

# East of England Hyperbaric Unit

## Quality Report

James Paget University Hospital  
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This report describes our judgement of the quality of care at this location. It is based on a combination of what we found when we inspected and a review of all information available to CQC including information given to us from patients, the public and other organisations

### Mental Health Act responsibilities and Mental Capacity Act and Deprivation of Liberty Safeguards

We include our assessment of the provider's compliance with the Mental Capacity Act and, where relevant, Mental Health Act in our overall inspection of the service.

We do not give a rating for Mental Capacity Act or Mental Health Act, however we do use our findings to determine the overall rating for the service.

Further information about findings in relation to the Mental Capacity Act and Mental Health Act can be found later in this report.

# Summary of findings

## Letter from the Chief Inspector of Hospitals

London Wound Healing Centres Ltd have provided the service at the East of England Hyperbaric Unit since 2007. We inspected the service on 17 & 18 September 2015. The hyperbaric unit was located within the James Paget University Hospital in Gorleston-on-Sea, Norfolk. The unit provided hyperbaric (high-pressure) oxygen therapy for a range of conditions. The service was available to NHS and private patients of all ages.

We carried out this inspection as part of our pilot phase for independent health care services. There are CQC inspection frameworks for single speciality (SS) services such as hyperbaric services which were being tested in wave 1 (April 2015 – September 2015). Until October 2015 we were in the pilot phase for the SS services list and therefore we will not publish a rating for the East of England Hyperbaric Unit.

The team inspected the full hyperbaric service against criteria to judge whether treatment and care was safe, effective, caring, responsive and well-led.

### **Are services safe?**

Services were safe. Staff paid careful attention to all aspects of safety. They were aware of safeguarding procedures and training completion was checked as part of the appraisal process. There were high standards of cleanliness and equipment was appropriately checked and maintained, with detailed attention to safety. Medical records were comprehensive. Staff assessed and took into account risks to individual patients. The unit was fully staffed and had access to additional specialist support.

### **Are services effective?**

The service was effective. Due to the specialised nature of the service there was no national benchmarking, but we saw that patients were fully assessed and treatment was based on best practice. Patients told us that they were pleased with their health outcomes. The service followed up on their progress after completion of their treatment. Patients were kept well hydrated. Appropriate regard was paid to the requirements of the Mental Capacity Act. Staff were experienced, well trained and well supported. There was strong team working, including with other agencies. Emergency treatment was available 24 hours a day, every day of the year.

### **Are services caring?**

We found the staff at the hyperbaric unit to be compassionate and caring. Care and treatment was provided in a friendly, kind and considerate way. All staff were approachable. They provided clear explanations of the procedures to patients. Staff were ready to discuss patient's treatments with them and involve them and (where appropriate) their families in decisions about care and treatment. Staff provided empathetic support to families as well as to the patients.

### **Are services responsive?**

We found the service responsive to the needs of patients it treated. Treatment schedules for non-emergency patients took their individual circumstances into account. Rapid access to treatment was provided, especially for emergencies, when the unit could be opened within about an hour. Patients told us that they received prompt appointments and there was no delay in their treatment when they arrived at the unit. Cancellations were rare. The service was patient-centred and encouraged feedback. A complaints policy was in place, but no formal complaints had been received.

### **Are services well led?**

The service was well led. Strong clinical and professional leads were provided by the medical director and the registered manager (who was the managing director). Staff shared a strong commitment to providing the best possible service to patients. Risks were assessed and action taken to reduce them. The quality of the service was carefully monitored.

# Summary of findings

Senior managers carried out audits and areas for improvement were identified and tackled. There was an open and honest culture. Feedback from patients and staff was encouraged and was used to improve the quality of the service. Investment was made in equipment to further improve the service and the service participated in national research. Problems such as enabling rapid access to the service for critically ill patients were being tackled.

## **Our key findings were as follows:**

- The service was well equipped and well maintained, with careful attention to all aspects of safety.
- The staff at the hyperbaric unit were compassionate and caring.
- The service was appropriately staffed with well qualified doctors, nurses and technical staff, and was responsive to patient's individual needs.
- The clinical lead and registered manager provided a strong lead and team working was effective.

**Professor Sir Mike Richards**  
**Chief Inspector of Hospitals**

# Summary of findings

## Our judgements about each of the main services

### Service

#### Hyperbaric Therapy Services

### Rating Summary of each main service

The clinical lead and registered manager provide strong leadership to the small and effective team. There was a positive ethos of providing good quality care and staff were caring and compassionate. Patients were positive about the care and treatment that they had received. There was careful attention to all aspects of safety. Risks were identified and actions were taken to reduce them. The service was responsive to patients' needs. Patients received prompt treatment and cancellations were rare. The service was accessible and the unit could be available for use for emergency patients in about an hour. Staff told us that they received good quality training. They were expected to complete mandatory training in their substantive posts within the James Paget hospital, and received specialist hyperbaric training from the provider. The service was actively looking for ways to further improve and took patients' and staff comments into account.

# Summary of findings

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# East of England Hyperbaric Unit

## Services we looked at

Hyperbaric Therapy Services; Dialysis Services

# Summary of this inspection

## Background to East of England Hyperbaric Unit

The East of England Hyperbaric Unit is based at the James Paget University Hospitals NHS Foundation Trust in Gorleston-on-Sea, Norfolk. Since 2007 the service has been provided by London Wound Healing Centres Ltd on behalf of NHS England. Referrals are taken from across the region, for example from London, Essex and Hertfordshire. The service is delivered in partnership with the James Paget University Hospital Trust. It is integrated with the hospital's critical care and emergency medicine department under the clinical leadership of NHS consultants based at the hospital.

