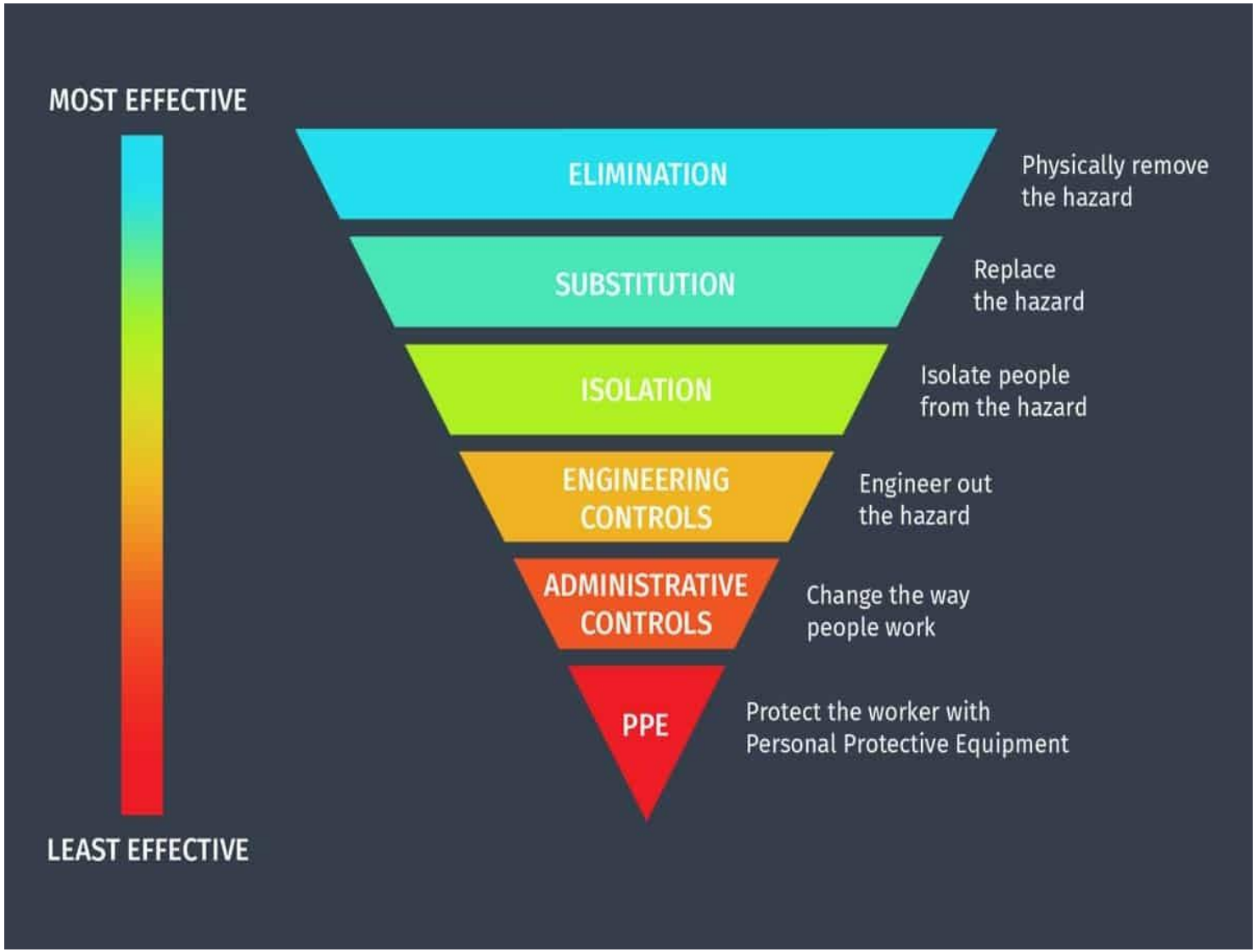
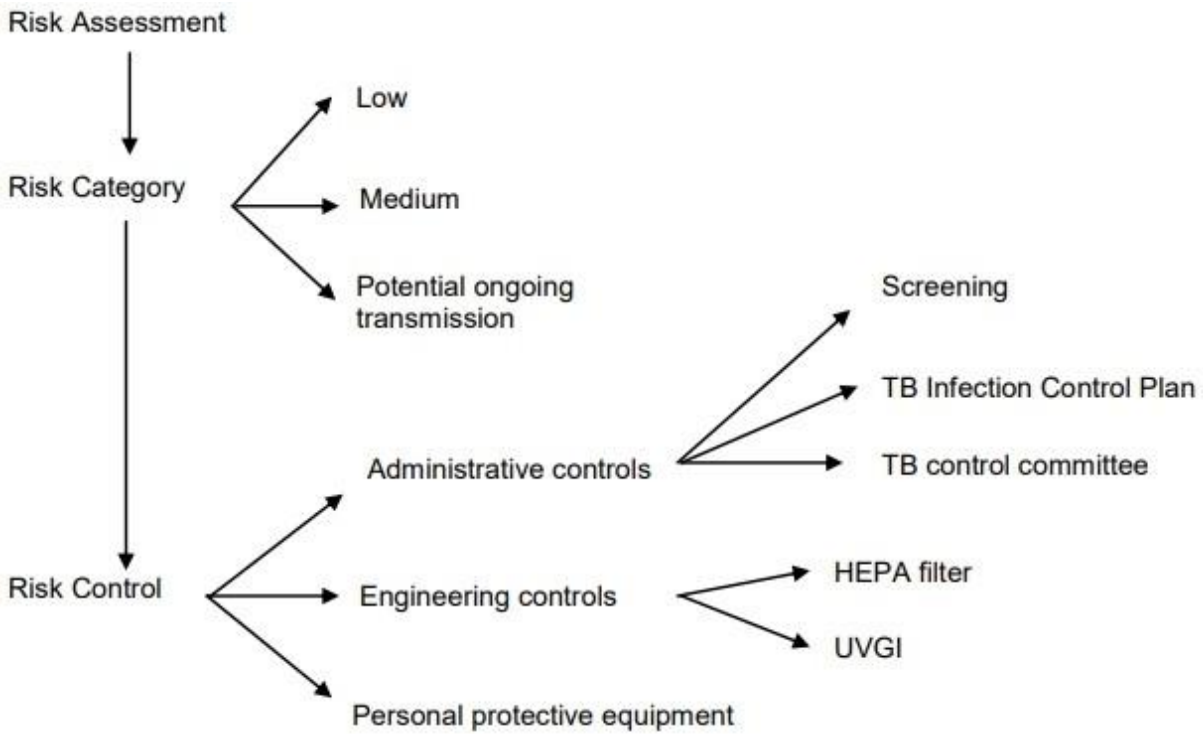
TUBERCULOSIS: WORKPLACE HAZARD

