Heart Valves

- Atrio-Ventricular (AV)
  - Bicuspid / Mitral (left)
  - Tricuspid (right)
- Semilunar
  - Aortic (left)
  - Pulmonary (right)

Coronary Arteries & Aorta
Phases of the Heart

- **Systole (Max BP)**
  - Ventricle contracted
  - Aorta inflated

- **Diastole (Min BP)**
  - Ventricle relaxed
  - Aorta deflated

SRC: Physiology for Nursing Practice, pp.434-5

Measurements: NIBP

Nikolai Korotkov
Korotkov Phases / Sounds

<table>
<thead>
<tr>
<th>Sound</th>
<th>Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nothing</td>
<td>0</td>
</tr>
<tr>
<td>Sharp</td>
<td>1</td>
</tr>
<tr>
<td>Swish</td>
<td>2-3</td>
</tr>
<tr>
<td>Faint</td>
<td>4</td>
</tr>
<tr>
<td>Nothing</td>
<td>5</td>
</tr>
</tbody>
</table>

Non-Invasive Blood Pressure

- **Requirement**
  - Major artery
  - Close to heart
  - Close to surface

- **Potential Sites**
  - Temporal
  - Carotid
  - Brachial
  - Radial
  - Femoral
  - Dorsalis Pedis

SRC: Physiology for Nursing Practice, pp.434-5
Invasive Blood Pressure (IBP) (Catheter)

Flexible bladder

≈ 1.5 mm

To external sensing circuit

Review: Total Internal Reflection

\[ \theta_c = \sin^{-1}\left(\frac{n_2}{n_1}\right) \]

\[ \begin{cases} n_1 > n_2 \\ \theta \geq \theta_c \end{cases} \text{TIR} \]
Artificial Piston/Bellow Heart
(2 chambers)
Pathology : Coronary Artery Disease

- Catheter
  - Iliac artery (most common)
  - Bracial artery
  - Inject contrast dye
- C-Arm
  - Xray of heart
  - Contrast dye exposes flow in coronary arteries
- CardiacCath Video
  - 5 minutes

Source: www.heartsite.com