

WELSH WOUND INNOVATION CENTRE



ANNUAL REPORT

March 2017



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Leading the Field in
Wound Prevention & Treatment

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Annual Report

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Note: Welsh Wound Innovation Initiative Ltd is the formal registered name of the organisation, which trades as WWIL and is also affectionately known as WWIC, which is the name of the premises.

Foreword from the Chair

It is my pleasure to introduce the second Annual Report from the Welsh Wound Innovation Centre (WWIL). This report summarises the key achievements of the organisation over the last year, and outlines our future plans and aspirations.

The Welsh Wound Innovation Centre was officially launched in September 2014 to create a centre of excellence in skin health, wound prevention and treatment. WWIL uniquely brings together the key voices on wounds in Wales, spanning government, NHS, academia, business and industry and the Third Sector, all of whom play key roles in overcoming the challenges of wound healing and the maintenance of skin health.

I am pleased to report that we have formally expanded the membership of the WWIL Board, to include Swansea University, and Cardiff and Vale University Health Board. We anticipate another Health Board will soon join the membership. This change brings a greater depth of expertise and knowledge, and represents the academic,



Fiona Peel DL, OBE

NHS and commercial triumvirate of WWIL and its role as the pathfinder for clinical innovation in Wales. The extended Board membership means that the stakeholder forum is no longer a requirement for governance purposes; however, we are always keen to receive ideas and constructive criticism to ensure that WWIL is the leader in wound healing.

2016 has been a successful year for the organisation. The team have consolidated

their reputation, through a wide range of activities undertaken, as highlighted in the report and continue to work with others to collaborate, inform and educate on best and innovative practice in wound healing.

My continued thanks go to Professor Keith Harding for his ambition to set up the WWIL; were it not for his vision and persistence we would not be here. My thanks go to all the directors and the team who have been steadfast in their support. We have lost and gained personnel over the year but all have contributed to our growing success.

Medical Director's Message

Following the opening of the Welsh Wound Innovation Centre in September 2014, the Centre continues to pursue its ambition to be recognised as the Centre of Excellence for patients with wounds not only within Wales but also at a global level. WWIL was created with the intent to be a genuine and mutually beneficial partnership between academic excellence, patient focused clinical care and innovation with commercial partners, and I believe that we have already achieved significant progress in that regard and continue to strive to further grow that vision and achieve our ambition.



**Professor Keith Harding
CBE, FRCGP, FRCP, FRCS,
FLSW**

The first year of operation was an exciting time of development and growth, coupled with the challenges of any new organisation. This led to us having to deal with many situations that were unanticipated and could be seen as a year of firefighting! This should not be considered to reflect a lack of planning but rather there was no road map to follow as this type of initiative had not been attempted anywhere else previously. Over the past year however a greater sense of calm has prevailed while we have been consolidating our partnerships and developing new innovations. It also has

been due in no small part to the effective working of the management team and the arrival of our Chief Operating Officer, Maureen Fallon, who has instilled a professionally managed and efficient way of developing and executing our work programme.

The last year has seen a successful number of new schemes in operation, as WWIL broadens and expands its portfolio of activities. Along with continued fruitful partnerships with commercial partners, WWIL has provided support to NHS partners in England and developed links in the care home sector, thus strengthening the triumvirate of academia/research, NHS/patient care and industry collaboration. We have been successful in helping to create new jobs in Wales to the extent that we achieved our targets set by Welsh Government for the end of our fourth year of operation by the end of our second year of existence!

We have also published data on the causes, extent and cost of wounds in Wales. Indeed, we are now in a position where we have more solid and comprehensive data than any published work from any other country in the world.

Our educational activities continue to expand, and this year we welcomed many international visitors, keen to experience our bespoke training programmes and to replicate our learning elsewhere. Indeed, our International visitors have come from countries as far afield as America, Australia, Canada, China, Malaysia, New Zealand and Singapore.

We have also developed a portfolio of educational tools and excitingly we are in the process of exploiting these for use within the NHS and Care Home sector in Wales; with the opportunity to yield commercial value outside the

principality. This coupled with our role in working with Welsh Government to create a National Wound Register, driven by the recommendations of the Flynn report 'In Search of Accountability', ensures we will have the most accurate and comprehensive data set anywhere in the world on the global health challenge that wounds present.

WWIL is a not for profit organisation, our primary goal is to make a difference for patients, ensure there is equity of access for all patients in Wales and to contribute to the health and wealth of Wales. The WWIL strategy is ambitious, and rightly so. This model is now being looked at by other countries in the world as more come to realise the enormity of the challenge of wound healing. The WWIL team is expanding, and has seen some changes this year. However, I am grateful for the commitment and dedication of everyone within the team, and our Board to achieve our shared goals.

