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| JOB IDENTIFICATION |
|  Job Title: Specialist Prosthodontic/Orthodontic Technician  Responsible to: **Consultant Maxillofacial Prosthetist** **Head Of Service**Department(s): **Oral Facial Laboratory**Directorate: **Surgical/ Head and Neck**Operating Division: **Acute Services**Job Reference:No of Job Holders: **2** Last Update: |

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| 2. JOB PURPOSE |
| To provide specialist technical advice and support to the Restorative, Orthodontic and Maxillofacial services through provision of a broad range of design and fabricated appliances. |

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| **3. DIMENSIONS** |
| The Oral Facial Laboratory is the sole unit of its kind serving the patient population of Ayrshire & Arran and beyond by providing clinical, technical and advisory services to Maxillofacial, Advanced Restorative Dentistry, Ophthalmology, E.N.T., Orthodontics, Orthopaedics, Dermatology departments.This post is primarily responsible for appliance design and construction with aspects of complexity involved for each of the following specialised services:ADVANCED RESTORATIVE DENTISTRYORTHODONTICSMAXILLOFACIAL |

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| 4. ORGANISATIONAL POSITION |
| Consultant Maxillofacial Prosthetist/Head of ServiceSecretaryPostholderSpecialist Prosthodontic /Orthodontic TechnicianHighly Specialist Orthodontic Technician/Maxillofacial Prosthetist (1 Post) Principal Maxillofacial Prosthetist/ Deputy of Service (1 Post) |

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| 5. ROLE OF DEPARTMENT |
| Provide scientific and advisory services to the patient population of Ayrshire & Arran and beyond through provision of the following:* Artificial Eye design, fabrication and fitting service
* Facial Prosthesis design, fabrication and fitting service
* Orthognathic Surgical Planning service
* Orthodontic Appliance design and fabrication service
* Maxillofacial Appliance design and fabrication service
* Restorative Appliance design and fabrication service
* Osseointegration Implantology design, fabrication and fitting service
* 3D surgical planning service.
* 3D rapid prototyping service.

All of the above specialised services require the necessity to liaise with consultants, junior medical staff, patients and other relevant parties to ensure up to date information and episodes relating to patient care and future planning of treatment.  |

