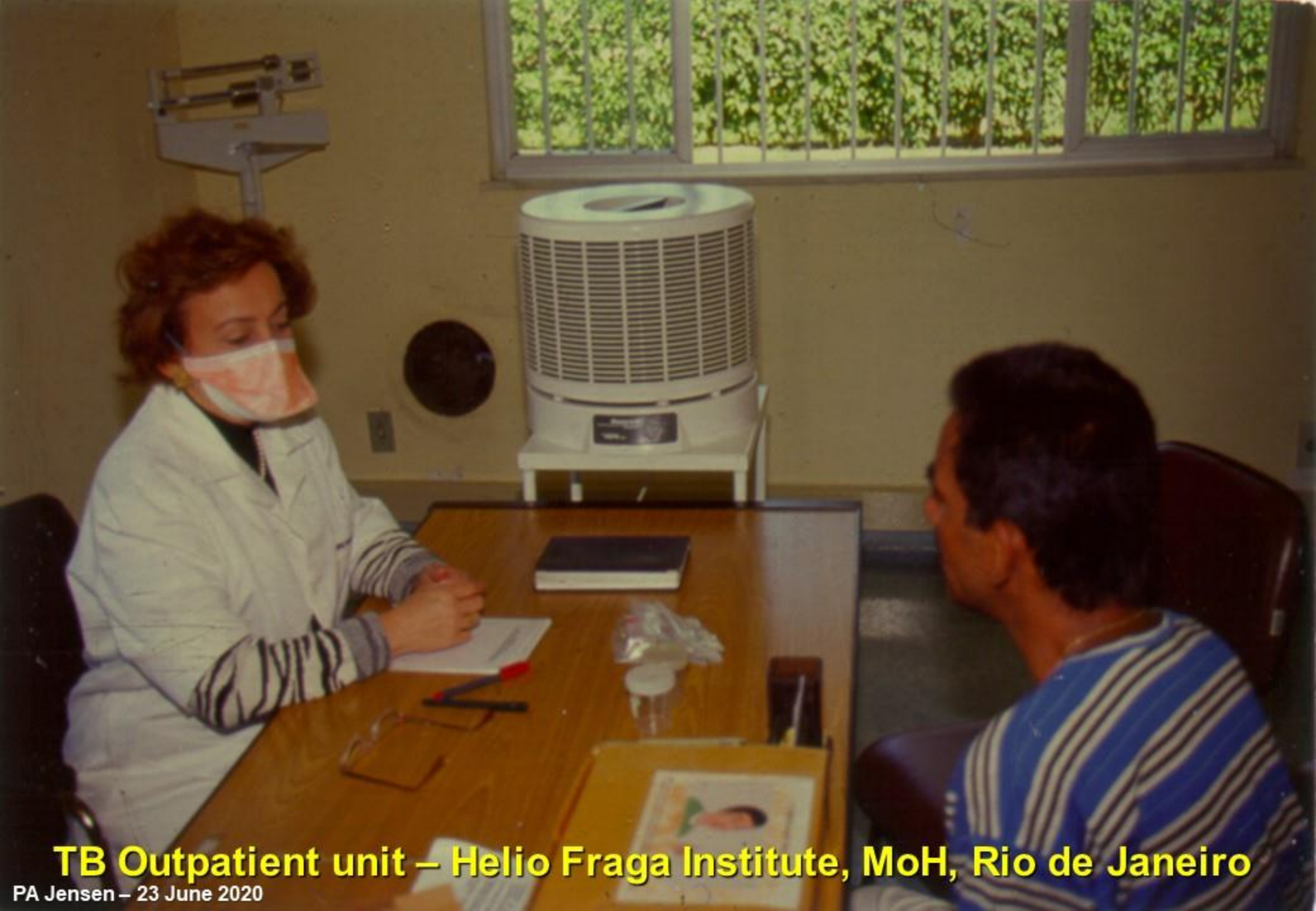


Whole-Room UVGI



Room Air Cleaners

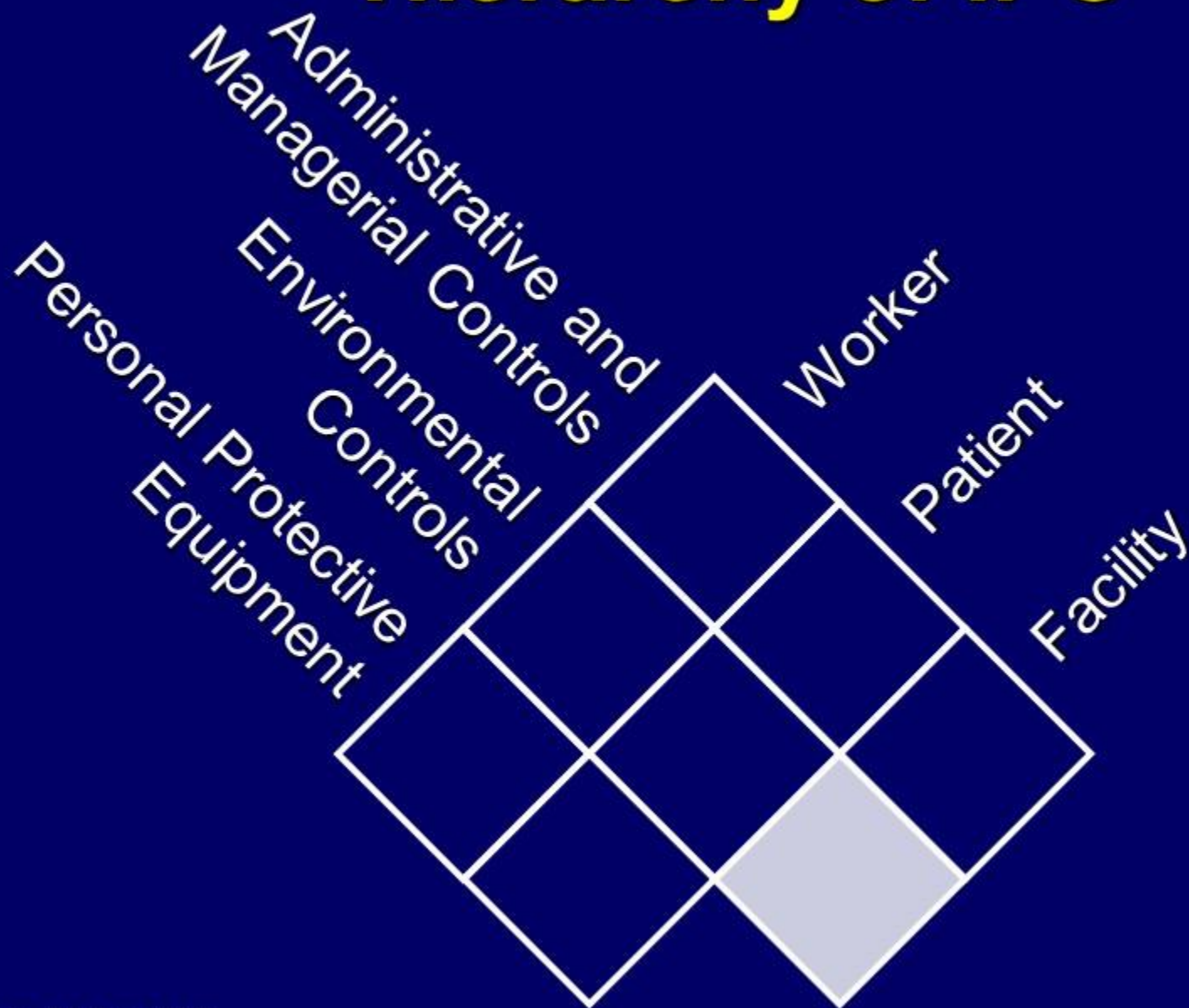




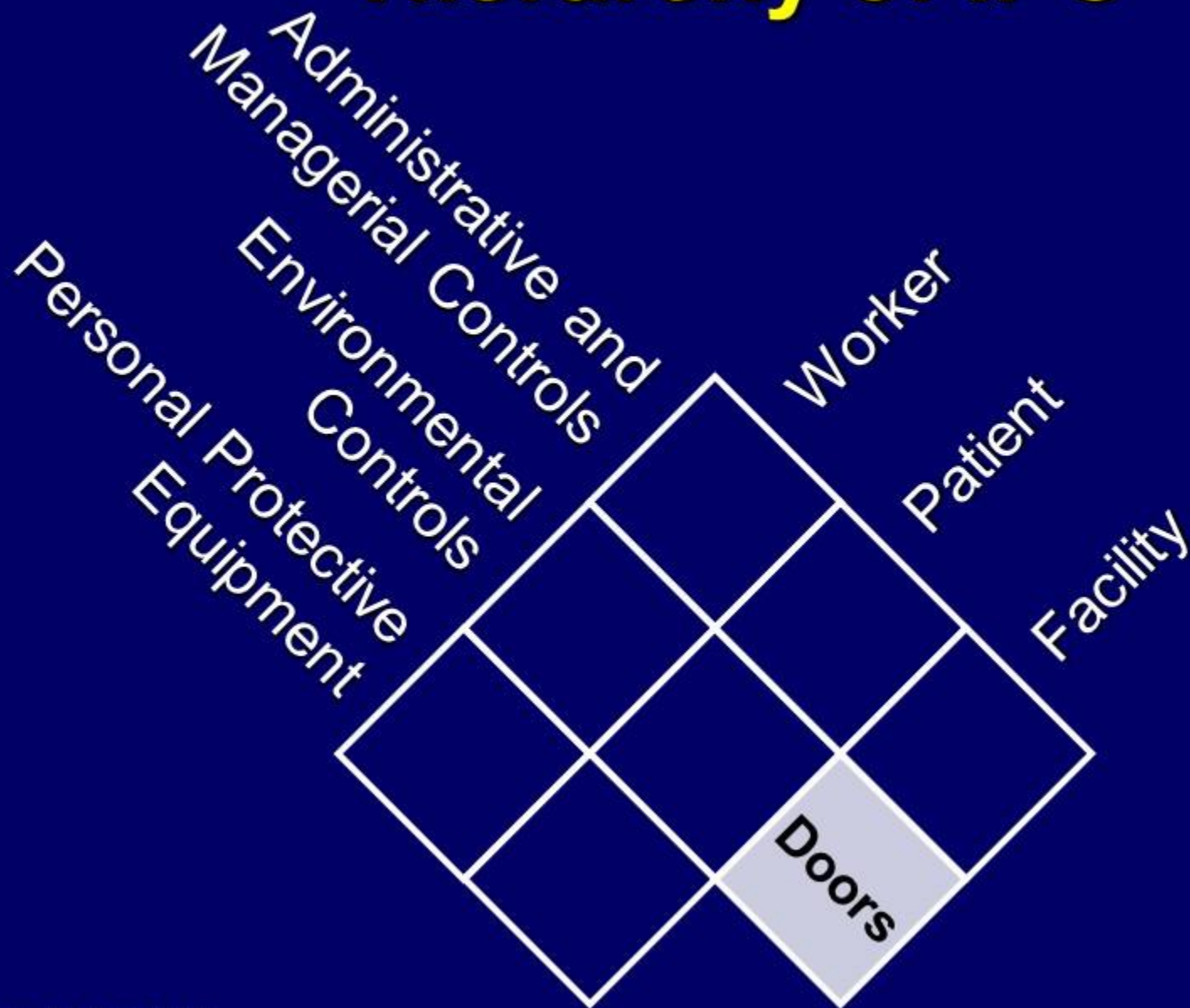
TB Outpatient unit – Helio Fraga Institute, MoH, Rio de Janeiro