The unit provides emergency services for divers with disorders requiring compression and emergency treatment for patients with carbon monoxide poisoning, gas embolism and necrotizing soft tissue infections.

Non-emergency treatment is available for a range of conditions including complications resulting from the use of radiation in cancer treatment, osteomyelitis, problem wounds that are not healing, and diabetic foot ulcers.

There are CQC inspection frameworks for single speciality (SS) services such as hyperbaric services which were being tested in wave 1 (April 2015 – September 2015). Until October 2015 we were in the pilot phase for the SS services list and therefore we will not publish a rating. The team inspected the full hyperbaric service at this inspection.

The previous CQC inspection was undertaken in 2013. The service was meeting all the inspected standards.

## How we carried out this inspection

The inspection was carried out by two inspectors from the Care Quality Commission.

We carried out this announced inspection on Thursday 17 and Friday 18 September 2015. We talked with the managing director, the medical director and seven members of staff, including doctors, nurses and the specialist technical staff. We also had conversations with eight current and former patients. We reviewed performance information from and about the unit.

We reviewed patients' clinical records and observed how staff worked as a team to ensure that patients received good care and treatment. Prior to the announced inspection, we reviewed a range of information we had received from the service.

## Information about East of England Hyperbaric Unit

The service is available 24 hours per day, 365 days per year.

Hyperbaric oxygen treatment involves breathing pure oxygen at higher than atmospheric pressures in an enclosed chamber. At the time of our inspection, the service had an eight-person 'walk-in' hyperbaric chamber. This was installed in 2008. It is a 'Category 1' facility, which means that it can cater for the most seriously ill patients who might need advanced life support.

Between May 2014 and May 2015, there were 11 emergency admissions, with these patients receiving a total of 41 treatment sessions. In addition, there were 18 non-emergency patients who attended for a total of 581 treatment sessions. The service has the capacity to provide more of these treatments, for example offering the potential to avoid amputations through the treatment of non-healing wounds and ulcers.

The management structure of the unit consisted of the managing director, an assistant manager, the medical

# Summary of this inspection

director, (a senior consultant) and the nurse manager. Eleven other doctors and 13 hyperbaric nurses were employed on a part-time basis, supported by three technical staff.



# Detailed findings from this inspection

# Hyperbaric Therapy Services

Safe

Effective

Caring

Responsive

Well-led

## Summary of findings

We found that the services provided by the East of England Hyperbaric Unit at the James Paget Hospital were safe, effective, compassionate, responsive and well led. This was because the service took great care in ensuring the safety of patients (and staff) and secured positive patient outcomes. Staff were competent, caring and professional, and they had the information and training they needed to provide effective care to patients.

There was highly effective multi professional team working and very quick access to treatment. The service was patient-centred and took into account the needs of different people.

We saw strong and effective leadership. There was an open and transparent culture. The low staff turnover reflected the positive regard in which staff held the service and their colleagues. Managers used effective governance and performance management to maintain and improve the quality of the service.

## Are hyperbaric therapy services safe?

Staff paid careful attention to the safety of the service and had up to date training on how to provide safe care and treatment. There were high standards of cleanliness. The service ensured that equipment was appropriately checked and maintained, with detailed attention to safety. Medical records were comprehensive. Staff assessed and took into account risks to individual patients. The unit was fully staffed and there was access to additional specialist support.

### Incidents

- The service had a clear process for handling and responding to safety alerts about medicines or equipment. Alerts were scrutinised and acted on where relevant. For example, a brand of pacemaker had a fault and patients fitted with that pacemaker needed to be re-tested. This was noted in case any patients had that brand of pacemaker. We were told that before treating a patient who had a pacemaker the service would routinely check with the manufacturer that there were no issues with it being subjected to pressure in the chamber.
- Staff reported incidents of harm or risk of harm in a log. Senior staff investigated any incidents reported and identified any lessons to be learned. Where incidents might have an impact on other hyperbaric units (such as those related to equipment), information was shared promptly with staff at the other units.
- The service had a policy that defined what incidents should be recorded and stipulated how they should be handled. We found that staff had a clear understanding of what constituted an incident and the action that should be taken; an example was when fluid was found

# Hyperbaric Therapy Services

on the floor of the chamber. It was not initially clear what it was, so it was noted as an incident and investigated. It turned out to be condensation and action was taken to remedy the problem.

- Patients told us that they felt that good attention was paid to safety.
- Staff were aware of their duty of candour responsibilities. (Providers of healthcare services must be open and honest with patients when things go wrong with care and treatment, giving them reasonable support, truthful information and a written apology). Patients were fully informed about their care and treatment. This included patients who had been unconscious when they had received emergency treatment.

## Cleanliness, infection control and hygiene

- The provider confirmed that there had been no healthcare acquired infections in the twelve months prior to August 2015.
- The service had adopted and was following the hospital's infection prevention principles and responsibilities policies, and its mandatory training which included infection control. The hospital's infection control team carried out unannounced visits to audit infection control practice.
- We noted good standards of cleanliness. Cleaners followed a detailed schedule and deep-cleaned the pressure chamber inside and out weekly. Staff cleaned other equipment, such as oxygen masks, according to a schedule and the service had a clear programme for replacing equipment when needed. A newly-introduced cleaning audit was in place.
- Staff followed clear protocols for treating infectious and potentially infectious patients.
- We observed the chamber and equipment being appropriately cleaned following treatment.
- Personal protective equipment (PPE) was readily available. We saw staff washing their hands appropriately.