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| 6. KEY RESULT AREAS |
| * Design and fabrication of a broad range of restorative appliances, aspects of which are complex, for the restoration of mastication, speech and facial aesthetics
* Design and fabrication of a broad range of orthodontic appliances with aspects of complexity involved for the correction of malocclusions
* Design and fabrication of a limited range of maxillofacial appliances which have orthodontic underpinning for the alleviation, stabilisation or correction of temporomandibular joint disorders, obstructive sleep apnoea, bruxism
* Assisting in the training and supervision of student Dental Technicians
* To assist/train/ support service users as required
* Identify research and development needs as appropriate for own mandatory Continuous Personal Development. Required to support and be involved in clinical trials and equipment testing
* Personal Development Plan appraisals with Consultant Maxillofacial Prosthetist /Head of Service
* Participate with clinicians as appropriate in the design and construction of appliances
* Observe and comply with current Health and Safety and COSHH Legislation – Safely handle and manage laboratory chemistry; safely handle and use laboratory equipment
* Comply with any other duties prescribed by the Consultant Maxillofacial Prosthetist & Technologist/Head of Service in line with the exigencies of the service
* Comply with Medical Devices Regulations 2002 ensuring all materials, component parts and processes for appliance patient provision meet national guidelines
* Provide technical information regarding the long term management of medical devices
* Adhere to departmental policy and guidelines regarding cross-infection control
* Assist in the administration of laboratory work as necessary
* Maintain the strictest confidences in relation to personal related information of patients
* Set up, use and maintain computer controlled equipment in the production of medical devices
* IT communication skills required, e.g. email, word processing to produce written reports, internet for research purposes and compiling presentation materials
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| 7a. EQUIPMENT AND MACHINERY |
| **Computer Controlled Dry Heat Processing Unit** - programming required for the processing of various types of materials by changing the materials from, e.g. acrylics from dough stage to hard acrylic stage, silicones from a runny/stringy stage to a soft solid stage in the manufacture of all types of orthodontic/maxillofacial appliances, etc.**Polishing/Abrading Units Incorporating Internal Extraction Systems** - utilised in the abrading/polishing processes of appliance fabrication.**Computer Controlled Safety Cell Trimming Units Incorporating Integral Dust Extraction Systems, Micro Motor Hand Pieces and Control Units** - for the trimming, shaping of appliances utilising computerised electrical micromotors with constant adjustable dust extraction employed.**High Speed Grinder** - required for the trimming to shape of extremely hard metals such as cobalt chromium.**Workstation Dust Extraction Systems** - required for removal of harmful acrylic/metal dusts created through shaping and trimming process.**Workstation Natural Daylight Lighting** – essential for fabrication of extremely fine appliance wires, components, in the provision of patient prosthetics.**Magnifiers** – for enlargement of intricate and extremely fine items of work.**Various Types of Anatomical Articulators** – setting up of teeth on provision of patient prosthetic appliances ensuring balance occlusion and articulation is achieved.**Full Sets of Carving and Modelling Instruments** - required for the sculpting and shaping of certain types of orthodontic appliances, restorative and maxillofacial appliances.**Microwave** – programming required for quick method heating of reversible hydrocolloid material for model duplication purposes.**Dry Heat Oven** - utilised for the drying out of models, etc.**Ultrasonic Bath** - utilised for the removal of ingrained materials from appliances following de-flasking of appliance from plaster or investment moulds. Also used in conjunction with ammoniated cleaning fluid for the removal of tarnish from metals.**Computer Controlled Duplicating Machine** – programmed and utilised for the duplication of large numbers of plaster models.**Computer Controlled Vacuum Mixer** – programming required for the mixing of plaster of paris/stone model materials producing a vacuum to ensure that all air is removed from the material prior to use in model casting.**Electrical PlasterTrimmer** - required for trimming of plaster/stone models, essential for the production of orthodontic study/working models.**Dental Surveyor Parallelometer** – utilised for analysing the path of insertion and planning and tracing of plates and clasps by locating and recording undercut depths present in patients’ maxillary/mandibular arches prior to appliance fabrication.**Disinfection Baths** – utilised for disinfection of facial/ocular/body and oral impressions.**Electronic Weighing Scales** – when measuring powder/liquid ratios of stone model materials.**Plaster Oscillator** - utilised for the removal of occluded air from plaster/investment material during casting/investing procedures.**Computer Controlled Soldering Unit** - required for the soldering of stainless steel in the fabrication of orthodontic appliances, etc.**Sandblaster** - required for removal of contaminants from the surfaces of metals, e.g. cast cap rapid maxillary expansion appliances, etc.**Laser Welder** – required for laser welding of different materials (gold/stainless steel/titanium) in the fabrication of medical devices/appliances.**3D printer** – used to produce 3D models for medical device design and fabrication, diagnostic purposes for patient treatment such as implant placement etc.**Computer Controlled Electrically Heated Pressure Vessel –** programming of the unit in the manufacture of auto polymerizing acrylic resin materials, e.g. changing the state of acrylic resin from a fluid material into a hard surface material in the forming of orthodontic, maxillofacial appliances and devices, etc.**External Fume Extraction Systems** – utilised for the safe removal of harmful fumes created in the fabrication of medical devices, e.g. soldering, metal casting, heating of investment moulds, etc.**Computer Controlled Downflow Fume Extraction Systems** - employed to remove harmful methyl-methylacrylate fumes in the mixing and spraying techniques involved in acrylic resin appliance fabrication.**Steam Cleaner** – required for removing residue from appliance surfaces following de-flasking process.**Full Sets of Orthodontic Pliers and Cutters** - required for the forming of extremely intricate, fine wire components in the fabrication of all types of orthodontic and certain maxillofacial appliances.**Bunsen Burners** - required for heating of various types of waxes for sculpting, modelling purposes in the appliance fabrication.**Micro-torches** - required for flaming and smoothing of modelling/carving/casting waxes during sculpting and modelling procedures. Also utilised for soldering of fine orthodontic wire components.**Computer Controlled Vernier Gauge** – for measuring of appliance/components.**Calipers –** for recording material thickness of appliances to microns of accuracy.**Electric Carving Knife** - required for trimming excess vacuum forming material from soft and hard laminated mouthguards, anti-snoring appliances, essix retainers, etc.**Computer Controlled Pressure Forming Machine/ Manual Vacuum Forming Machine** -utilised for adapting various types of plastic material closely to working models in the fabrication process of mouthguards, anti-snoring devices, essix orthodontic retainers, etc.**Clinic Patient Chair** – required for treatment of patients who may require appliance alterations.**Glue Gun** - utilised for dispensing specialised adhesive glues onto soft laminate materials for bonding of maxillary/mandibular components when fabricating anti-snoring devices.**Fridge** - utilised for the storage of materials to extend shelf life.**Computer** - retrieval of information, accessing email, internet for research and development purposes, etc.**Printer/Scanner/Copier** - producing hard copies of work stored on computer. |
| **7b. SYSTEMS** |
| 1. **Manual Records** – appliance prescription cards stored chronologically for retrieval by technical/admin staff; diaries of appliance/work requests updated daily; files holding information on Laboratory staff for leave, training, etc; paper diaries of staff; resource files for reference purposes, e.g. Safety Health and Environmental manual, Child Protection Protocol Manual, requisitions placed retained for reference/ invoice processing purposes, brochures of supply companies, etc
2. **Medical Devices Regulations 2002.** Quality Management System**:** This system is utilised for the documenting of CE marked materials and components which are provided to patients through the provision of appliances on completion of their treatment plans. This also permits the tracking of components and materials to their supplying company where LOT numbers can be checked for conformity where failure of material component has occurred. This system is digitally logged and kept on the shared drive, there are also printed version of the forms for clinical use, domestic records, disinfecting etc. These forms are filed in chronological order and retained for 5 years.
* **Safe Systems of Work:** Located through resource file and computerised information system. carrying out the work to ensure adherence to the approved systems. A reference system requiring to be complied with to ensure that approved and documented safe systems of work are followed in the day to day fabrication and provision of appliances.
1. **Risk Management:** Located through resource file and computerised information systems. A system requiring to be accessed and complied with to determine the risks arising from identified hazards and the appropriate precautions to be taken within the workplace.
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| 8. ASSIGNMENT AND REVIEW OF WORK |
| Work which is referred to the laboratory from the specialist orthodontic, maxillofacial, restorative clinics has the appliance type, time and date information transferred from supplied work cards into laboratory work book. Work which is appropriate for the post is allocated daily by self and undertaken under own initiative. Appliances which are referred for fabrication from external clinicians for income generation purposes would be assigned to post holder by senior members of staff.Supervision can be required by more senior members of staff who would issue non-routine appliances for design and construction.Quality assurance of work is achieved and maintained through conformity on a daily basis with Medical Devices Regulations 2002. This is an appliance/prosthesis, implant recording system for material/component conformity, traceability, a quality management system (QMS) for adherence to prescription plans which is countersigned by senior members of staff. Work is reviewed by Consultant Maxillofacial Prosthetist & Technologist/Head of Servicethrough regular personal contact and formal meetings, written reports, e.g. personal development planning |