PA Jensen – 23 June 2020

Hierarchy of IPC



Hierarchy of IPC





25A

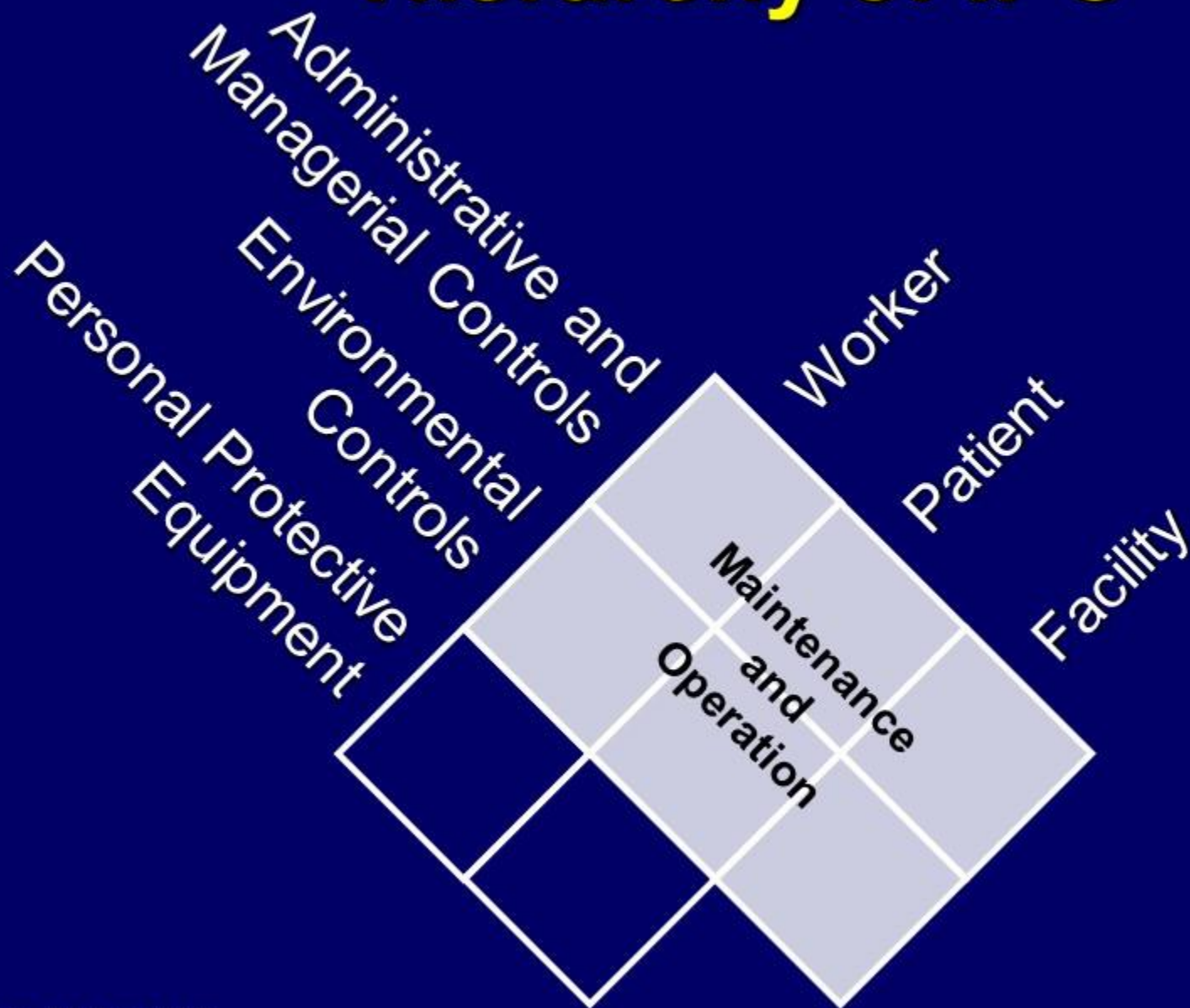
25B







Hierarchy of IPC

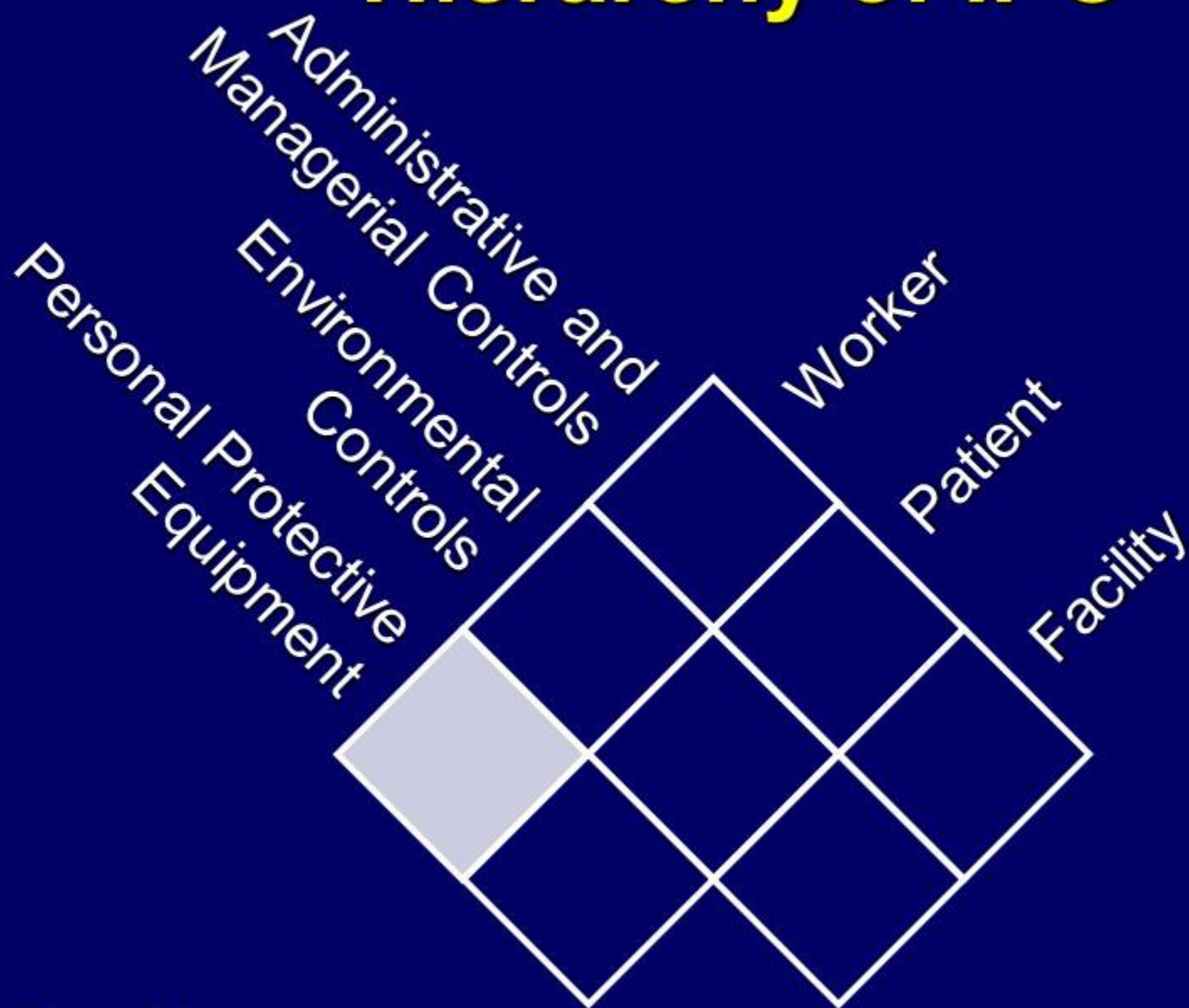




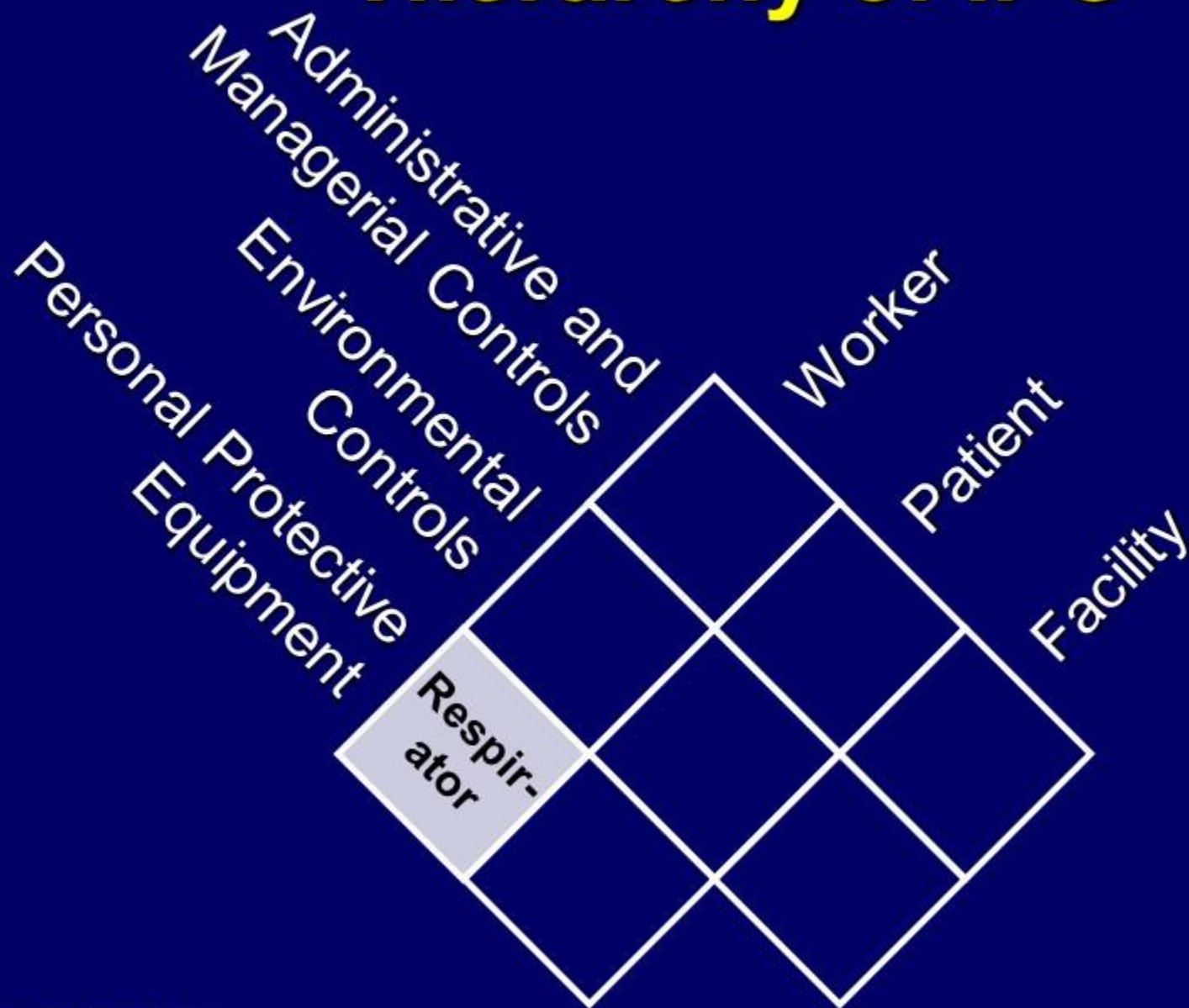




Hierarchy of IPC

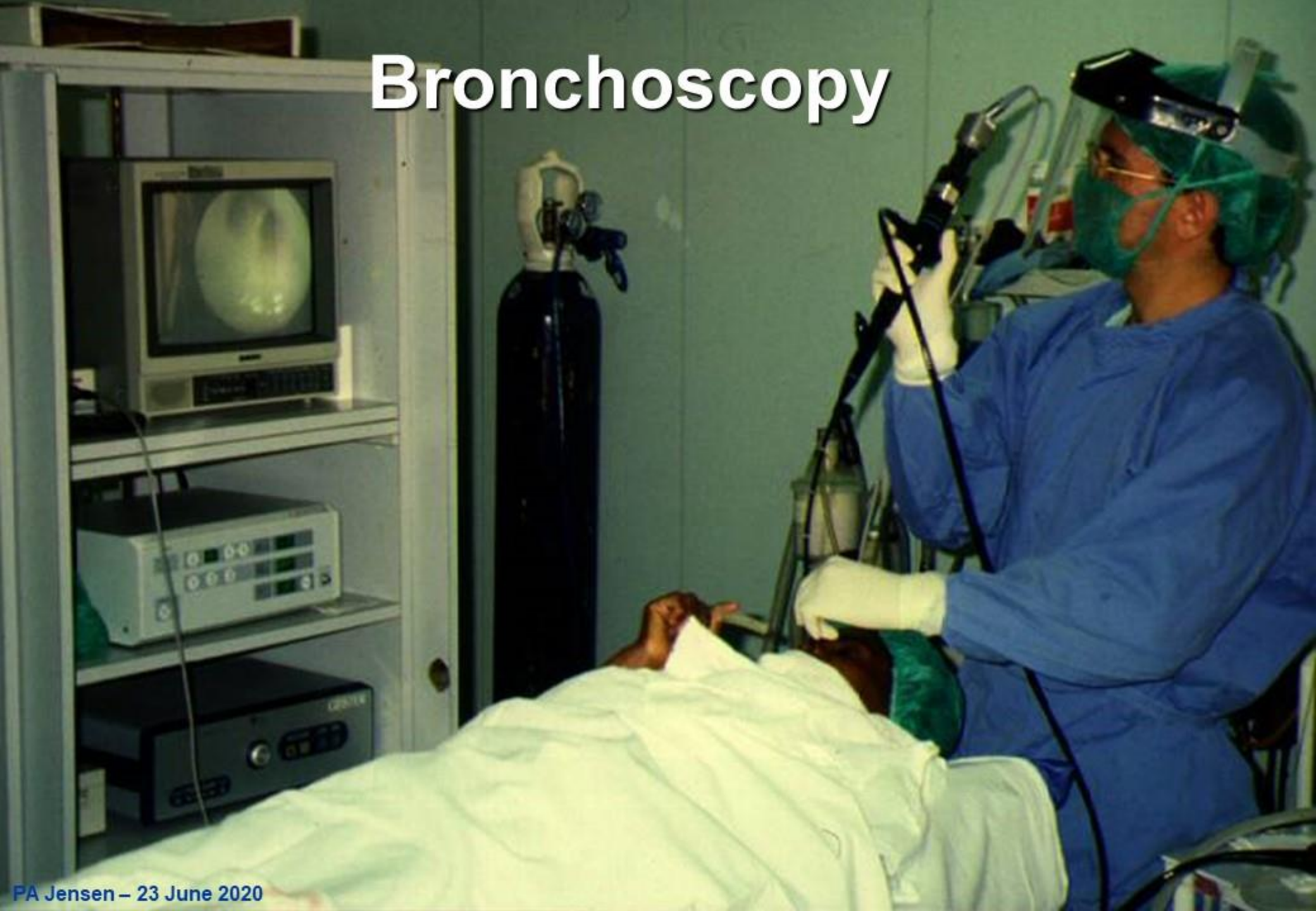


Hierarchy of IPC





Bronchoscopy



Use Personal Protective Equipment (PPE) When Caring for Patients with Confirmed or Suspected COVID-19

Before caring for patients with confirmed or suspected COVID-19, healthcare personnel (HCP) must:

- **Receive comprehensive training** on when and what PPE is necessary, how to don (put on) and doff (take off) PPE, limitations of PPE, and proper care, maintenance, and disposal of PPE.
- **Demonstrate competency** in performing appropriate infection control practices and procedures.

Remember:

- PPE must be **donned correctly** before entering the patient area (e.g., isolation room, unit if cohorting).
- PPE must remain in place and be worn correctly for the duration of work in potentially contaminated areas. PPE should not be adjusted (e.g., retying gown, adjusting respirator/facemask) during patient care.
- PPE must be removed slowly and deliberately in a sequence that prevents self-contamination. A step-by-step process should be developed and used during training and patient care.

Preferred PPE - Use N95 or Higher Respirator



Acceptable Alternative PPE - Use facemask



Donning (putting on the gear):

More than one donning method may be acceptable. Training and practice using your healthcare facility's procedure is critical. Below is one example of donning.

1. **Identify and gather the proper PPE to don.** Assess choice of gown size is correct (based on training).
2. **Perform hand hygiene using hand sanitizer.**
3. **Put on isolation gowns.** Tie all of the ties on the gown. Assistance may be needed by another HCP.
4. **Put on NIOSH-approved N95 filtering facepiece respirator or higher (use a facemask if a respirator is not available).**

If the respirator has a reservoir, it should be fitted to the nose with both bands, not bent or tented. Do not pinch the nosepiece with one hand. Respirator/facemask should be extended under chin. Both your mouth and nose should be protected. Do not wear respirator/facemask under your chin or store in scrubs pocket between patients.*