## Environment and equipment

- The small room accommodating the chamber and the chamber itself were tidy and well organised.
- The service had a detailed planned and preventative maintenance schedule covering, for example, regulators and valves, compressors and medical devices. This specified the frequency with which checks needed to be carried out and all the checks were up to date.

- A maintenance log noted any work undertaken, parts used and (if relevant) the date on which further inspection was due. Maintenance and servicing was carried out by hospital technicians in accordance with hospital guidance and manufacturers' specifications.
- There was fire fighting equipment in the chamber and also an automated fire suppressant (misting) system.
- Staff carried out thorough and detailed monitoring of equipment. For example, to check that the equipment was working effectively, staff monitored oxygen delivery daily and weekly using transcutaneous oximetry measurement (a way of measuring oxygen levels under the skin). This ensured that patients received the correct dose of hyperbaric oxygen.
- Staff assessed risks and took action to reduce them. For example, they flushed the ventilator screen in the chamber with a small amount of nitrogen to reduce further any possible risk of fire. Staff had assessed the risks of using nitrogen in the chamber.
- There were backups of power and medical gasses in the event of system failure. This would allow sufficient time for the chamber to return to atmospheric pressure. A safety mechanism on the control panel meant that the pressure in the chamber would start reducing automatically in the event of problems outside of the chamber. Staff could complete treatments manually in the event of computer failure. Staff told us that if there were any concerns or problems, the default position was one of safety and the chamber would be depressurised at a safe rate.
- A new intensive care unit ventilator was installed in the chamber following requests by the consultant anaesthetists for this equipment to be upgraded to enable the better care of critically ill patients. This is enabled the unit to look after very unwell patients. The ventilator was of the same design used in the hospital so that staff were familiar with its operation.
- The unit was the first in this country to have an ultrasound machine. This could be used to check that a patient did not have pneumothorax (a collapsed lung) following treatment when the chamber pressure is normalised.
- All equipment for use in the chamber was certified for use under pressure. The British Hyperbaric Association had carried out a peer review in 2014 and found equipment related to the functioning of and the chamber itself to be properly maintained and in good condition.

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- Each treatment was referred to as a 'dive'. Prior to any treatment staff carried out a pre-dive checklist to ensure all equipment was correct and safe to use.

## Medicines

- The provider had a code of practice for the management of medicines in its hyperbaric units. This laid out clear guidance and responsibilities.
- No controlled drugs were kept in the unit. Where needed, these would be administered in the hospital's intensive care unit under the relevant hospital protocols according to procedure. Together with the standard James Paget University Hospital drugs charts, any medications would be brought to the unit with the patient and unused drugs taken back with the patient.
- The hyperbaric unit had two cardiac arrest packs and a hypoglycemia box. A drug cupboard contained nasal drops to help patients clear their ears and paracetamol. We saw that all medicines had been checked and were in date.
- Doctors in the unit had direct access to the hospital pharmacy and advice from the lead pharmacist.

## Records

- Staff maintained medical records in line with the hospital policy and followed the hospital proforma to ensure that assessments were comprehensive and consistent. These proforma were printed out and put with patients' records.
- We reviewed five patients' records. They were fully completed with appropriate description of treatment and any concerns reported. A full assessment and a detailed plan of treatment were completed for each patient. All appropriate risk assessments were in place and completed, together with a record of consent. Allergies were identified and properly recorded.
- Clinical records accompanied the patient on each treatment session. Summary clinical notes regarding treatment of inpatients were entered in the patients' paper hospital notes, or on the intensive care unit electronic record. Separate notes for the hyperbaric unit contained more detail. These were retained for two to three months after the patient's discharge, for possible audit, and then scanned and given to the hospital's records department.
- Staff registered new patients on the hospital patient admission system.

- On the completion of treatment of elective patients a discharge letter was sent to the referring consultant and copied to the patient's GP. Emergency patients' discharge letters were also sent to their GP. All discharge letters were also copied to the patients.
- The service kept additional records of each pressurisation including times, pressures and names of all other participants. This data was recorded in a separate chamber treatment log and not included in the patient's hospital record.
- The medical director carried out checks on the quality and completeness of patients' notes and communicated audit outcomes directly to individual physicians or via staff meetings. We saw evidence that auditing of records was carried out.

## Safeguarding

- The service had a safeguarding policy in place. This assigned responsibilities and required staff to follow the hospital's policies and procedure for safeguarding children and adults.
- Staff understood their responsibilities and the procedure to follow if they had any concerns about patients being subject to abuse. The service followed the same policy on safeguarding patients from abuse as the James Paget University Hospital.
- Information regarding prompt referral of safeguarding concerns was available in the unit, along with contact numbers for the safeguarding team.
- Records going back to January 2013 confirmed that no safeguarding concerns or alerts about the service had been received by the CQC.
- All staff caring for patients under the age of 18 had Level 2 safeguarding training, with 60% trained to Level 3.
- The clinical director (a paediatric anaesthetist) told us that when a young child required treatment a paediatric nurse would accompany them.

## Mandatory training

- We were told that wherever possible the unit had adopted the hospital's clinical and training policies to support a seamless approach to service provision.
- A programme of mandatory training recorded what courses had been attended by staff. This included safeguarding and life support for both adults and children, moving and handling, and infection control.