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| **9. DECISIONS AND JUDGEMENTS** |
| Typical decisions and judgements required of the post may involve:* Urgent appliance requests requiring assessment of present workload and decision as to where prioritisation falls, e.g. is urgent cases of higher importance than of work previously assigned. Use own initiative and time management skills to incorporate request into current workload or reach decision with other staff members for reallocation of work.
* Accuracy of impression received from clinician, if defects are found then decision is made whether defect will compromise fit or action of appliance. If so, a new impression is requested from clinician
* Clinicians prescription contra-indicated when assessed with anatomical landmarks recorded on working cast. Discussion with clinician regarding alternative design prior to appliance fabrication
* When providing patients who have jaw discrepancies, with prosthetics for the restoration of speech, mastication and aesthetics, decisions have to be made regarding the setting up of the artificial teeth within the mandibular, maxillary arches. For instance, correct overbite/overjet required to prevent tripping of the prosthetics; correct curve of spee, monson, degree of cuspal grinding to provide balanced occlusion and to prevent cusp locking, mould of teeth required to permit good interdigitation of opposing teeth and to compliment the facial shape of the patient. Judgement as to the positioning of individual teeth to alleviate malocclusions and the contouring of the prosthetics labial/buccal flanges to determine the degree of facial plumping required particularly important when treating patients who have undergone radical ablative jaw surgery where facial form must be restored by building out and shaping of buccal surfaces of prosthetics to support flaccid buccinator muscles.
* Judgements concerning a broad range of Health and Safety issues/situations in a busy working laboratory.
* In the treatment of patients requiring orthodontic intervention for correction of malocclusions – this can result in the requirement of complex orthodontic appliances being designed and fabricated incorporating multiple, active, passive and retentive components being positioned and acrylated into an orthodontic appliance base plate. Careful analysis must be undertaken to determine the appropriate design and positioning of the orthodontic components to ensure that 1. Activation of tooth movement is unrestricted by adjacent components; 2. Desired direction of tooth movements is achieved without obstruction from erupting teeth; 3. Retention of appliance is achieved through thorough analysis of available undercut areas present on teeth required for retention. Deciduous teeth rarely have sufficient undercut areas present for ideal retentive clasp placement therefore permanent dentition is often the preferred teeth of choice. However, in the case of multi component appliances, this can be most problematic as permanent tooth choice may not be possible due to the positioning and number of active components incorporated in the device required to achieve the desired treatment result. In such cases improvisation of component design and positioning incorporating innovative techniques must be employed.
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| 10. MOST CHALLENGING/DIFFICULT PARTS OF THE JOB |
| The number of specialties that the post requires to provide direct services to, and the diversity of knowledge and skills required for the provision and implementation of each individual service, inevitably can result in difficulties being experienced through the frequency of unavoidable interruptions. Due to the nature of the post, keeping up to date with the latest innovative techniques for each specialised service becomes very challenging as many units in the country have departments specialising in a single individual specialty only. This post has to achieve and maintain similar high levels of knowledge and skills in not one but three separate specialties in the provision of high quality services to patients.When constructing oral prosthesis for patients who have undergone ablative reconstructive jaw surgery and for whom essential anatomical landmarks are no longer present on working casts, technical planning if often compromised to meet clinicians’ prescription criteria. This poses a challenge with regards to achieving improved aesthetics, speech and masticatory function for the restorative patient.A challenging aspect of orthodontics can arise in the fabrication of appliances for the mixed dentition patient. Each orthodontic case has two components to examine: the dental component and the skeletal or facial component. After careful evaluation and analysis of the patient’s dentition on the dental models, anticipation of the development stage can be challenging where both deciduous and permanent teeth are present. Growth may be dynamic if the patient is a growing child; facial harmony is established when both components fit closely together. The further apart the two components are the greater the discord and the more complex the case becomes.  |