- **Respirator:** Respirator straps should be placed on crown of head (top strap) and base of neck (bottom strap). Perform a user seal check each time you put on the respirator.
 - **Facemask:** Mask ties should be secured on crown of head (top tie) and base of neck (bottom tie). If mask has loops, hook them appropriately around your ears.
5. **Put on face shield or goggles.** When wearing an N95 respirator or half facepiece elastomeric respirator, select the proper eye protection to ensure that the respirator does not interfere with the correct positioning of the eye protection, and the eye protection does not affect the fit or seal of the respirator. Face shields provide full face coverage. Goggles also provide excellent protection for eyes, but fogging is common.
 6. **Put on gloves.** Gloves should cover the cuff (wrist) of gown.
 7. **HCP may now enter patient room.**

Doffing (taking off the gear):

More than one doffing method may be acceptable. Training and practice using your healthcare facility's procedure is critical. Below is one example of doffing.

1. **Remove gloves.** Remove gloves removal does not cause additional contamination of hands. Gloves can be removed using more than one technique (e.g., glove-to-glove or bird beak).
2. **Remove gown.** Untie all ties (or unsnap all buttons). Some gown ties can be broken rather than untied. Do so in gentle manner, avoiding a forceful movement. Reach up to the shoulders and carefully pull gown down and away from the body. Rolling the gown down is an acceptable approach. Dispose in trash receptacle.*
3. **HCP may now exit patient room.**
4. **Perform hand hygiene.**
5. **Remove face shield or goggles.** Carefully remove face shield or goggles by grabbing the strap and pulling upwards and away from head. Do not touch the front of face shield or goggles.
6. **Remove and discard respirator (or facemask if used instead of respirator).*** Do not touch the front of the respirator or facemask.
 - **Respirator:** Remove the bottom strap by touching only the strap and bring it carefully over the head. Grasp the top strap and bring it carefully over the head, and then pull the respirator away from the face without touching the front of the respirator.
 - **Facemask:** Carefully untie (or unhook from the ears) and pull away from face without touching the front.
7. **Perform hand hygiene after removing the respirator/facemask and before putting it on again if your workplace is practicing reuse.**

