

## P21+ Best Practice

<b>Project:</b>	<b>Barn Theatre, Broadgreen Hospital</b>
<b>PSCP:</b>	<b>IHP</b>
<b>Architect:</b>	<b>Nightingale</b>
<b>M&amp;E:</b>	<b>EMCOR</b>
<b>M&amp;E Design:</b>	<b>Hulley and Kirkwood</b>
<b>Health Planners:</b>	<b>Directions Consultancy</b>
<b>Structural Design:</b>	<b>Alan Johnston Partnership</b>



### Description

A four bed 'Barn' operating theatre was developed specifically for Broadgreen hospital to maximise the efficiency of the operating theatre, improve infection control and minimise running costs.

### Key Benefits

- Patient throughput increased by 40%
- Opportunities for enhanced team working
- Peer awareness of contemporary surgical practice and standards
- Improved supervision of non-consultant surgeons
- Reduced level of staffing requirement
- Opportunities to develop non-Doctor Anaesthetists in a safe environment
- Reduced infection rates through improved theatre discipline
- Reduced cost per operation
- Higher quality environment
- Efficient space utilisation

### Evidence

#### Post-operative infection rate 2010:

- |                              |      |
|------------------------------|------|
| • National average:          | <1%  |
| • Broadgreen 'Barn' Theatre: | 0.3% |

## Post-operative infection rate 2007:

Risk index		Your hospital						All hospitals		
		Last 4 periods			All periods					
No.	No.	%	No.	No.	%	No.	No.	%		
operations	SSIs	infected	operations	SSIs	infected	operations	SSIs	infected		
0	262	0	0.0	477	1	0.2	63152	340	0.5	
1	102	0	0.0	228	0	0.0	26487	276	1.0	
2	2	0	0.0	6	0	0.0	2966	58	2.0	
3	0	0	0.0	0	0	0.0	39	2	5.1	
Unknown	30	0	0.0	110	0	0.0	23394	172	0.7	
<b>Total</b>	<b>396</b>	<b>0</b>	<b>0.0</b>	<b>821</b>	<b>1</b>	<b>0.1</b>	<b>116038</b>	<b>848</b>	<b>0.7</b>	

Health Protection Agency  
July - September 2007

Latest Generation Barn Theatres

- Clinical Consultant input on theatre throughout design
- Project handed over in 2007 ahead of programme
- Maquet sterile pre-fabricated modular design  
Metal finish, replaceable 1.2M units, no waste
- Access via "air lock" Electrically operated sliding doors with knee controls & low aerodynamic disturbance
- Full height clear windows with integral blinds

*"We use lean principles to increase theatre throughput and have increased the number of patients treated by about 40% over the last two years," (since 2007) says Mr John Davidson.*



## Evaluation in use



**A simple questionnaire was left in the theatre and there were 30 respondents:**

5	Consultants Surgeons
3	Junior Surgeons
1	Consultant Anaesthetist
2	Junior Anaesthetists
1	Surgical Practitioner
9	Senior Theatre Staff
2	Staff Nurses
3	ODAs / ODPs
4	Support Workers

## Questions

- What concerns did you have prior to working in the 'Barn' Theatre?
- What do you see are the advantages of working in the 'Barn' Theatre?
- What disadvantages have you noticed working in the 'Barn' Theatre?
- Do you prefer working in the 'Barn' Theatre or a conventional Theatre?

## Disadvantages:

- Need to screen other patients from those who are awake (epidurals) during procedures
- Vent plant to minimum of 3 operating zones need to be operational (or on 'setback') to maintain integrity of air flow
- Maintenance cannot be carried out within 'Barn' Theatre whilst it is clinically operational – must be done 'out of hours' except in emergency

## Improved working environment:

- Light and airy
- Clean
- Spacious – less claustrophobic
- Defined Operating areas

- Runners
- Scrub staff advice
- Anaesthetic support
- Surgical support

### Costs in Use

<b>ANNUAL COSTS</b>	
Maintenance of Operating lamps:	£1,880
Vapac humidity units:	£3,226
Maintenance of Theatre canopies:	£5,900
Theatre validation:	£5,860
UPS/IPS backup:	£7,963
Pre and Bag filters:	£1,500
Estates staff maintenance overtime:	£5,000
Theatre deep clean:	£2,500
Replacement HEPA filters and CJ screens:	£12,000
<b>TOTAL</b>	<b>£45,829</b>

### Design Development



Steps taken to minimise risk of infection

#### ENVIRONMENTAL MEASURES

- Isolation of operating zones using ultraclean air ventilation canopies to HTM 2025
- Barn Theatre' positively pressurised
- Separate Operating Theatre for high risk patients
- Layout of Department minimises cross traffic
- High quality finishes to encourage & facilitate rigorous cleaning

#### PROCEDURES

- Improved Theatre discipline
- Zero or minimal patient stay prior to procedure
- Setting up of instruments in UCA zone



# Layout of 'Barn' Theatre