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| **11. COMMUNICATIONS AND RELATIONSHIPS** |
| **Orthodontic, Maxillofacial, Restorative consultants and junior medical staff** – require frequent communication face to face and by telephone for information sharing on appliance design**Nurses** – frequent communication face to face and by telephone for training of nurses and information sharing regarding timescale for appliance construction/disinfection of impressions, etc to ensure appliances are delivered to external hospitals on due date/time and to ensure collection and distribution of work takes place**Laboratory Secretary** – frequent communication face to face/written information regarding used material items for stock control purposes. Information regarding equipment repair and liaising with Secretary regarding admin aspects of training, updating personnel records, patient prescriptions, etc.**Patients** –regular communication face to face, e.g. witnessing consent forms for medical photography; giving opinion/reassurance regarding cosmetic result of facial/ocular prosthesis; acting as chaperone (when requested by the Consultant Maxillofacial Prosthetist)when he is treating certain facialpatients who may be emotional. Attending orthodontic, Restorative, maxillofacial patient clinics for receiving patient information regarding appliance design requirements and treatment plans. Relieving/adjusting patient appointments at chairside**College/University Lecturers** – Face to face, email and telephone communication required when attending post graduate courses.**Sales Representatives** – Telephone, face to face communication when receiving information regarding laboratory materials, equipment and products and also when attending company presentations.**Education Department** – Face to face communication when providing table top demonstrations/presentations to public, e.g. large groups of school leavers who have an interest in medicine as a career and Open Days.**Various internal departments** - e.g. human resources, IT, Communication, Works Department and Ambulance Service – face to face, telephone and email regarding information sharing and reporting.**External Laboratory Contractors** – telephone, written communication for relaying of appointments/invoices/technical information and involvement in provision of specialised training courses.**Medical Photography** – face to face contact when escorting patients for photographic evidence of patient/prosthesis and defect site on behalf of The Consultant Maxillofacial Prosthetist**Other Laboratory Staff** – daily face to face/telephone/written/email contact regarding e.g. information sharing, workload issues, advice and guidance, training, laboratory staff meetings including requirement to participate in delivery of technical presentations.**Technicians From Other Health Boards and External Laboratories** – telephone/written communication for information sharing regarding appliance construction and supply. |