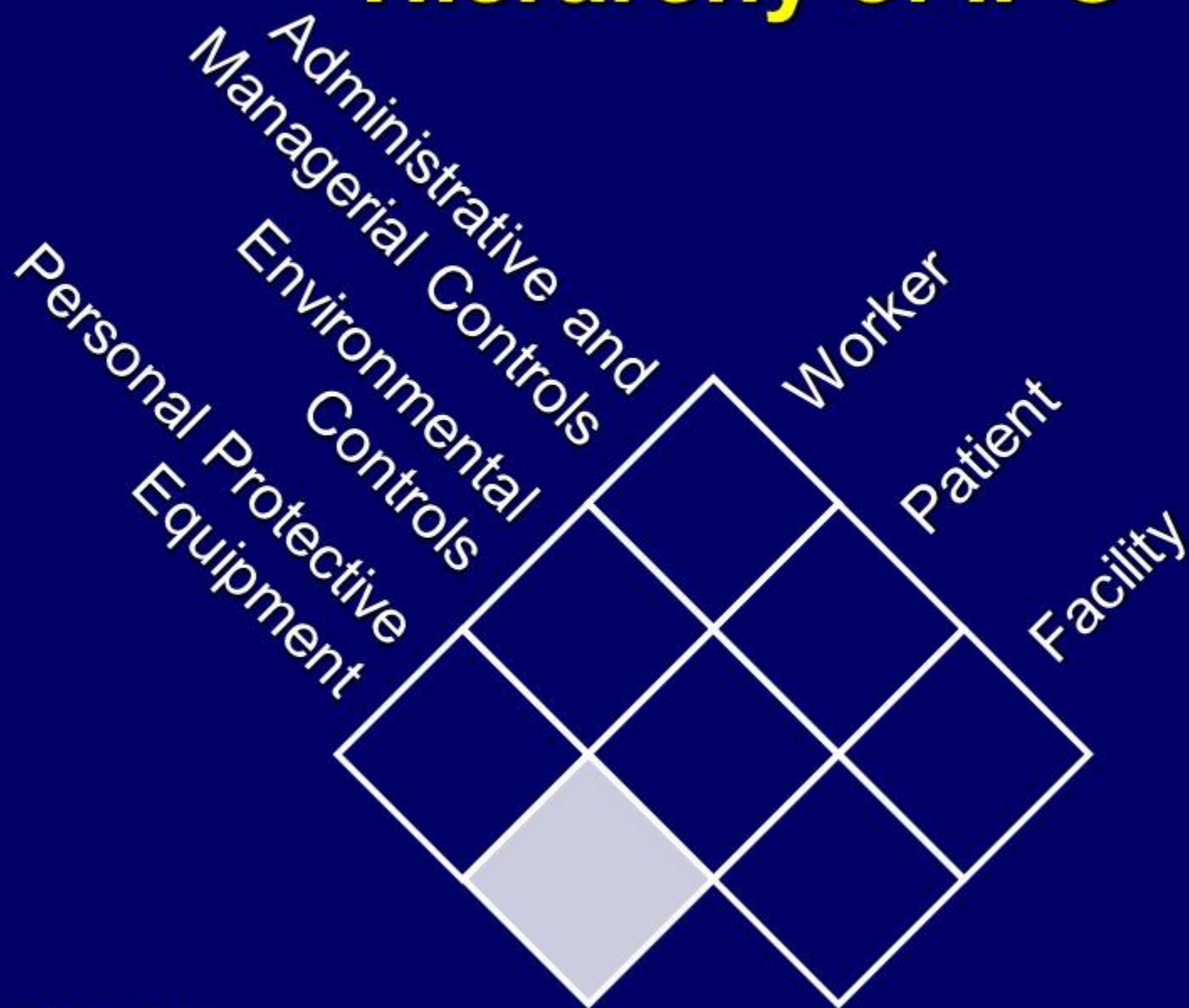


COVID-19 RESOURCE

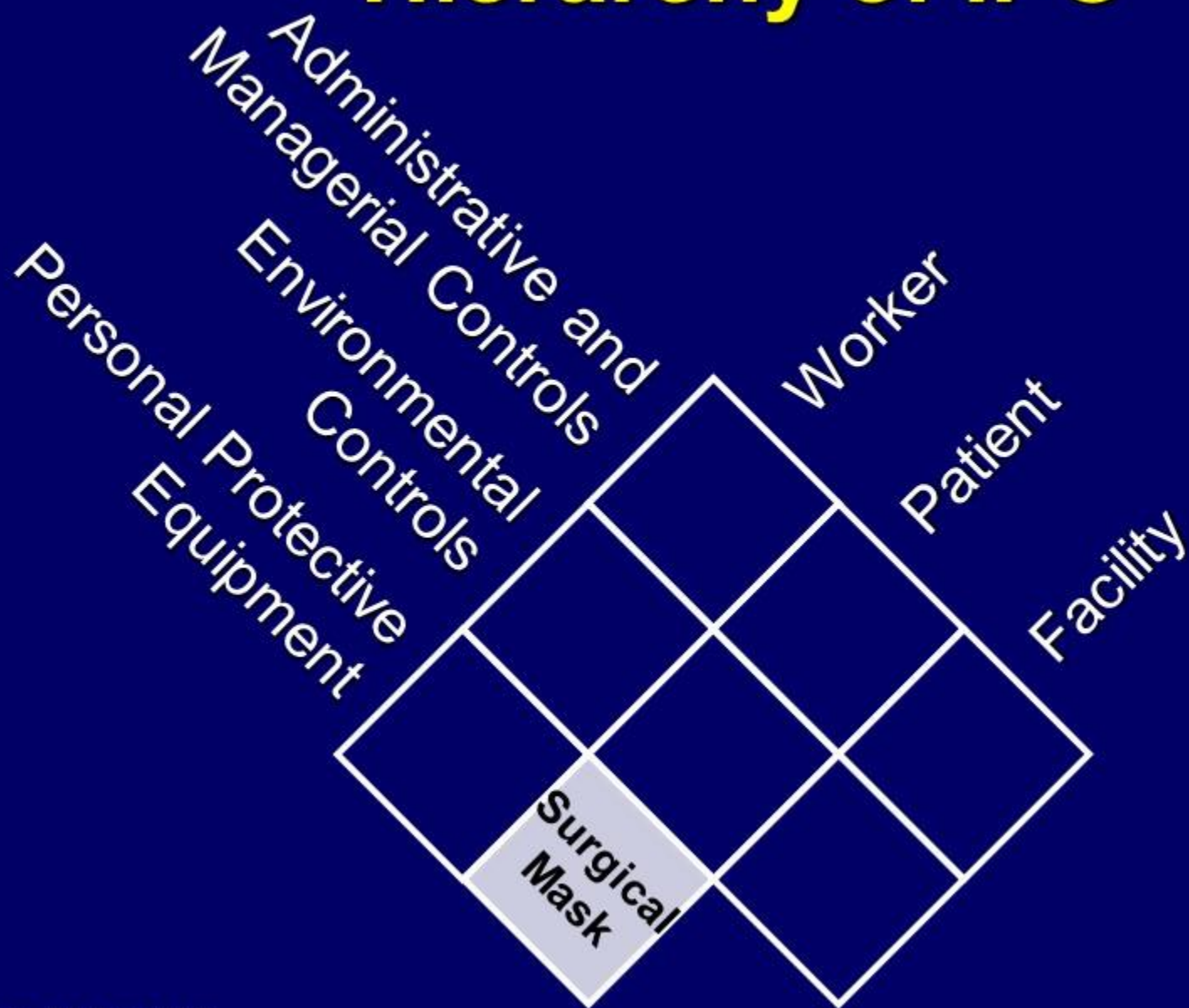
*Facilities implementing reuse or extended use of PPE will need to adjust their donning and doffing procedures to accommodate these practices.

