An introduction to the ILO Radiological Classification of the Pneumoconioses

Professor Neil White
Objective of the session

• To provide an introduction to the radiology of pneumoconioses;

• Background reading material
  – Guidelines for the use of the ILO International Classification of Radiographs of Pneumoconioses

• Home Study material
  – Guidelines for the use of the ILO International Classification of Radiographs of Pneumoconioses
  – ROLDS CD-ROM
    • “The Symposium”
    • “The Simulation”
The “ILO Classification”

• ILO International Classification of Radiographs of Pneumoconioses (1980)

• Primarily an epidemiological tool.

• ILO Classification not intended to define pathological entities, take into account working capacity, nor imply a definition of pneumoconiosis for compensation purposes.
ILO International Classification of Radiographs of Pneumoconioses.

- 22 standard films
- Comparison with these films enables the reader to categorise the appearances in a standardised fashion
  - Parenchymal
  - Pleural
  - Other abnormalities

<table>
<thead>
<tr>
<th>NAME:</th>
<th>_</th>
<th>STAFF No:</th>
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<table>
<thead>
<tr>
<th>1A. DATE OF X-RAY</th>
<th>1B. FILM QUALITY</th>
<th>1C. IS FILM COMPLETELY NEGATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>YES</td>
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<table>
<thead>
<tr>
<th>2A. ANY PARENCHYMAL ABNORMALITIES CONSISTENT WITH PNEUMOCONIOSIS?</th>
<th>3A. ANY PLEURAL ABNORMALITIES CONSISTENT WITH PNEUMOCONIOSIS?</th>
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<tbody>
<tr>
<td>YES</td>
<td>COMPLETE 3B, 3C and 3D</td>
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<table>
<thead>
<tr>
<th>2B. SMALL OPACITIES</th>
<th>2C. LARGE OPACITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. SHAPE/ SIZE</td>
<td>a. SHAPE/ SIZE</td>
</tr>
<tr>
<td>b. ZONES</td>
<td>b. ZONES</td>
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<tr>
<td>c. PROPORTION</td>
<td>c. PROPORTION</td>
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<thead>
<tr>
<th>3B. PLEURAL THICKENING</th>
<th>3C. PLEURAL THICKENING</th>
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<tbody>
<tr>
<td>a. DIAPHRAGM</td>
<td>a. DIAPHRAGM</td>
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<tr>
<td>PROXIMATE ANGLE</td>
<td>PROXIMATE ANGLE</td>
</tr>
<tr>
<td>SITE</td>
<td>SITE</td>
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<tr>
<td>b. IMPINGEMENT</td>
<td>b. IMPINGEMENT</td>
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<table>
<thead>
<tr>
<th>4A. ANY OTHER ABNORMALITIES?</th>
<th>4B. OTHER SYMBOLS (OBLIGATORY)</th>
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<tbody>
<tr>
<td>YES</td>
<td>COMPLETE 4B and 4C</td>
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<table>
<thead>
<tr>
<th>4C. OTHER COMMENTS</th>
<th>5. FILM READER'S INITIALS</th>
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</table>

SHOULD WORKER SEE PERSONAL PHYSICIAN BECAUSE OF COMMENTS IN SECTION 4C
ILO Classification: Quality

• 1 = acceptable
• 2 = minor defect
• 3 = major defect but still interpretable
• 4 = unreadable
ILO Classification: Abnormal?

- If *any* appearances of pleura or parenchyma are consistent with pneumoconiosis proceed. Use symbols and comments for any appearances that are definitely not pneumoconiosis.
- If it is probable that *all* appearances are the result of other aetiology do not classify.
- If the appearances *might* be due to pneumoconiosis record, but note what other aetiology was considered.
Small Opacities - type

**Rounded**
- p < 1.5 mm
- q 1.5 to < 3 mm
- r 3 to < 10 mm

**Irregular**
- s < 1.5 mm
- t 1.5 to < 3 mm
- u 3 to < 10 mm

An opacity is rounded if its greatest diameter is less than 1.5 times its smallest diameter.
## Small Opacities - type

<table>
<thead>
<tr>
<th></th>
<th>R</th>
<th>mm</th>
<th>I</th>
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</thead>
<tbody>
<tr>
<td>p</td>
<td>.</td>
<td>-1,5</td>
<td>s</td>
</tr>
<tr>
<td>q</td>
<td>.</td>
<td>1,5 - 3</td>
<td>t</td>
</tr>
<tr>
<td>r</td>
<td>.</td>
<td>3 - 10</td>
<td>u</td>
</tr>
</tbody>
</table>

Small Opacities - type

- Decide on the predominant type of opacity
- Mark that type e.g. “q”
- Decide whether most opacities are of that type or not.
- If virtually all opacities are that size and shape then record the symbol twice e.g. q/q
- If another size or shape also seen then record this as a second letter e.g. q/r
Small Opacities - type

Small Opacities - profusion

- Four point scale
  0 = normal
  1, 2, 3 = abnormal (increasing numbers of small opacities)
- Four point scale extended to a 12 point scale.
  0/- 0/0 0/1 = normal
  1/0 1/1 1/2
  2/1 2/2 2/3
  3/2 3/3 3/+
Small opacities - profusion

<table>
<thead>
<tr>
<th></th>
<th>0/0</th>
<th>0/1</th>
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<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1/0</td>
<td>1/1</td>
</tr>
<tr>
<td>2</td>
<td>2/1</td>
<td>2/2</td>
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<tr>
<td>3</td>
<td>3/2</td>
<td>3/3</td>
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Small Opacities – profusion

