

• w/ 4 nodes: $\#lt=3 \quad \#rt=0, \#lt=2 \quad \#rt=1, \#lt=1 \quad \#rt=2, \#lt=0 \quad \#rt=3$
 $(5 \times 1) + (2 \times 1) + (1 \times 2) + (1 \times 5) = 14$

• w/ 5 nodes: $\#lt=4 \quad \#rt=0 \therefore 14 \times 1$
 $\#lt=3 \quad \#rt=1 \therefore 5 \times 1$
 $\#lt=2 \quad \#rt=2 \therefore 2 \times 2$
 $\#lt=1 \quad \#rt=3 \therefore 1 \times 5$
 $\#lt=0 \quad \#rt=4 \therefore 1 \times 14$

$14 + 5 + 4 + 5 + 14$
 $= 42$

$(2 \text{ possible}) (5 \text{ possible}) (3 \text{ possible}) = 2 \cdot 42 \cdot 5 = 420$

5) # combinations possible if all nurses are present

$\begin{matrix} 3 & 3 & 3 & 1 & 4 & 4 & 1 & 5 & 2 & 2 & 1 \\ 3 & 3 & 2 & 2 & 5 & 3 & 1 & 1 & 7 & 1 & 1 & 1 \\ 4 & 3 & 2 & 1 & 4 & 2 & 2 & 2 & 6 & 2 & 1 & 1 \end{matrix} \left. \vphantom{\begin{matrix} 3 \\ 3 \\ 4 \end{matrix}} \right\} \begin{matrix} 9 \text{ diff. ways assuming no} \\ \text{other patients are in the slot} \end{matrix}$

combinations possible if one nurse is on break

$\begin{matrix} 7 & 2 & 1 & 8 & 1 & 1 & 5 & 4 & 1 \\ 6 & 2 & 2 & 5 & 3 & 2 \\ 6 & 3 & 1 & 4 & 4 & 2 \end{matrix} \left. \vphantom{\begin{matrix} 7 \\ 6 \\ 6 \end{matrix}} \right\} 7 \quad 9 + 7 = 16 \text{ ways}$