www.cdc.gov/coronavirus

Hierarchy of IPC



Hierarchy of IPC





How to Make a Mask



Tutorial: How to Sew a Face Mask for Hospitals | Coronavirus COV19



Watch later Share



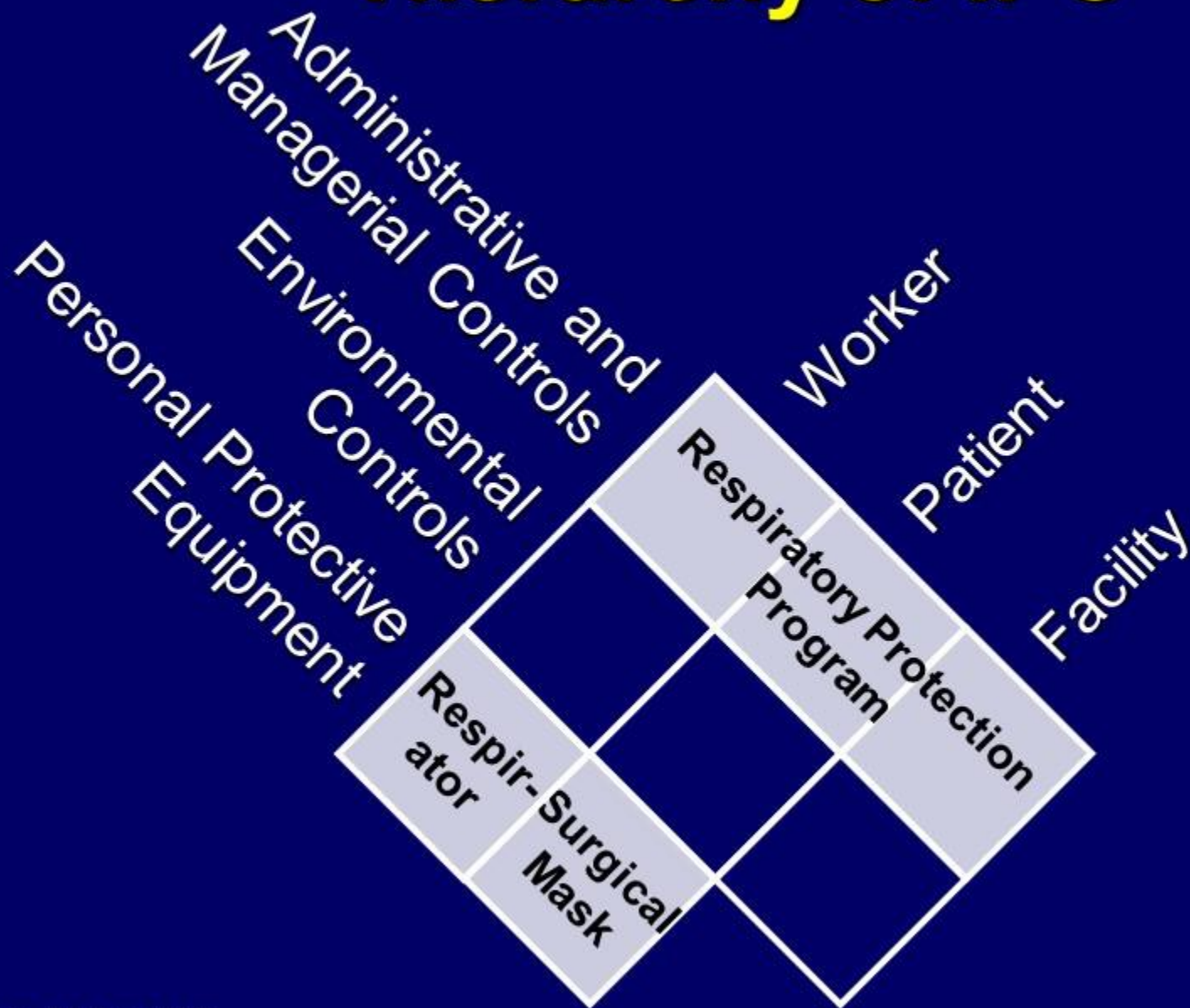
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YouTube