HIERARCHY OF CONTROL MEASURE



GUIDELINES ON PREVENTION AND MANAGEMENT OF TUBERCULOSIS FOR HEALTH CARE WORKERS IN MINISTRY OF HEALTH MALAYSIA

Occupational Health Unit
Disease Control Division
Ministry of Health Malaysia
2012



ENVIRONMENTAL CONTROL MEASURES

- Isolation rooms
- Treatment rooms
- HIV care facilities
- Immunocompromised patient care areas
- TB wards & clinics
- Intensive Care Unit where TB patients may receive treatment

- Sputum Induction Room
- Bronchoscopy Suites
- Operating Rooms
- Accident & Emergency
- Outpatient department
- Laboratories
- Radiology department

Type of Environmental Control

- Prevent the spread and reduce the concentration of infectious droplet
- Maximizing natural ventilation through open windows
- Local exhaust ventilation (LEV) --> six air changes per hour (ACH)
- Negative pressure rooms
- HEPA filtration to remove infectious particles
- Upper room Ultraviolet germicidal irradiation (UVGI) to sterilize the air (30 µW/cm2 to 50 µW/cm2)
- Humidity control: (increase humidity, reduce UVGI effectiveness) -->aim 30-60% humidity
- Temperature: 20-24 degree (optimal for UVGI function)

Approach

Primary: Control source of infection (Mengurangkan bilangan droplets TB dalam bilik rawatan TB). eg: LEV (tarik udara dari bilik ke luar bangunan)

Secondary: Control airflow to prevent contamination of air in areas adjacent to source (mencegah sisa droplet TB dalam udara dari bilik rawatan TB ke ruang menunggu pesakit). eg: HEPA, UVGI

Type of Administrative Control

- TB Infection Control Committee: unit kawalan infeksi, JKKP
- TB Infection Control Plan:
  - HCW medical surveillance
  - monitoring (EM, BM, BEM)
  - training
- Risk assessment: HIRARC, risk classification
- Triaging

- High Risk TB Area (HRTBA):
  - Medical / Respiratory Wards
  - Chest Clinics
  - Health Clinics
  - Laboratories
- Patient education: etika batuk, pelitup muka etc
- Saringan gejala TB: kendiri, QRTB