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Confirmation that staff had completed the mandatory training was copied to the unit management and training completion was checked as part of managers' appraisal of individual staff's work performance.

- Staff told us that their training was up to date and that they were confident that it equipped them to provide safe care.
- Records confirmed that staff were up to date with mandatory training and specified when refresher training was required.

## Assessing and responding to patient risk

- There were low levels of unplanned transfer of care with one patient transferred to another health care provider in last 12 months.
- During each treatment a consultant anaesthetist or a consultant in emergency care and two nurses were available. Depending on the patient's condition, medical staff were inside or outside the chamber. Other specialists would be available if required.
- There was equipment to monitor the patient's condition and treatment from full ventilation to blood pressure and transcutaneous oxygen and blood gas monitoring.
- Nursing, medical and technical staff were able to communicate at all times via communication systems in the chamber.
- To maintain confidentiality, staff could pass notes through an airlock instead of using the telephone.
- Medical records we reviewed showed that the patient's condition was checked regularly throughout their treatment.
- Clear procedures were in place to identify patients at risk of deterioration. If a patient's condition deteriorated, a doctor could enter the chamber and be ready to treat the patient in less than 90 seconds.
- If a patient required evacuation from the chamber, this could be achieved in less than two minutes following an emergency protocol.
- Patients who required resuscitation could be given emergency aid at depth with an external defibrillator powering paddles within the chamber if the need for defibrillation arises. The chamber would be depressurised to then enable the patient to receive full treatment outside unless the hyperbaric treatment was the paramount treatment e.g. in cerebral gas embolism.

## Nurse Staffing

- Four experienced staff (in accordance with the industry standard) were always present required to be present for the duration of treatment. These included a hyperbaric physician, a chamber supervisor, a chamber operator and an in chamber assistant.
- The chamber supervisor covered daily sessions from 8.30am to 12.30 pm. They also covered a daily and weekend on call rota. A supervisor from London was available to assist when necessary.
- The chamber operator and in-chamber assistant roles were covered by a nurse, paramedic or operating department assistant who were specially trained in this speciality. The in chamber assistant accompany patients at all times.
- The chamber operator monitored patients through a chamber window and via CCTV. This provided an additional check on how individual patients were coping with the treatment and enabled the chamber operator to alert the in-chamber attendant when any patient showed signs of distress.
- There were no staff vacancies. Staff turnover and sickness levels were low and arrangements were in place to secure additional hyperbaric-trained intensive care nurses if needed.
- As a precaution, staff could only enter the chamber when it was in operation once in a twenty four hour period. They received a short medical from the attending consultant at the end of each session.

## Medical staffing

- The hyperbaric physician role was provided by 14 doctors on part time contracts with the unit.
- Critically ill patients were always accompanied by an experienced intensive care nurse inside the chamber and a second doctor would sometimes be in attendance for ventilated patients.
- The unit's medical director had direct access to medical advice from other senior consultants at the hospital and could also contact international experts where required. Either the medical director or their deputy was available on call at any time to other clinicians working in the unit. Where needed, further back-up would be provided by the provider's London-based staff.
- The rota for hyperbaric physicians was prepared three months in advance to ensure critical care cover all day, every day. There was a monthly rota for in-chamber attendants and operators. This was updated continually

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to take into account any staff absences. Doctors and nurses confirmed that there were never any staff shortages, with a readiness by staff to stand in at short notice if needed.

- Rotas reviewed showed there to be full cover of the unit 24 hours, seven days a week.

## Major incident awareness and training

- Staff had received fire training and were aware of contingency plans in the event of power failure or other technical emergencies.
- The unit was connected to the back-up generator for the intensive care unit and all the equipment inside the chamber had back-up power supplies.
- The system was run by computer but the chamber could be run manually in the event of computer malfunction or failure.
- The medical director told us that standard operating procedures were in place for events such as a fire or the blow-out of a window in the chamber.
- Staff described how a lightning strike on the hospital site had affected the electricity and telephones. Treatments planned for that day were cancelled as a precaution.

## Are hyperbaric therapy services effective? (for example, treatment is effective)

The service was effective. Patients were fully assessed and treatment was based on best practice. Staff had access to the information they needed to provide effective treatment. Patients were pleased with their health outcomes. They were provided with clear information, for example about potential side-effects, and the service followed up on their progress following treatment. Patients were kept well hydrated. Prompt action was taken if they experienced pain. Appropriate regard was paid to the requirements of the Mental Capacity Act. Staff were experienced, well trained and well supported through supervisions and appraisals. There was strong team working, including with other agencies. Emergency treatment was available 24 hours a day, every day of the year.

## Evidence based care and treatment

- Evidence based care and treatment was provided. All treatments were in line with recognised British

Hyperbaric Association guidance and underpinned by recognised international diving guidance. Treatments were subject to change based on clinical judgement. There was a policy in place to facilitate this variation.

- Each patient received a full assessment by a consultant prior to receiving treatment. For non-emergency patients, this usually involved a complete review by the multidisciplinary team.
- In-chamber attendants ensured that masks and hoods were correctly fitted and that patients' posture enhanced best oxygen intake. Patients were required to give up smoking before treatment and there was normally no more than two days between treatments in order to optimise results.
- A full 'dive log' was kept for each treatment showing the time of descent, time at depth and ascent. It included which patient and staff were in the chamber and noted any events that occurred with the patient or any technical events. Each member of staff had their own dive log.
- There were procedures and algorithms in place to manage clinical complications such as pneumothorax. These procedures were based on best practice and National Institute for Health and Care Excellence (NICE) guidance.
- The treatment of any children using the service would be overseen by a paediatric consultant.
- Ventilated patients could be accommodated and sedated ventilated patients would be overseen by a trained anaesthetist.
- The clinical team had the managerial authority to call in any staff as required without involvement of the management team, in order to act in the patient's best interests.