Hierarchy of IPC



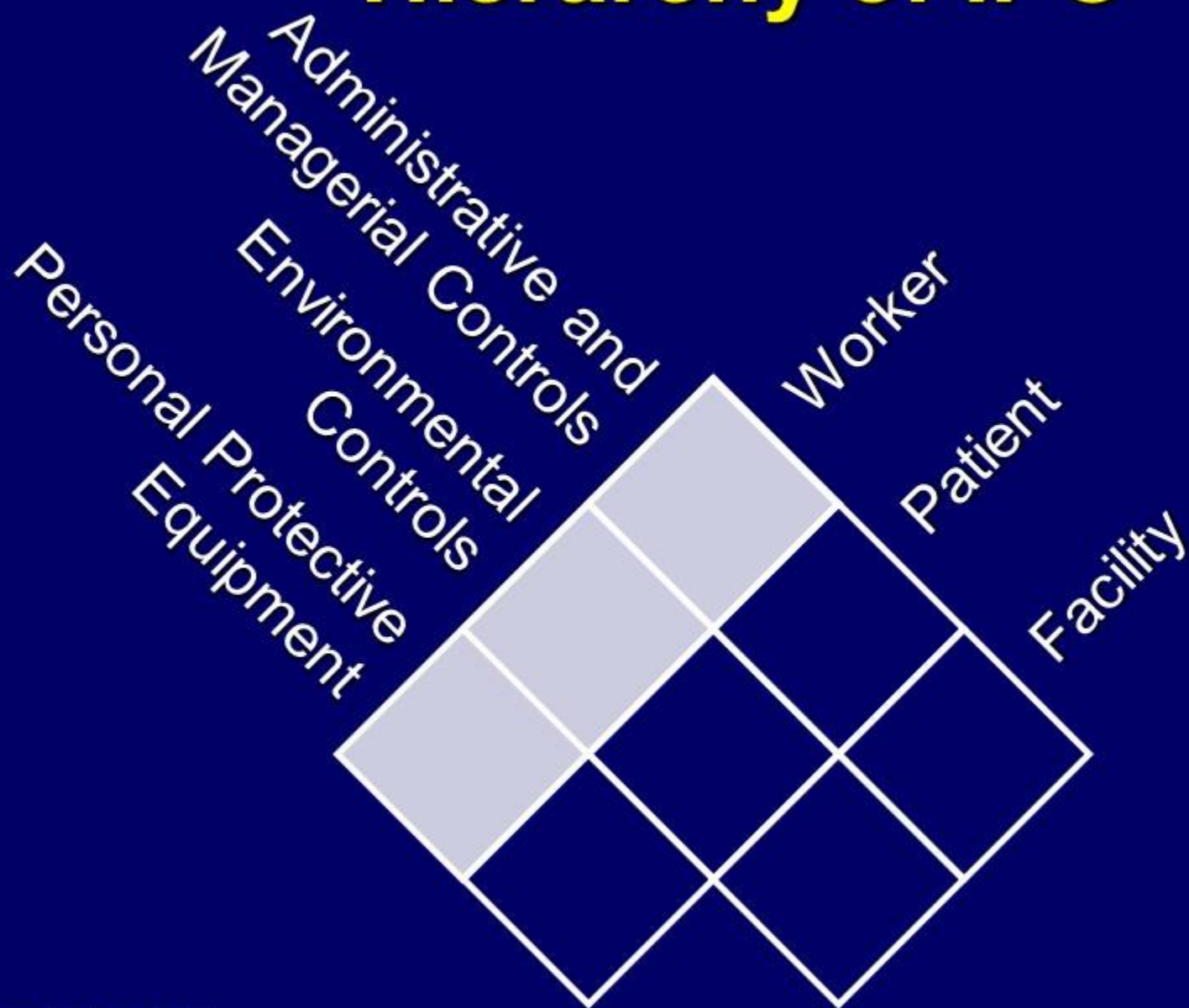




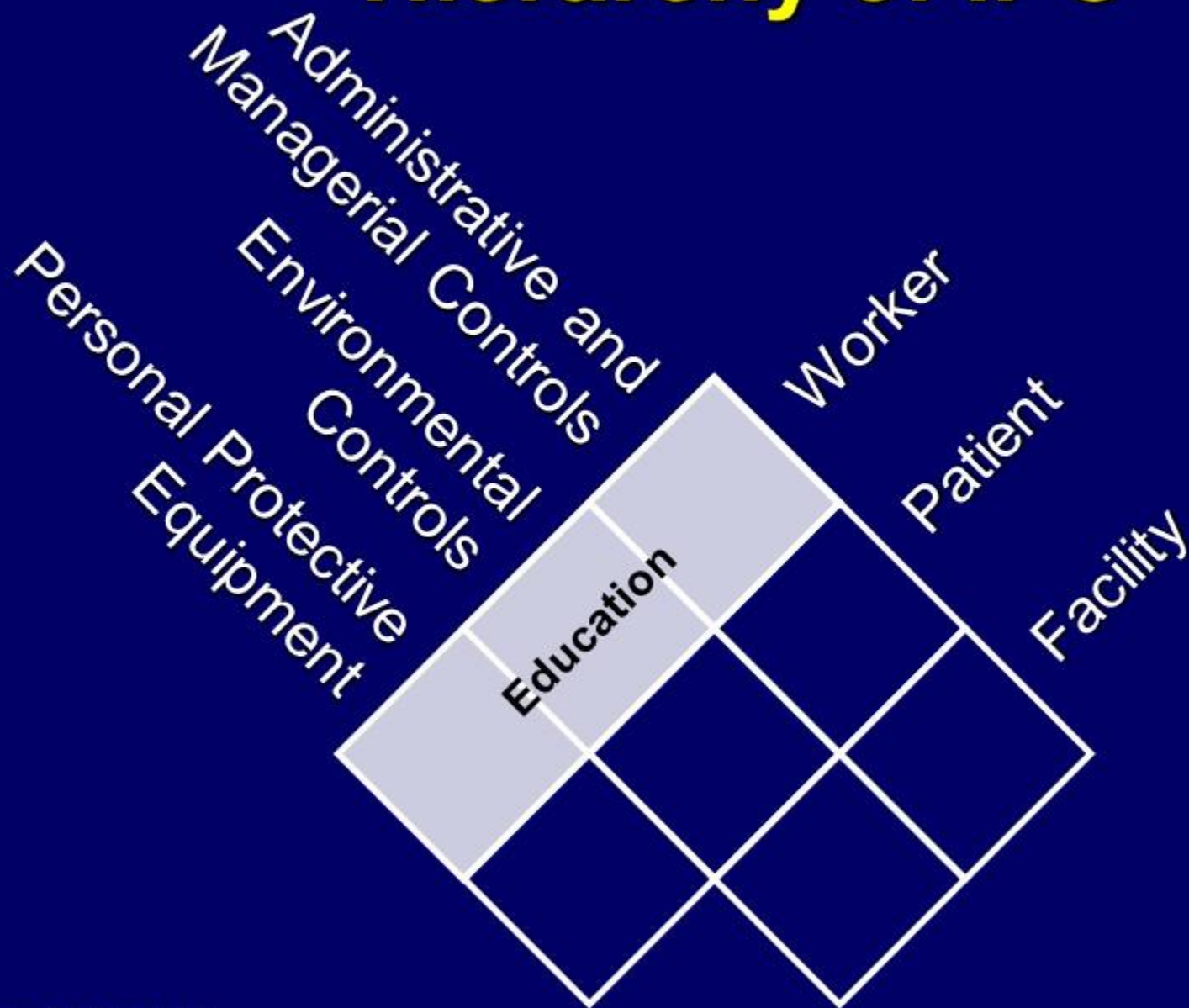


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Hierarchy of IPC



Hierarchy of IPC

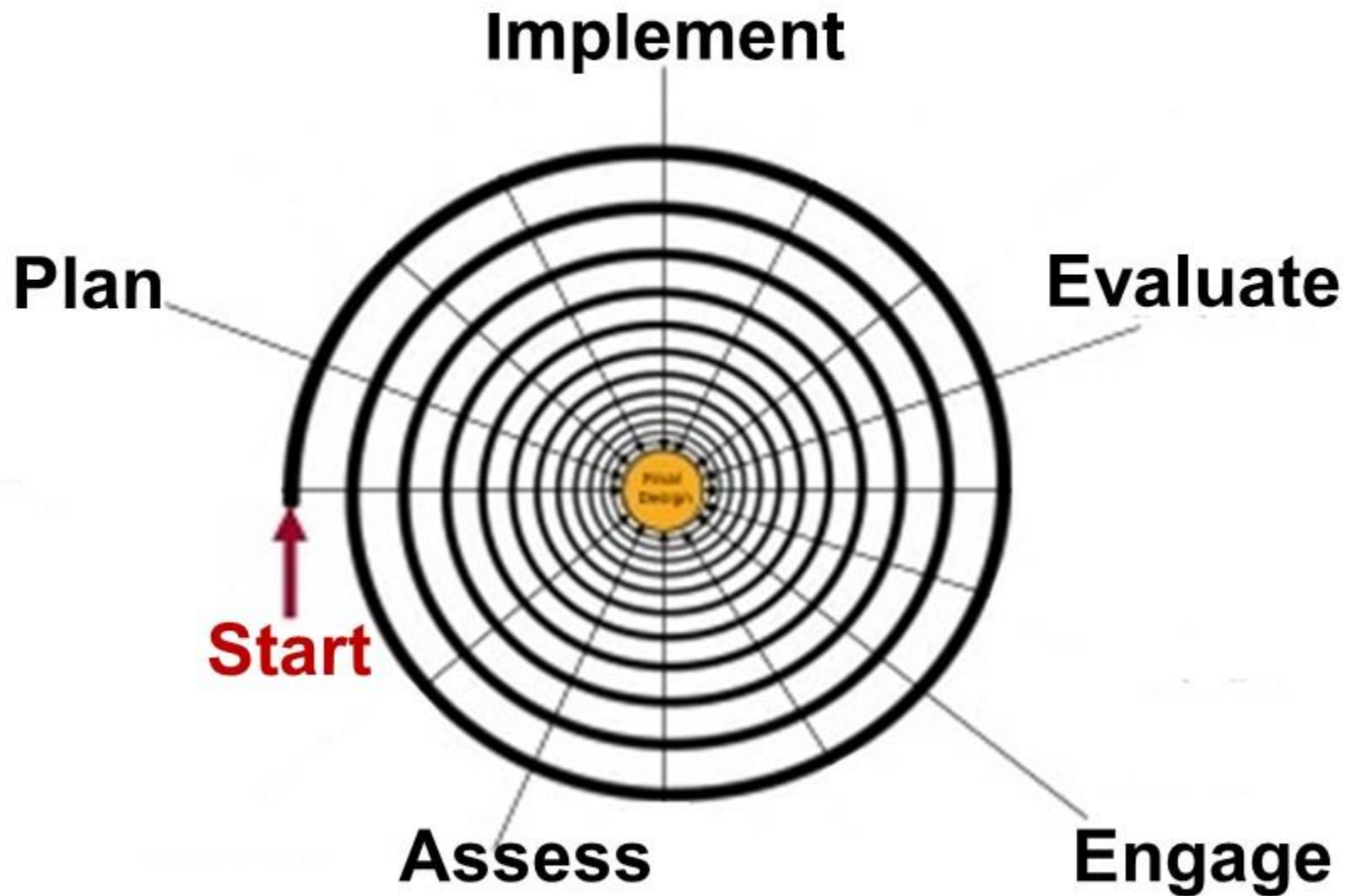




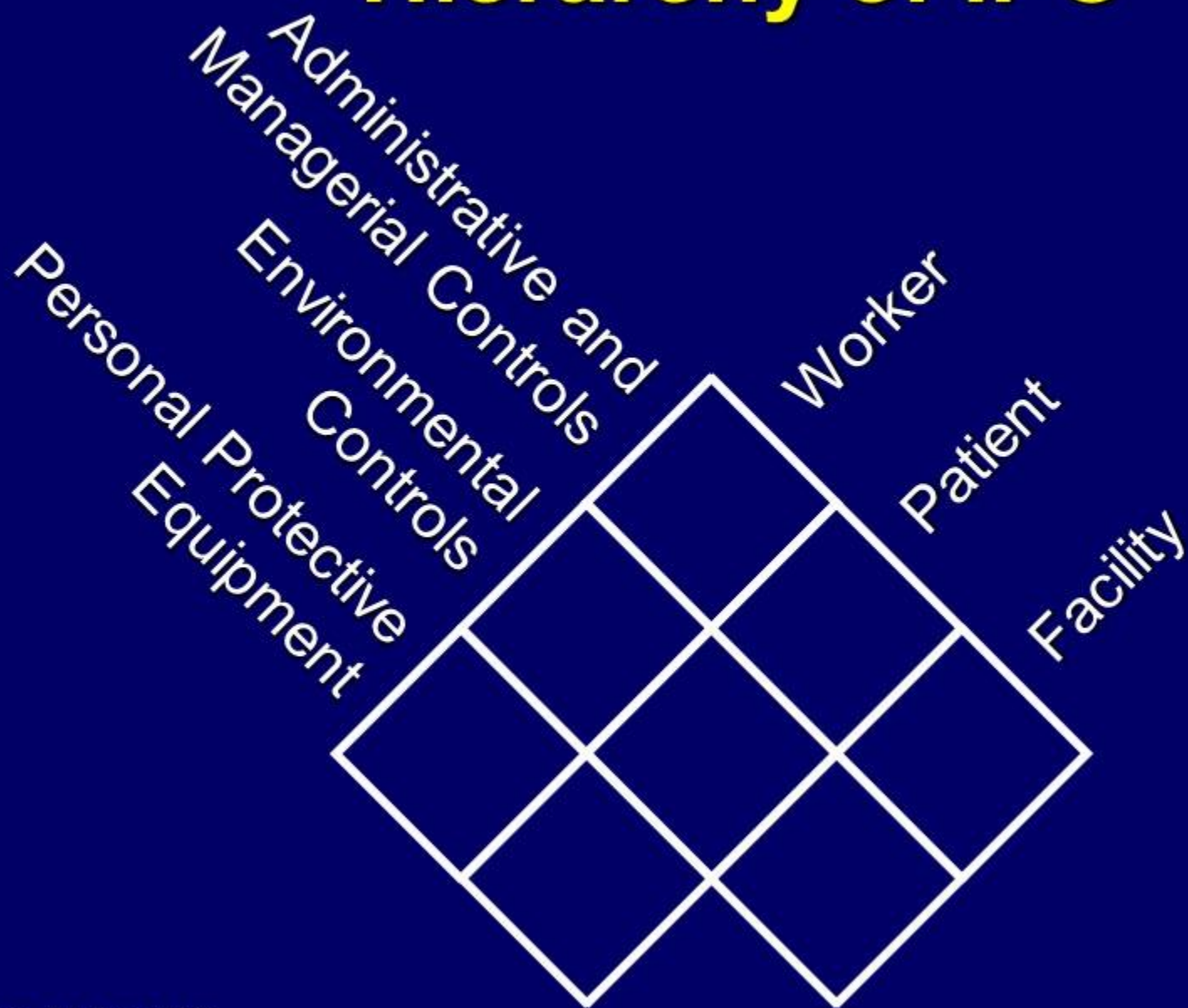
Prioritization Table for IPC Assessment & Intervention

| IC Hierarchy | Priority | Description | How to implement? | When to implement? | Budget (short- and long-term) | What obstacles might you face? |
|--------------------------------|----------|-------------|-------------------|--------------------|-------------------------------|--------------------------------|
| <i>Administrative Controls</i> | | | | | | |
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| <i>Environmental Controls</i> | | | | | | |
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| <i>Respiratory Protection</i> | | | | | | |
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| | | | | | | |

IPC is a Continuous Process



Hierarchy of IPC




Hierarchy of IPC



Package of Measures!!!

Plan for sustainability!!!



Personal respiratory protection

What are respirators and why do we need to wear them?
Respirators or filtering facepiece equipment are disposable, single-use devices that provide respiratory protection by filtering out particles and other airborne microorganisms such as Mycobacterium tuberculosis (M. TB). Respirators are used to protect health-care workers and non-ventilated those wearing TB and other airborne respirators. Respirators that don't provide protection should be used only with a combination of other infection prevention and control measures to provide reasonable protection for health workers.

Does WHO recommend respiratory protection?
Yes, the updated WHO TB infection prevention and control guidelines (second edition) recommend the use of respiratory protection for health workers. Recommended TB respirators include the use of respirators for health workers. Recommended TB respirators include the use of respirators for health workers. Recommended TB respirators include the use of respirators for health workers.

ETT Stop TB Partnership



Respirator fit testing

Why is fit testing important?