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| **12. PHYSICAL, MENTAL, EMOTIONAL AND ENVIRONMENTAL DEMANDS OF THE JOB** |
| PHYSICAL SKILLS NEEDED FOR THE JOB:Highly developed manual dexterity skills required when constructing precision appliances by the use of specialised instruments and equipment for the manipulation of extremely fine and intricate components and associated materials.* Standing for protracted periods of time during various stages of appliance fabrication, e.g. casting, trimming, flasking, packing and polishing. Chairside assistance at clinic sessions, e.g. alteration of appliances
* Sitting for protracted periods of time fabricating orthodontic\maxillofacial\Restorative appliances
* Lifting requiring sudden short bursts of effort e.g. lifting heavy 25kg bags of plaster, carrying\lifting material\equipment deliveries into stock cupboard etc.
* Sitting for periods of time at computer using keyboard skills for word processing, information retrieval and internet research.

MENTAL DEMANDS OF THE JOB:Requirement for frequent prolonged concentration on a daily basis during fabrication of Orthodontic/Restorative/Maxillofacial appliances. Due to the extremely broad spectrum of specialised work undertaken and aspects of that work being of a non-routine nature requiring frequent communication with clinicians/nurses during appliance fabrication, it is inevitable that frequent interruptions perpetuate the working day.  **EMOTIONAL EFFORT/SKILLS:**Occasional exposure to emotional effort when requested to attend clinic environment where terminally ill patients with oral facial defects are being treated.**ENVIRONMENTAL AND WORKING CONDITIONS OF THE JOB:**Frequent exposure to controlled harmful substances, e.g. monomeric fumes from acrylic resins involved in appliance construction. Fine dusts for abrading procedures/polishing procedures. Vibration of hand when using micromotors. Inhalation of fine plaster dusts when model casting, etc.Frequent daily contact with body fluids when casting disinfected dental impressions requiring further cleansing of blood/saliva. Disinfection of appliance removed from mouth requiring repair or alteration.Exposure to fumes when heating stainless steel/flux during soldering process for aspects of orthodontic appliance fabrication.Potential for exposure to verbal/physical aggression by patients during chairside appliance alterations. Also assisting with Consultant Maxillofacial Prosthetist /Head of Service, Restorative Consultant, Orthodontic Consultant, Maxillofacial clinicians, etc. |

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| 13. KNOWLEDGE, TRAINING AND EXPERIENCE REQUIRED TO DO THE JOB |
| BSc (Hons) Degree in Dental Sciences (4 years) or equivalent.+Postgraduate Diploma in Prosthodontic and/or Orthodontic Technology (2years) plus evidence of continuous professional development + Registration with the General Dental Council Computer proficient requiring a working knowledge of Microsoft Software Packages.Experience of supervising students and demonstrating aspects of work to students and less experienced fellow professionals.Knowledge of intra-oral clinical procedures.Knowledge and experience of complex restorative dentistry utilising semi and fully adjustable articulation.Postgraduate knowledge and experience of constructing a wide range of orthodontic appliances removable intra-oral maxillofacial appliances.Fully conversant with legislation covering data protection and patient confidentiality.Knowledge of current COSHH, health and safety legislation to safely handle and use laboratory equipment and materials.Knowledge of legislation relating to Medical Device Regulations 2002 ensuring all material, component parts and processes for appliance patient provision meet national guidelines through knowledge of relevant materials science, use of bio-compatible materials, chemistry, rheology and toxicology. |