## Pain relief

- Patients referred through to the unit from the hospital's intensive care unit would normally have anaesthetics and analgesics in place. Elective patients (those who were receiving non-emergency treatment) who needed pain relief would bring in their own pain killers. These could be passed through to them in the chamber if required.
- Staff told us that they would not treat people suffering from colds or with symptoms such as earache. If a

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patient experienced pain in their ears during treatment the pressure would not be increased and staff would encourage the patient to use techniques, such as swallowing, to help them clear their ears.

- As specialists in anaesthetics and intensive care, the medical and nursing staff were experienced at picking up signs that patients who were unable to communicate verbally were suffering pain. Appropriate pain relief would then be given.
- None of the patients with whom we talked had needed pain relief. A few of them told us that they, or another person in the chamber, had experienced pain in their ears. The increase in pressure was stopped at this point and they were reminded of the strategies to use to help clear their ears. These techniques worked and the treatment was then continued.

## Nutrition and hydration

- Formal assessment of the nutrition and hydration of patients using the chamber were not undertaken. This was due to the nature of the ailments of patients receiving treatment.
- Patients were provided with water and fruit squash in the chamber and all the patients with whom we talked confirmed that they were encouraged to drink. During a tea break part way through each session, tea, coffee and biscuits were passed through the air lock into the chamber.
- Blood tests would be carried out when patients were first admitted and signs of dehydration would be highlighted.
- In the service's risk register a control measure against the risk of decompression illness/barotrauma required supervisors to ensure that all occupants were adequately warm during treatment and well hydrated throughout.

## Patient outcomes

- Patients were pleased with the outcomes of their treatment. They told us that they had been made aware of the potential side effects but had none of the people with whom we spoke had suffered any symptoms. They confirmed that clinical staff checked their hearing and eyesight at intervals during the course of treatment.
- Patients received a discharge letter and were provided with an emergency phone number to contact the service if they experienced any adverse effects, or had queries or concerns. They were advised of possible side

effects such as temporary visual problems. Elective patients were advised to avoid driving before, or following treatment and to have a companion with. Divers who had been treated for decompression illness were asked to return to the unit for a follow up check before they next undertook a dive.

- Patients were discharged to the care of their GP or referring physician, for example the referring vascular surgeon would carry out the follow up for a leg ulcer treatment patient. In addition unit staff telephoned every patient about three months after the completion of their treatment to check on progress. In instances such as a wound or ulcer not healing as well as anticipated, patients were invited back to the unit for assessment and possible further treatment. The patient's GP and/or consultant would be notified of these recalls.
- The medical director told us that the three-monthly post-treatment progress checks were indicating that patients were experiencing better quality of life, for example with reduced need for analgesics.
- The unit audited outcomes including pain levels following treatment, outcomes of patients following treatment for decompression illness which had been published and necrotising fasciitis. All patients were followed up with a phone call three months after treatment.

## Competent staff

- The medical director and all the other hyperbaric physicians were consultant level anaesthetists or critical care consultants, trained to the required standard in hyperbaric medicine. A hyperbaric physician described the six day course that had been part of their induction as being detailed, although mainly related to diving. This was supplemented by tele-learning, attendance at international conferences, evening lectures and practical sessions. A member of the medical team described recent in-house training involving a hands-on simulation of a cardiac arrest in the chamber as very practical and useful. Although the physician was trained in advanced life support techniques the practicalities of communication from inside to outside the chamber, resuscitation in a restricted space and understanding of the decision making and responsibilities in such a situation provided valuable learning.
- All chamber staff had completed a chamber operator and attendant course organised and run by the provider

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and recognised as an appropriate qualification by the National Board for Hyperbaric Medical Technology (US). This included an induction by the registered manager (an experienced supervisor and operator). Supervisors went on refresher courses to update and refresh their skills.

- Staff were required to maintain their basic skills, with annual refresh training.
- The staff with whom we talked were experienced and displayed a confident and competent approach to their work in the unit. They told us that they felt they had received good training and that they were able to access any additional relevant training. We noted that training included safe use of insulin, blood handling and conflict resolution.
- Staff were encouraged to pursue continual personal development in the speciality. A number of staff were going to attend the British Hyperbaric Association annual conference.
- Patients told us that they were confident in the competence of the staff. One patient gave us an example of the quick and co-ordinated team response when another patient undergoing treatment in the chamber was having some difficulties.

## Supervision and appraisals

- The medical director, formerly the appraisal lead for the hospital, was responsible for the monitoring and appraisal of the physicians in the unit. This included direct observation of practice and monitoring the quality of each doctor's notes in the clinical records.
- The senior nurse manager conducted quarterly supervision sessions and unit appraisals for the nursing staff. We were told that all the appraisals had been completed for nurses who had been working in the unit for over 12 months, with appraisals needed for four new members of the team. The three staff files that we reviewed showed that appraisals had been completed. An appraisal matrix indicated when appraisals were due.

## Effective team working

- We observed strong, efficient and mutually supportive team-working within the unit.