Fit testing is important to ensure the respirator fits tightly to the face of the wearer (seal) and prevents them from inhaling airborne aerosol containing Mycobacterium tuberculosis and other airborne pathogens. Leakage of air from the breathing zone through any gap between the face and the respirator increases the risk of TB exposure in individuals working in high TB transmission risk settings. This leakage can be detected by performing a respirator fit test. The size, shape and configuration of every face is different and can potentially change over time. Therefore, it is important that several different respirator models and sizes are available, and every health worker should be fit tested with respirators before they are used in high-risk settings. This is why regular fit testing is an essential component of an effective personal respiratory protection program.

What is fit testing?
Fit testing is a procedure that measures the efficiency of a respirator to protect the wearer from inhaling particles from the air (see http://www.cdc.gov/nceh/od/ohrt/fit_testing.htm). It is done about 15-20 minutes per person to compare a fit test and a performance grade respirator. After passing a fit test with a respirator, you should use the tested same make, model, style, and size respirator for the job.

There are two types of fit tests: qualitative and quantitative. Qualitative fit testing is normally used for filtering facepiece respirators called "fit" or "pass" as well as the alternative ("buddy") respirators. See ETTI respiratory infection information sheet here: <http://www.stoptb.org>

ETT Stop TB Partnership



Disinfecting room air with upper-room (UR) germicidal UV (GUV) systems

What are UR GUV systems?
UR GUV systems refer to an ultraviolet germicidal irradiation (UVGI) system installed in the upper range of UV energy in the upper room with horizontal air mixing to disinfect large volumes of room air (see Figure 1).

Why is UR GUV needed?
UR GUV is an effective, efficient and sustainable intervention to assist in reducing TB transmission in high TB transmission risk settings.

Are UR GUV systems recommended by WHO?
Yes, the updated WHO TB infection prevention and control guidelines state: "Upper-room germicidal ultraviolet (GUV) systems are recommended to reduce M. tuberculosis transmission in health workers, persons attending health care facilities or other persons in settings with high TB transmission." (See www.who.int).

What are the effectiveness of GUV in low TB transmission risk settings?