I am privileged to work with such a dedicated, committed and passionate team and WWIL's continued development is testament to everyone in our fantastic bunch.

This report highlights some of the WWIL achievements this year, and signals our intent for the future. As we gain experience I become more convinced the model will work and we will be able to make a difference to many patients who currently struggle to receive 21st century standards of care when they experience wound problems.



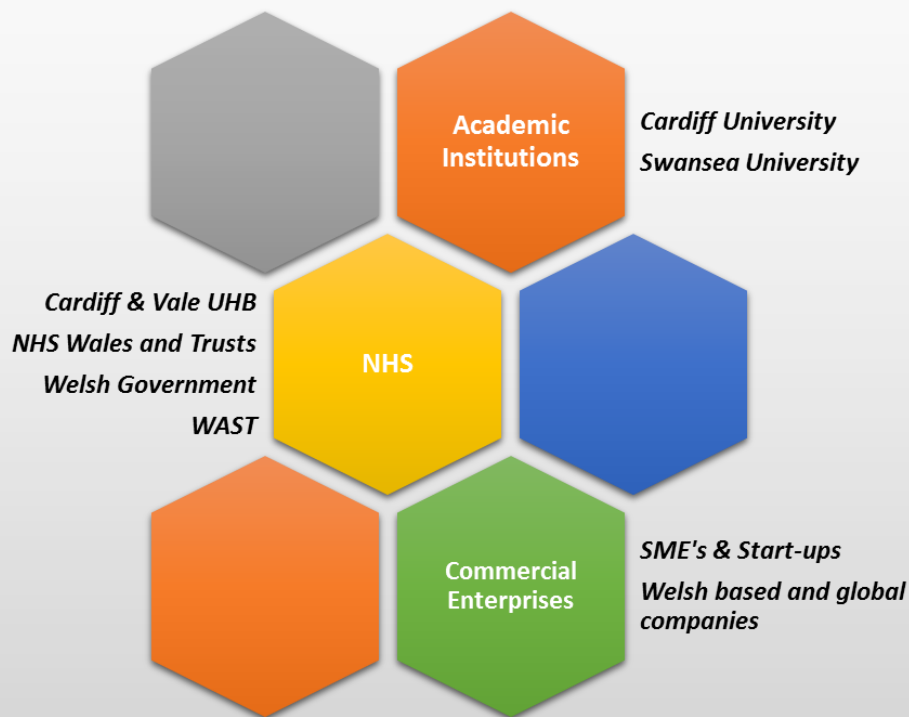
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Who We Are and What We Do

The Welsh Wound Innovation Initiative Ltd (WWIL) is a private company limited by guarantee and was incorporated on 4 November 2013 with Cardiff University as its sole member. To better reflect WWIL's All-Wales role, the membership was broadened in the latter part of 2016 to include an additional Higher Education Institute

(HEI), Swansea University and 1 NHS organisation; Cardiff & Vale University Health Board, with the plan to incorporate a fourth member later this year.

The Company is a non-profit distributing entity. It is recognised that there are several stakeholders connected to the company, including:



The Company is governed by the Board who in turn are responsible for the stewardship of the Company and oversight of the conduct of the business. The Board is supported by an executive management team who are accountable for developing and delivering the operational plan.

WWIL itself is managed by the Medical Director and Chief Operating Officer and are supported by a strong mix of professionals to include Academics, General Practitioners, Independent Consultants, Tissue Viability and Wound Specialist Nurses, a Podiatrist, Clinical Scientist Health Care Support Worker and Accountant. This bespoke team, comprising 18 WTE provides a wide range of expertise and skills to ensure the very best care and experience for patients by developing and adopting innovative approaches to wound healing.

As the pathfinder for clinical innovation in Wales and the only body that connects NHS, academic and commercial organisations, we are the catalyst that creates the right conditions to facilitate clinically effective change across the health economy as well as energising a climate for inward investment. We are maximising opportunities for health and wealth creation in Wales and beyond through:

- Leading and supporting the development and adoption of wound healing innovation to include diagnostics, technologies and pathways.
- Driving the adoption and spread of evidence based practice to include MSc in Wound Healing; bespoke clinical courses, e-learning, publications and presentations.
- Enhancing economic growth through collaboration and partnership with industry and the NHS.