- The senior members of the clinical team were consultants within the hospital. This helped the close and effective working with the intensive care unit and other parts of the hospital.
- Staff told us that communication was good both inside the team and with other colleagues, for example we were told that physicians could easily get a second opinion and other support from colleagues.
- Multi-disciplinary working involved a range of other healthcare specialists from both within the hospital and in the community according to the patient's condition. We were told that this worked smoothly, "The majority of the time".
- The unit had effective links with the regional referring agencies, emergency services, neighboring hospitals and transport services.

## Seven day service

- Treatments for diving disorders not requiring compression and elective hyperbaric treatments were carried out 9.00-12.00 weekdays. However, the service was available to provide emergency treatment 24 hours a day every day of the year. Most of the support services that were likely to be needed, such as CT brain scans, were also available. MRI scanning was not available all the time but medical staff told us that this would usually already have been carried out or could be done after unit treatment.
- Referring specialists have been ready to attend in emergencies, for example concerning a necrotising wound.
- The lack of ear, nose and throat (ENT) expertise on site at weekends was the only area described to us as resulting in some issues, although it had usually been possible to get an ENT surgeon when needed.

## Access to information

- Staff told us that they had access to the information needed to provide appropriate treatment for each patient.
- All the necessary records were available to enable the appropriate care and treatment. Records for hyperbaric treatment were kept within the unit. Access to other information such as blood results was through usual hospital systems. Staff we spoke with told us they had no problems accessing the correct information but told us that they would not provide care if the appropriate information was not available.



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## Consent, Mental Capacity Act and Deprivation of Liberty Safeguards

- The service followed the local hospital approach on informed consent and on assessing capacity.
- Patient consent forms were reviewed and revised following discussions with the General Medical Council and with a third part provider to ensure that they aligned with legal requirements.
- A tick list form was completed for each patient and this included obtaining signed consent. Elective patients came in for assessment and, if suitable for treatment, were given a consent form for treatment, photography and CCTV use. Information was provided about the nature, purpose and potential effects of the treatment, including the risks and expected benefits. Patients with whom we spoke confirmed that the process had been well explained.
- Consent issues were covered in the intensive care unit for unconscious patients who were transferred from this unit.
- All the patients whom we asked confirmed that the treatment had been fully explained to them so that they were able to give their informed consent.

## Are hyperbaric therapy services caring?

We found the staff at the hyperbaric unit to be compassionate and caring and judged this aspect of the service as 'good'. Care and treatment was provided in a friendly, kind and considerate way. All staff were approachable and they provided clear explanations of the procedures. They were ready to discuss patient's treatments with them and involve them and (where appropriate) their families in decisions about care and treatment. Staff provided empathetic support to families as well as to the patients.

### Compassionate care

- There was only one patient receiving treatment at the time of our inspection, but we observed that the staff had established a friendly relationship with the patient who told us that they found the service excellent.
- We spoke with a further seven patients by telephone. They all confirmed that they had received kindly and considerate care. Staff responded promptly when one patient had experienced some pain in their ears during treatment. The patient was impressed by the sensitive

way with which this was handled. Another patient told us that they found the staff very respectful and compassionate and said, "They did everything they could to make it comfortable."

- One patient mentioned that it was hard for a tall person to feel comfortable in the confined space of the chamber, but staff did their best to ensure the patient's comfort by placing them opposite an unoccupied chair so that they could stretch their legs.
- Another patient commented that where people had mobility issues staff listened carefully to what the people said about how they could most easily get in and out of the chamber. When an amputee needed to use the service they were, "Assisted in a way to help them feel as least embarrassed as possible". Staff were respectful of the person's desire to do as much as they could themselves but ready to assist when needed.
- Prior to receiving treatment patients were asked whether they had claustrophobia or had ever had panic attacks. Staff told us that various strategies, including sedation and relaxation techniques, were offered to patients who felt that they might experience problems. One of the patients we talked with observed that a person who said they might experience claustrophobia was offered alternative masks to identify what best suited them.
- We reviewed a sample of 14 patient satisfaction survey forms. Without exception these confirmed that the service received had been delivered in a caring and considerate manner.
- A curtained changing area was provided within the waiting area, but if patients preferred a more private setting, they were able to use the facilities of the adjacent radiology unit.
- The service had received no formal complaints. One 'unofficial' complaint email had been received in the last year. This was resolved to everyone's satisfaction by the clinical lead and no formal complaint was made. The large number of 'Thank You' cards, boxes of chocolates and other items indicated patients' appreciation of the care that they had received.

## Understanding and involvement of patients and those close to them

- Staff told us that they tried to be approachable if patients wanted to discuss their treatment or had any concerns. Patients with whom we spoke confirmed this. They told us that what would happen during their

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treatment was very well explained. This included them being shown the inside of the chamber and given an explanation of how it worked and what to expect. Comments from patients included, “One of their priorities was to make sure I was comfortable with the procedure” and, “They made me feel welcome and comfortable with the whole procedure”.

- Duty doctors and nurses were ready to talk with patients prior to each daily treatment session and during and after treatments. One patient told us “At every stage they take a great interest in what you have to say.”

All patients had an opportunity to discuss any issues during their treatment reviews with the duty physician. These occurred after every 10 sessions. A younger patient commented that they were particularly impressed that the consultant was very accessible and ready to discuss the treatment and any concerns raised by the patient or members of their family.