In Paris, the effect on health workers of GUV in low TB transmission risk settings was 76.6%.

What studies show the varying levels of effectiveness of GUV in preventing airborne transmission of measles and other airborne pathogens?

How do we know if UR GUV systems are right for us?
Every facility should conduct a comprehensive airborne infection prevention and control (AIPC) assessment for a room before UR GUV. This should be followed by development of a feasible and sustainable AIPC plan to address and maintain the risk. Recommended conditions must be given high priority before considering other measures including UR GUV systems.

ETT Stop TB Partnership

<http://www.stoptb.org/wg/ett/resources.asp>

This presentation was made possible through the support of Stop TB Partnership's End TB Transmission Initiative (ETT) Working Group provided by the United States Agency for International Development (USAID), under the terms of cooperative agreement number STBP/USAID/GSA/2018-04.

Future Webinars

- **Administrative Controls**
 - Overview of administrative controls
 - Airborne IPC – Implementation planning and development of an action plan
 - Implementation of administrative controls
 - Designing layout to optimize airborne IPC

- **Environmental Controls**

- Overview of environmental controls
- Ventilation for airborne IPC: Natural and mechanical ventilation
- Practical and sustainable ventilation solutions
- Room air cleaners for airborne IPC
- Commissioning of mechanical and natural ventilation systems (from concept through acceptance testing)
- How to test Ventilation (mechanical, natural, hybrid) systems
- Overview of UVGI/GUV systems
- Practical and sustainable UVGI/GUV systems
- Commissioning of UVGI/GUV systems (from concept through acceptance testing)
- How to test UVGI systems (including instruments)
- Supply-chain management of environmental controls

- **Personal Protective Equipment**
 - ~~Respiratory protection for TB, COVID 19, *et al.*~~
 - Respirator fit testing (including how to make a fit test kit)
 - Re-use of respirators, including decontamination
 - Supply-chain management of Respirators & masks

Summary

- **Work hard!**
- **Play hard!**
- **Promote good public health!**
- **Be safe!**
- **Enjoy life!**







Thank you!

Рақмет сізге!

Раҳмат сага!

Sag boluñ!

Muito obrigado

Rahmat!

Спасибо!

Сипос!

Tashakor!

Muchas gracias!