• Visually integrate the small opacities seen.
• The distinction between 0/1 and 1/0 crucial – 0/1 is normal, 1/0 is not.
• Select out the closest standard film. If the film corresponds closely to a standard film, then use that full category e.g. 2/2. If less profuse use 2/1, if more profuse use 2/3.
<table>
<thead>
<tr>
<th>4 major</th>
<th>12 minor</th>
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<tbody>
<tr>
<td>3</td>
<td>3/3</td>
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<tr>
<td>2</td>
<td>2/2</td>
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<tr>
<td>2</td>
<td>2/3</td>
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<td>1/2</td>
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<td>1</td>
<td>1/1</td>
</tr>
<tr>
<td>0</td>
<td>0/0</td>
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</table>
Small Opacities – profusion

- Pneumoconiosis is usually, but not always symmetrical.
- If there is significant regional difference in profusion apply the following:
  - If any zone is 3 or more sub-categories less profuse than the most profuse zone then do not include that zone in the decision on recording profusion.
Small Opacities - zones

- Lung fields divided into six zones
- Affected zones marked

Large opacities (P.M.F.)

- **A** = greatest diameter >10 mm but < 50 mm or several opacities > 10 mm but sum of greatest diameters < 50 mm
- **B** = one or more opacities with sum of greatest diameter > 50 mm but < area of right upper zone
- **C** = combined area > right upper zone

(Note: the lower border of the RUZ is at the lower margin of the anterior end of the second rib on a non-lordotic or kyphotic film.)
Large Opacities (P.M.F.)

A  \( \phi + \phi + \phi \)
\( = 1 - 5 \text{ cm} \)

B  \( \square + \square + \square \)
\( \text{cm}^2 = \text{RU} \)

C  \( \square + \square + \square \)
\( \text{cm}^2 > \text{RU} \)

Large Opacities (P.M.F.)

Source: Parkes
Pleural abnormalities

Circumscribed (plaques) or diffuse
Site (R/L) – both sides are recorded separately

Width
a < 5 mm
b maximum width > 5 and < 10 mm
c maximum width > 10 mm

Extent
1 < ¼ lateral projection of chest wall
2 > ¼ but < ½ lateral projection of chest wall
3 > ½ lateral projection of chest wall

Pleural Calcification
Diaphragms and chest walls recorded separately
Symbols

• Use of symbols is obligatory.
• When symbols are used it is understood that they are preceded by an appropriate word or phrase
  e.g. “suspect”
    “changes suggestive of”
    “opacities suggestive of” etc.
Symbols

ax = coalescence of small pneumoconiotic opacities (can be used with A, B, C, of classification)
bu = bulla(e)
ca = cancer of lung or pleura
cn = calcification in small pneumoconiotic opacities
co = abnormality of cardiac size or shape
cp = cor pulmonale
cv = cavity
Symbols

di = marked distortion of intrathoracic organs
ef = effusion
em = definite emphysema (usually COPD)
es = eggshell calcification of hilar and/or mediastinal lymph nodes
fr = fractured rib(s)
hi = enlarged lymph nodes, hilar and/or mediastinal
ho = honeycomb lung
Symbols

id = ill defined diaphragm (> 1/3 of 1 hemi-diaphragm
ih = ill defined heart outline (> 1/3 of left heart outline)
kl = septal lines (Kerley B lines)
od = other disease
pi = interlobular fissure pleural thickening
px = pneumothorax
rp = rheumatoid pneumoconiosis (Caplan’s syndrome)
tb = tuberculosis
## ILO: Short form

**Name:** ____________ **I.D. No.:** ____________

**Datum van X-straal opname:**  
**Date of X-ray plate:**

<table>
<thead>
<tr>
<th>0/0</th>
<th>0/1</th>
<th>p</th>
<th>q</th>
<th>r</th>
<th>s</th>
<th>t</th>
<th>u</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>tba</th>
<th>tbu</th>
<th>cv</th>
<th>hi</th>
<th>es</th>
<th>hv</th>
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<tbody>
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<td>1</td>
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**Comments:** __________________________________________________________

**Reader:** ________________ **Date read:** ________________
### ILO: NIOSH/ACR Form

#### 1A. Date of X-Ray

- **Date:**
- **Verdict:**
- **Reason:**

#### 1B. Film Quality

- **Grade:**
- **Reason:**

#### 1C. Is Film Completely Negative?

- **Answer:**
- **Section:**

#### 2A. Any Parenchymal Abnormalities Consistent with Pneumoconiosis?

- **Answer:**
- **Section:**

#### 2B. Small Opacities

- **Shape/Size**
  - Primary
  - Secondary
- **Location:**
  - R
  - L

#### 2C. Large Opacities

- **Size:**
  - A
  - B
  - C

#### 3A. Any Pleural Abnormalities Consistent with Pneumoconiosis?

- **Answer:**
- **Section:**

#### 3B. Pleural Thickening

- **Site:**
  - Diaphragm
  - Costophrenic Angle
- **Measurements:**
  - Width
  - Extent

#### 3C. Pleural Thickening...Chest Wall

- **Site:**
  - Diaphragm
  - Wall

#### 3D. Pleural Calcification

- **Site:**
  - Diaphragm
  - Other Sites

#### 4A. Any Other Abnormalities

- **Answer:**
- **Section:**

#### 4B. Other Symbols (Obligatory)

- **Symbols:**
- **Date:**

#### 4C. Other Comments

- **Remarks:**
  - Should Worker See Personal Physician because of Comments in Section 4C

#### 5. Film Reader's Initials

- **Initials:**
- **Date of Reading:**

MBOD/ NCOH Form