Type of PPE Control

- Airborne PPE: N95 -->fit test
- PARP: Powered air-purifying respirators
- Surgical mask ?adequate

WORKPLACE HAZARD IDENTIFICATION, RISK ASSESSMENT AND RISK CONTROL (HIRARC)

Penilaian Keselamatan dan Kesihatan Di Tempat Kerja

Di bawah Occupational Safety and Health Act 1994:

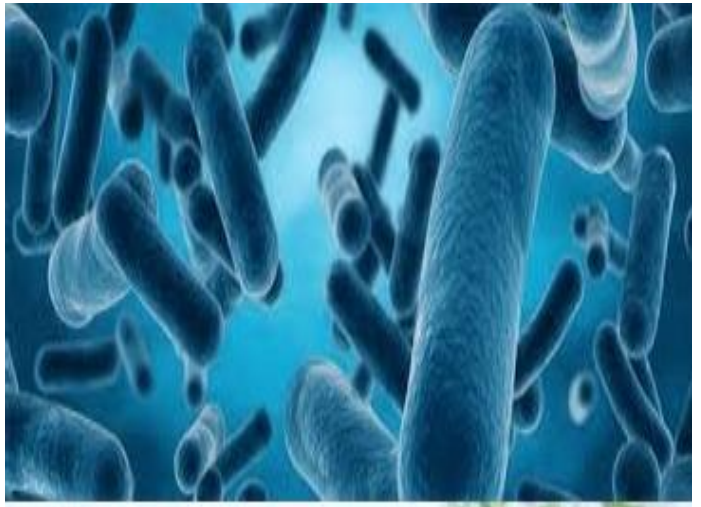
- Majikan hendaklah memastikan tempat kerja adalah selamat untuk bekerja.
- Majikan hendaklah menilai risiko yang terhasil di tempat kerja dan memastikan tindakan mengatasi risiko tersebut.

Ianya adalah proses yang berterusan yang perlu dijalankan:

- **SEKARANG**, sekiranya tidak pernah dilakukan
- Bila wujud **TUGASAN BARU** yang dirancang
- Bila berlaku sebarang **PERUBAHAN CARA KERJA** yang ketara
- Selepas berlakunya **KEJADIAN/KEMALANGAN**
- Mengikut kekerapan yang berjadual /secara rutin

Tujuan Menilai Risiko

- **Kenal pasti bahaya**: heatlh hazard (fizikal, kimia, biologikal, psychososial dan ergonomik), safety hazard dan environmental hazard.
- Melakukan "**hazard rating**".
- Menilai darjah pendedahan terhadap bahaya tersebut dan menentukan "**exposure rating**".
- **Menyimpulkan kesan-kesan** yang signifikan terhadap risiko kesihatan.
- **Menilai kawalan risiko sedia** ada mencukupi atau pun tidak.
- Mencatit kawalan risiko yang diperlukan bagi **penambahbaikan**.



Terma-Terma Penting

- **Hazard** = anything that can cause harm
- **Hazard control** = measures to reduce risk associated with hazard
- **Hierarchy of control** = order for the types of measures
- **Hazard identification** = identification of undesired events/ hazards
- **Risk** = the likelihood of harm taking place, based on exposure to that hazard (likelihood of occurrence X severity of injury)