- Patients said that the benefits and potential side effects had been discussed with them. They were advised to have a friend or family member to do any driving required when they were attending appointments. When patients had completed their treatment they were given advice, for example to avoid flying or to come in for a check-up before undertaking further dives. They were told what to do if they experienced any side effects such as changes in their eyesight. One patient had needed to contact the service for advice subsequent to receiving treatment. They commented on the quick and helpful response that they had received to their emails and to telephone calls from their family.

## Emotional support

- Patients with whom we spoke commented on the empathetic and supportive attitudes of all the staff, for example understanding concerns that people may feel about using the masks and enabling them to try them on prior to treatment.
- Staff described entertaining children who were receiving treatment in the chamber with, “Fish – and sometimes sharks!” swimming past the portholes.
- Patients told us that companions were made welcome.

## Are hyperbaric therapy services responsive to people’s needs?

### (for example, to feedback?)

We found the service responsive to the needs of patients. Treatment schedules for non-emergency patients took their individual circumstances into account. Rapid access to treatment was provided, especially for emergencies. Patients told us that they received prompt appointments and there was no delay in their treatment when they arrived at the unit. Cancellations were rare. The service was patient-centred and encouraged feedback. A complaints policy was in place, but no complaints had been received.

## Service planning and delivery to meet the needs of local people

As a Category 1 facility, the East of England Hyperbaric Unit had been able to cater for some of the sickest patients in the country. Referrals had been taken from across the region, for example from London, Essex and Hertfordshire.

We were told that the unit had three distinct patient groups:

- Those who attended the service for 30 to 40 routine hyperbaric therapy sessions over a six to eight week period.
- Those admitted as emergency referrals but conscious and not critically ill.
- Critically ill patients and those whose condition was unstable, making them at risk of deteriorating and becoming critically ill.
- Routine treatments were scheduled on a daily basis, taking into account the distances travelled by each patient and their individual situation.
- All emergency referrals were admitted via James Paget University Hospital’s accident and emergency department, where patients would be assessed and stabilised. Critically ill patients were first admitted to the intensive care unit using long-standing protocols developed between the intensive care unit and the hyperbaric unit. Patients not needing this level of care were referred on directly to the hyperbaric unit for further assessment and treatment.
- Patients told us that they had been provided clear directions and information prior to attending for their initial assessment sessions. They were also given

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appropriate contact details for use during and after their treatment. These included a dedicated hyperbaric emergency hotline to ensure a prompt response to any enquiries.

## Access and flow

- Although space was limited the unit was fully accessible. Ramps and assistance were available for patients in wheelchairs to access the chamber. One row of seats could be removed from the chamber so that a trolley or bed could be accommodated.
  - An effort had been made to ensure that the environment was as patient-friendly as possible, for example with a CD player having speakers inside the chamber on which patients own CDs could be played.
  - Toilet facilities, with appropriate privacy, were provided inside the hyperbaric chamber. Air conditioning was also provided within the chamber.
  - The service offered a 24 hour, 7 day a week service for emergency patients. Staff could be called in and the unit opened within about an hour.
  - Non-emergency patients were seen Monday to Friday during normal working hours.
  - Staff attended mandatory training (provided by the hospital) on diversity, cultural requirements and dementia.
  - The service had not had any patients who needed translation services, but staff were aware that they could use an interpretation service via the hospital switchboard.
  - A Braille translation service was available.
  - There had been no patients treated recently who had a learning difficulty or who were living with dementia, but staff told us they would be considered for treatment in the same way as other patients whilst allowing for the restrictions of a very small treatment area and any concerns that this might cause the patients.
  - Some patients travelled significant distances to the unit. Staff had, on occasion, arranged accommodation for patients and relatives to stay locally during treatment.
- emergency admissions when it could be available in about an hour. Those needing emergency admission, such as divers, could be airlifted to the facility by a third party provider.
  - Initial assessment for elective patients allowed time for the treatment to be fully discussed and for patients to ask any questions. One patient told us that they, “Had a good discussion beforehand and I was able to ask questions”.
  - The service tailored appointment times to patients’ needs, for example university attendance.
  - Patients told us that referral to treatment times were quick and they had never had any cancellations or postponements. When they arrived at the unit there was no delay in their treatment. One patient told us that transport arrangements meant that they had arrived early for some appointments but that staff had greeted them and provided a cup of tea for them to enjoy in the unit’s waiting area.
  - The service told us that in the last 12 months there had been one postponed treatment due to maintenance of the chamber. The only other time that services were cancelled was as a precaution following the lightning strike in case equipment had been affected.
  - In order to free up trained hyperbaric staff from the hospital’s intensive care unit, the provider had arrangements in place with an approved nursing agency, to replace any member of staff who may be called upon to undertake hyperbaric duties.
  - The provider had developed a link between the unit and the ‘Special Ambulance Transfer Service’ to return critically ill patients to their referring hospital after treatment. This was to secure timely access to a suitable intensive care ambulance and crew and to avoid having to remove anaesthetists from their other hospital duties to accompany the patient. This has meant that the service could be tailored to meet patients’ needs for a prompt return to intensive care.

## Learning from complaints and concerns’

## Meeting people's individual needs

- We found that the service was accessible. Managers told us that the chamber could be ready for use and fully staffed at short notice, especially in the case of
- There was a complaints policy and procedure in place, but no complaints had been received by the service.
- Managers told us that if any complaints were received these would be sent to, and investigated by, the

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registered manager. The clinical director would liaise with hospital if relevant. Patients could take any complaints direct to the hospital's Patient Advice and Liaison Services if they preferred.