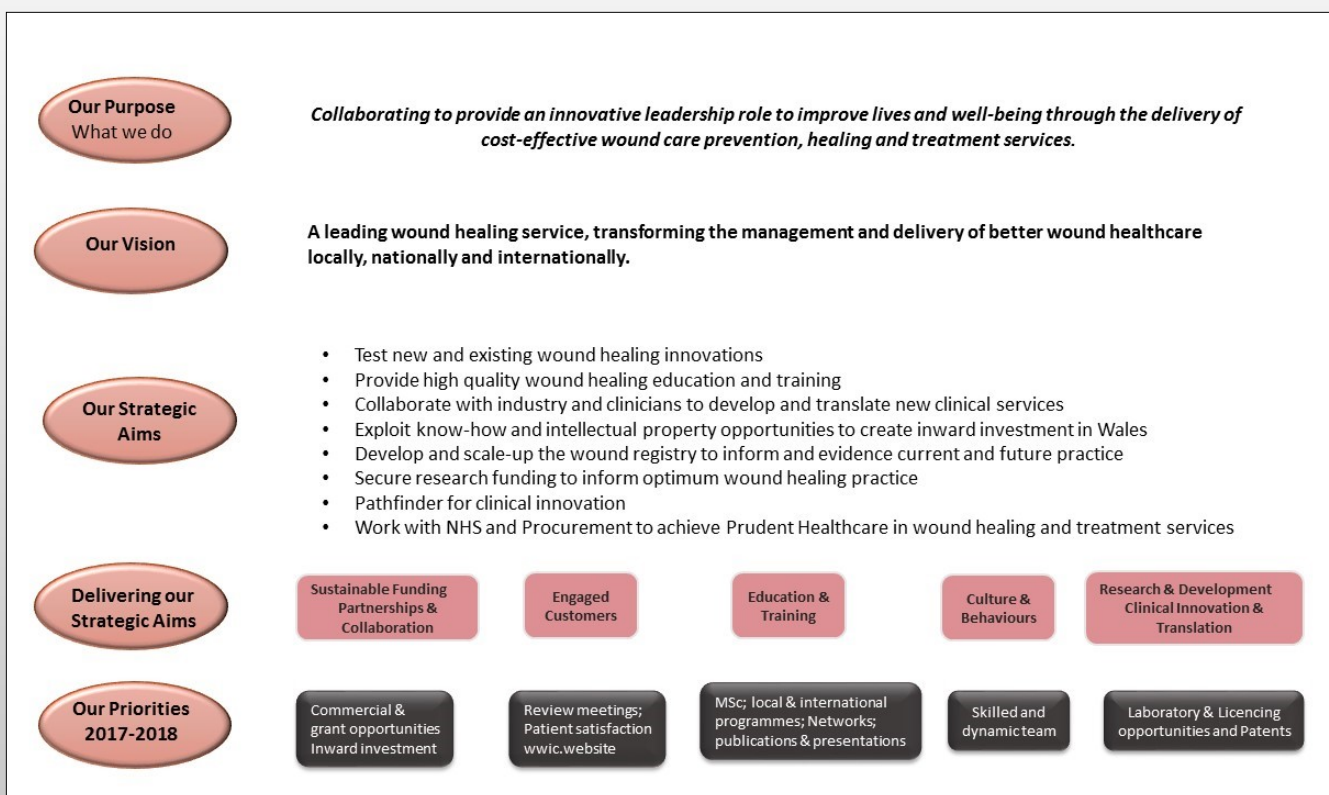
Mission Statement

The overall mission of WWIL is to lead the way through partnership with commercial companies, the NHS, HEIs and Welsh Government to prevent and improve the treatment and care of wounds and thereby reduce costs and improve the health of those affected and attract new investment into Wales. Or put another way:

‘Collaborating to provide an innovative leadership role to improve lives and well-being through the delivery of cost-effective wound care prevention and treatment services’.

Figure 1 below outlines our strategic framework delivery mechanism.

Strategic Overview



Infographic - The Cost of Wounds in Wales

The economic importance of wounds across Wales is highlighted in the following infographic.



The infographic highlights the significant cost of wound care to NHS Wales, prudently set at circa 6% of the total NHS Wales spend. WWIL's mission statement clearly illustrates our belief that we can provide leadership to achieve better and more cost effective wound prevention and healing services through the adoption of Prudent Healthcare principles and innovative approaches to include education, training, diagnostics and importantly clinical practice.