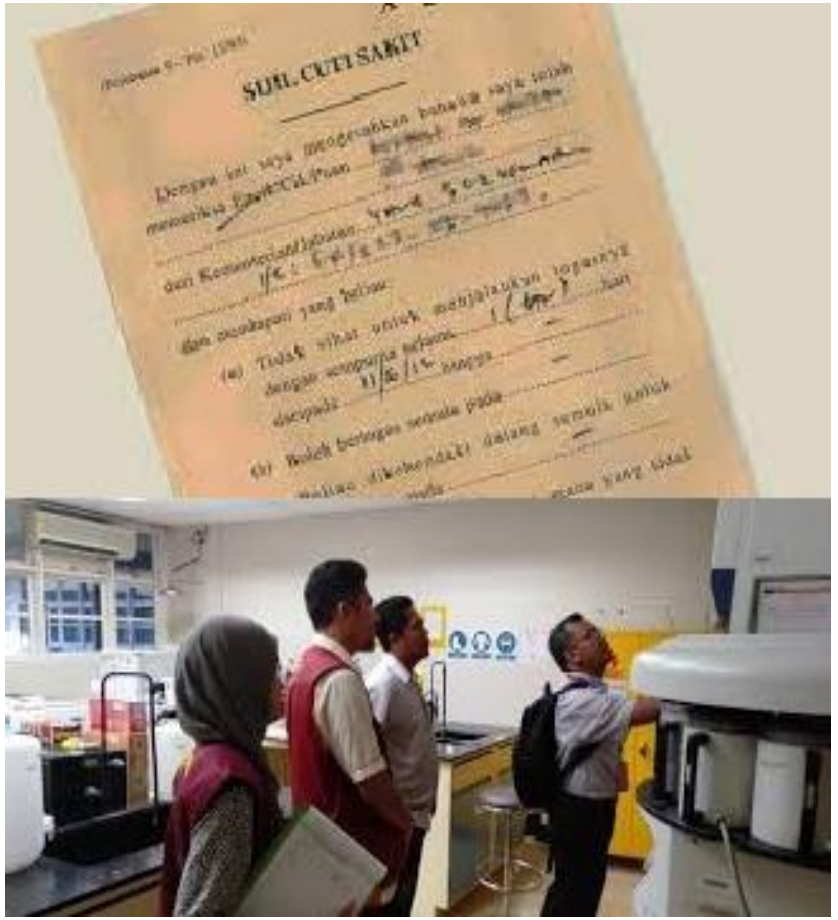
Active TB = (MTB Pt) X (Managing TB Pt) X (DM/Poor training/Non-compliance to PPE)

Hazard Identification

- Kenal pasti hazard yang boleh mendatangkan mudarat kepada keselamatan dan kesihatan pekerja semasa proses kerja berjalan
- 3 kelas utama hazard (health hazard, safety hazard dan environmental hazard)
- **TB -->health hazard (bio hazard) -->**Acute or chronic health effects → all or part of body

Cara Kenal pasti Hazard

- Melalui laporan kesihatan
- NADOPOD
- IR
- Walk through survey
- Komplen atau komen
- Rekod MC
- etc



Risk Assessment (RA): Kebarangkalian Terdedah ✘ Severity

Exposure Rating	Definition
Improbable (1)	Exposure less than one per year
Remote (2)	Exposure greater than one time per year
Occasional (3)	Exposure greater than one time per month
Probable (4)	Exposure greater than one time per week
Frequent (5)	Potential exposure one or more time per shift or per day

✘

Hazard Rating	Definition in Terms of Potential to Cause Harm to People
1	No injury/slight injury/illness – not affecting work performance or causing disability
2	Minor injury/illness – affecting work performance such as restriction of activities or need a few days to recover
3	Major injury/illness – result in permanent partial disability or affecting work performance in the long term
4	Permanent total disability or fatality
5	Multiple fatalities (large exposed population)

Risk Matrix

	Severity (S)				
Likelihood (L)	1	2	3	4	5
5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5

Action Taken

RISK	DESCRIPTION	ACTION
15 - 25	HIGH	A HIGH risk requires **immediate** action to control the hazard as detailed in the hierarchy of control. Actions taken must be documented on the risk assessment form including date for completion.
5 - 12	MEDIUM	A MEDIUM risk requires a planned approach to controlling the hazard and applies temporary measure if required. Actions taken must be documented on the risk assessment form including date for completion.
1 - 4	LOW	A risk identified as LOW may be considered as acceptable and further reduction may not be necessary. However, if the risk can be resolved quickly and efficiently, control measures should be implemented and recorded.

ADAKAH RISIKO INI BOLEH DITERIMA?

Jika YA →

Biarkan Sahaja!!!