## Are hyperbaric therapy services well-led?

The service was well led. Strong clinical and professional leads were provided by the medical director and the registered manager. Senior staff and all the members of the team with whom we spoke shared a strong commitment to providing the best possible service to patients. The quality of the service was carefully monitored. Risks were assessed and action taken to reduce them. Senior managers carried out audits and areas for improvement were identified and tackled. There was an open and honest culture. Feedback from patients and staff was encouraged and used to improve the quality of the service. Investment was made in equipment to further improve the service and the service participated in national research. Problems such as enabling rapid access to the service for critically ill patients were tackled.

## Governance, risk management and quality measurement for this core service

- The medical director provided an effective clinical governance lead. Together with their deputy and the senior nurse they monitored the quality of the care provided. This included ensuring that documentation was clearly and fully completed for each patient. Audit results are communicated to individuals or to the team as necessary.
- The medical director also ensured that clinical staff had the necessary qualifications, skills, experience and training. They checked that all training had been completed and carried out annual appraisal of unit practitioners' performance.
- Quarterly clinical governance meetings were attended by the clinical lead and their deputy, the senior hyperbaric nurse and patient administration manager, plus other staff, for example when presenting audit findings. These meetings reviewed any incidents. Learning was identified and any relevant changes to procedures were agreed. The meetings also oversaw risk management and the development of standard operating procedures and of policies for the service, for example for chaperoning.

- The service submitted data quarterly to NHS England for the Specialised Services Quality Dashboard related to the clinical reference group of Hyperbaric Oxygen Therapy.
- The registered manager visited the service weekly monitored the quality of the service and of the equipment and its maintenance. We saw that the equipment was regularly maintained.
- All staff had professional indemnity insurance.
- A risk management policy was in place that required risks to be assessed according to likelihood and impact and then ranked as red, amber or green. We saw that this approach was followed in the risk register and that the most severe risks were prioritised, with mitigating actions put in place to alleviate the risks. A wide range of risks was identified, from the potential for barotrauma to cross infection and fire. Appropriate actions to reduce the risks had been put in place, with progress reviewed by the clinical governance group.
- The provider informed us that staff were encouraged to visit other facilities and attend conferences. This was to enable learning and better benchmarking of the effectiveness of the service. A hyperbaric practitioner confirmed that such opportunities were promoted to staff, for example attendance at international conferences. Staff brought back learning and shared this with the rest of the team.
- The management and senior clinical team were fully aware of the potentially complex commissioning arrangements of the service and actively worked with commissioners to enable prompt access to the service.
- Senior staff audited a range of aspects of the service from monitoring of patient outcomes to the quality of patient's notes. The unit engaged with the emergency medicine division at the hospital to facilitate auditing. For example, where there were side-effects from emergency treatments, the clinical procedure and outcomes were audited. Action plans were developed in response to any issues identified.
- An external review by the British Hyperbaric Association had identified a need to rename some of the standard operating procedures. The service had addressed this in a timely way with a plan to ensure on going compliance. This demonstrated good practice.

## Leadership and culture of service

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- The medical director and registered manager were established experts in hyperbaric medicine and in the operation of hyperbaric facilities respectively. They were both very visible and approachable, and were held in high regard by team members.
- We saw that there was a high level of trust and respect between members of the team. This had resulted in effective and supportive team working.
- There was an open and honest culture with staff ready to ask for and receive assistance when needed.
- Staff well-being was actively promoted, with an awareness of the risks involved, for example for staff who accompanied patients in the chamber. All staff exposed to altered pressure in the course of their work were required to have medical checks before taking up their duties and these checks were repeated at two-yearly intervals.

## Public and staff engagement

- All patients were encouraged to complete a patient satisfaction survey form. The resulting data was collected and evaluated on a quarterly basis as part of the quality dashboard process. Patients' comments were discussed at staff meetings.
- The data from patient satisfaction forms for the East of England hyperbaric unit and its sister unit in London was audited internally and fed into the annual quality report sent to local NHS England commissioners.
- The provider had recently developed website-based feedback to enable patients to record and publish their views on the service.
- Staff contacted all patients by telephone about three months after treatment to check on progress and capture any comments about the quality of the service.
- Patients had made comments regarding unreliability of contacting patient transport services over the

weekends. In response, the service required emergency weekend telephone contact numbers for the vehicle driver and the company undertaking the transport. This reduced waiting times for patients.

- A number of events had taken place in response to staff requests for team bonding activities to help get to know new staff better. These included helicopter evacuation and water rescue training.

## Innovation, improvement and sustainability'

- The provider informed us that the medical director's role included monitoring international developments in their speciality and, when necessary, introducing new guidance and research evidence to the team to ensure the effectiveness of the service.
- There was a clear commitment to improving the service through investment in new equipment to enable the service to care for the sickest patients and developing recognised training programmes for staff working in this highly specialist field.
- The unit had conducted research in line with a national research programme.
- Two members of the hyperbaric team were members of the clinical reference group for hyperbaric oxygen therapy and are working closely with public health experts and commissioners in developing new clinical commissioning guidelines for the service.
- The provider was working with NHS England to develop outcome measurement tools as part of a 'Commissioning for Quality and Innovation' programme to help evaluate the effectiveness of the treatment.
- The limited range of regional helicopters had made it difficult for some patients to be transferred to the service. The clinical director had held meetings with the Search and Rescue service based at Ipswich and reached an agreement that, where life or limb were under threat, the Search and Rescue Sea King helicopters could be used to transfer patients from London.