Key Pillars of the Operational Plan 2016-18

Our 2016/18 Operational Plan identifies the key pillars to achieving our 5 strategic aims, as follows:

1. Sustainable Funding, Partnerships & Collaboration

WWIL is a not for profit organisation, so any surplus of income over expenditure is reinvested to deliver the objectives of the organisation. As at the end of December 2016, WWIL had a small surplus of £27k, which was slightly below the forecast. We implemented a range of cost efficiency measures during 2016 which proved successful in reducing expenditure, and we intend to maintain this discipline in future years. Income performance remains robust, with commercial income in line with forecast, and Welsh Government grant funding terms and conditions.

The financial strategy for the future is focused on developing commercial income streams through consolidating existing partnerships and the development of new ventures to include expanding our training and education portfolio as well as exploiting our know-how through licensing agreements. It is anticipated that these developments will ensure a sustainable income stream for the future.

2. Engaged Customers

WWIL have signed several contracts and agreements with partners in the last year, and continues to expand its diverse portfolio. The numbers of clinical trials and evaluations continue to increase, and with it, the recruitment of patients to enable successful completion of those trials. Several of these are due to be completed in early 2017, and results will be published when they are available. Our partnership section outlines some of our partners' achievements.

Our social media presence continues to increase, across Facebook, Twitter and YouTube, with a 37% increase in Twitter followers in the last year. We are in the process of refreshing the wwic.wales website which will be launched in Spring 2017.

3. Culture & Behaviours – Capacity & Capability

We have developed capacity planning tools to help us assess the demand and capacity levels required as clinical evaluations and trials start and finish. We have appointed additional Research Nurses to meet the increased demand, and are using collaborative secondment arrangements from the NHS to assist with the workflow. Over time, we are looking to fully develop a 'bank' of skilled research nurses, to ensure a highly skilled workforce and responsive capacity management strategy. We do however recognise the challenges in recruiting in a competitive environment with many NHS organisations not being able to support secondments given their own staffing requirements. That said, the opportunities for individual professional and personal growth through working in an internationally recognised wound service may serve to strengthen rather than denude NHS nursing capacity and capability over the medium to longer term.

We are about to appoint an additional member of staff to the medical team to grow our capacity for the future. Also, we have been approached by an interested trainee who would like to spend a clinical year with us to develop their skills in wound healing strategies.

Further, the appraisal process is now embedded, with all staff receiving an annual appraisal linked to WWIL's strategic objectives and priorities.

4. Education & Training

Education & Training continues to be a bedrock for developing capacity and capability at both national and international levels to staff working in the NHS, independent sector and more laterally in social services and regulation and inspection agencies. The focus of the education and training initiatives has been to help fulfil the following objectives:

- Provide high quality education and training for all staff involved in wound healing in Wales/UK and internationally to ensure a competent workforce. This includes the design and delivery of MSc and e-learning modules; workshops and 'train the trainer' programmes.

- Collaborate with industry and clinicians to develop and translate new clinical services that improve both patient and staff experience of wound care management and treatment options.
- Act as an exemplar of prudent NHS working to include working with the All-Wales Tissue Viability Nurse Forum and Podiatry Network to share and spread best practice.

5. Research & Development and Clinical Innovation and Translation

With the broadening of WWIL's membership we are now able to adopt a flexible approach to contract development for clinical trials, education and consultancy work programmes, product evaluations, focus groups and so forth utilising the templates developed by the Cardiff University legal team or indeed the All-Wales Model Clinical Agreements, as appropriate. This transformational development now enables WWIL to rapidly respond to requests for industry based projects and has speeded up the process by 8 - 12 weeks, on average.

We currently have 15 research projects underway, with several others due to come online during 2017. In all, over 400 patients have been recruited into the various studies across our 3 partner NHS sites: Cardiff & Vale; Aneurin Bevan and Cwm Taf University Health Boards. The research projects are wide ranging by their nature;

some are related to the performance of specific products, others are focused on wound fluid sampling, healing rates and other parameters. In addition, we held several focus group events testing new products by a range of independent users, and provided feedback to the manufacturers. Our reputation is growing as an independent research organisation that can deliver successful projects on time and to an exemplary standard.

Building on our reputation for delivering first class clinical trials as well as our status as the pathfinder for clinical innovation in Wales we are providing a template for future such developments in Wales and beyond. Indeed, the Wound Management Innovation Cooperative Research Centre in Brisbane, Australia has been modelled on WWIL and Professor Harding was invited to open the centre together with Dr. Charlie Day, Head of the Office of Research and Innovation, Federal Office, Government of Australia.