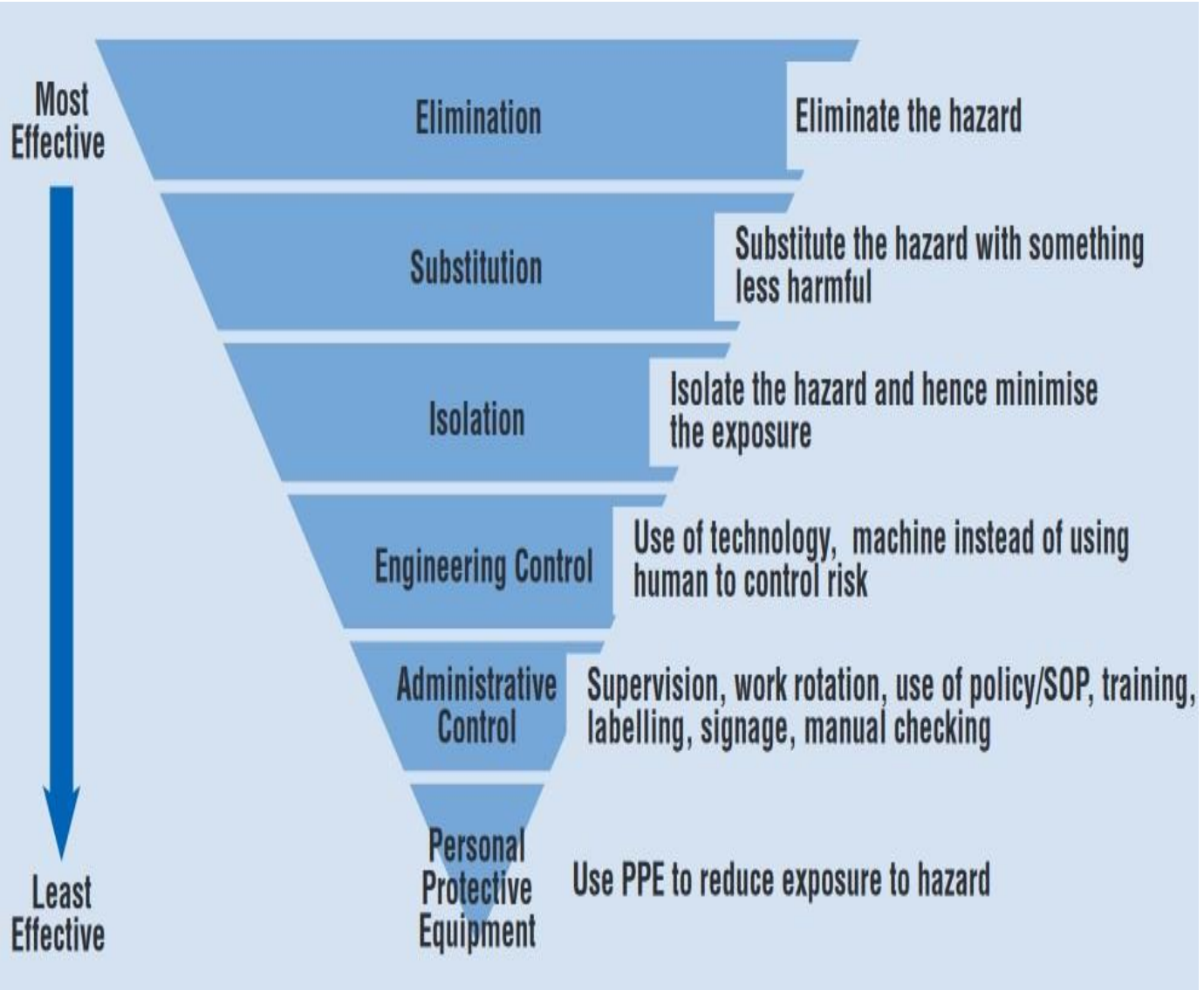
Tapi perlu lakukan pemantauan….

Jika TIDAK →

Perlu sediakan pembetulan dan kawalan terhadap risiko tersebut….

RISK DECISION	ADEQUACY OF CONTROL MEASURES	CONCLUSION	DECISION/tindakan
Risk Not Significant	-	C1	Hentikan penilaian semasa. Ulangan penilaian setiap 5 tahun atau bila perlu.
Risk Significant	Adequate	C2	Tentukan tindakan bagi meneruskan kawalan risiko. Tentukan kawalan tambahan sekiranya berlakunya sesuatu yang diluar kawalan.
	Not Adequate	C3	Tentukan dan jalankan kawalan risiko dengan segera.
Insufficient Information	-	C4	Dapatkan nasihat pakar dalam bidang tersebut dan pada masa yang sama lakukan cara kerja yang baik bagi mengurangkan pendedahan risiko.
Uncertain about exposure	-	C5	Dapatkan nasihat pakar dalam bidang tersebut dan pada masa yang sama lakukan cara kerja yang baik bagi mengurangkan pendedahan risiko.

Risk Control (RC)



- Elimination: Getting rid of a hazardous job, tool, process, machine or substance (?TB)
- Substitution: Sometimes doing the same work in a less hazardous way is possible (?TB)
- Isolation: isolate the hazard from work activity (?TB)
- Engineering control: redesign, automation, barrier etc (?TB)
- Administrative: training, supervision, rotation, CPG, guidelines, manual (?TB)
- PPE (?TB)


Thank You