Closer to home is the proposed development of a Respiratory Centre of Excellence in Llanelli, South West Wales. The proposal draws on the academic, commercial and NHS triumvirate and the learning that WWIL can provide should serve to accelerate this development. In respect of learning, we are working with Professor Ceri Phillips, Head of College of Human and Health Sciences at Swansea University, to publish a 'lessons learnt' paper such that others can share in our learning, struggles and importantly our successes.



Infographic - Our Year in Numbers

The following infographic highlights our Key Achievements in 2016. Points to note include;



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Infographic Highlights

1. 28 new jobs created against a milestone target of 14, demonstrating the positive impact on the economy, and to the life sciences sector in particular.
2. With over 19,000 Wound Registry entries, we have now built up an extensive registry, and are leading the way in terms of wound data to inform clinical practice as well as to support future investigative/exploratory research.
3. Our education and training programme continues to flourish with 54 people achieving an MSc and 3 a PhD. We have also provided a significant amount of training to NHS and industry colleagues with over 87 workshops being provided. Included within this number has been the provision of several legal study days and excitingly a number of staff from overseas undertaking a clinical attachment with us.
4. Our clinical trial programme continues to thrive, with over 400 patients recruited to a number of clinical trials/product evaluation studies. Our growth in recruitment potential has been supported by the inclusion of the Aneurin Bevan and Cwm Taf University Health Boards as new participating sites.
5. Sustainable income is a key milestone for WWIL's continued success and this has been supported through the achievement of commercial contracts and successful grant applications.
6. The team at WWIL continue to share and advance wound healing through its publications and presentation portfolio.

Key Achievements in 2016

Care Home Pilot

WWIL in collaboration with a mattress manufacturer, Direct Healthcare Services (DHS), was successful in obtaining Welsh Government grant funding to undertake a technology based project in care homes. Working with partners, including care homes and a local IT company, whatAdata, the pilot aimed to assess equipment and staff knowledge of pressure ulcers, provide resources for improvement, and assess their impact.

Working with 4 care homes in the SE Wales region, the initial phase consisted of skin assessment, an assessment of equipment, specifically focused on the quality of mattresses, and an assessment of the knowledge levels of the registered and non-registered nursing staff, via knowledge and attitude questionnaires. Following this assessment, new mattresses were deployed via our partner organisation (DHS), bespoke training was provided and an e-learning platform was implemented via tablet, known as wwic.care.

The care homes were then revisited approximately three months later to evaluate the impact of the new

equipment, training and education, and to assess whether this impacted on the number of pressure ulcers (PU's) within the care home. Detailed results were provided to each of the nursing homes, and whilst there was no intention to combine the results, some common themes emerged, summarised overleaf:



Emergent Learning:

Staff Attitudes

- Staff reported high attitude scores for their personal competency to prevent PU's and that pressure ulcer prevention was a priority
- Attitude scores were lower when staff considered their personal responsibility for and their confidence in the effectiveness of prevention

Staff Knowledge

- Registered nurses scored higher upon their knowledge of pressure ulcers than non-registered nurses

Residents

- All residents were elderly, and 100 of the 117 involved in the study were at high/very risk of developing pressure ulcers

Equipment

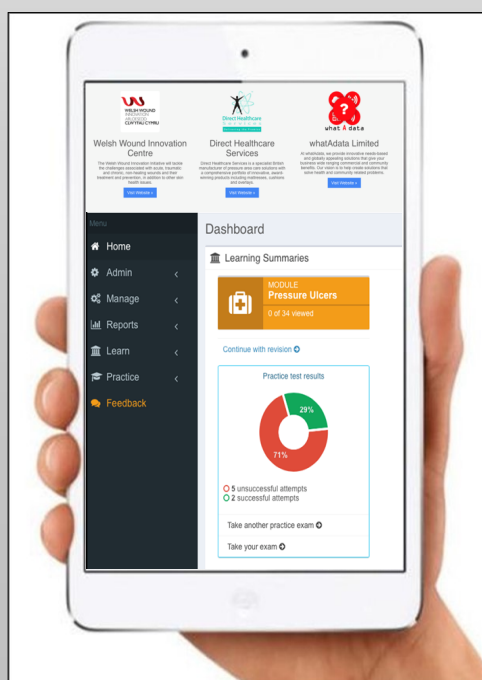
- Significant numbers of mattresses, particularly foam mattresses, failed either a visual inspection or specific bedside test to assess the support they provided
- Following replacement, post implementation reviews found that some mattresses failed the subsequent testing, highlighting the importance of regular quarterly audits

Staff Turnover

- Two care homes experienced significant staff turnover, and these homes experienced higher numbers of pressure ulcers

Following completion of the implementation process, the care homes provided valuable feedback about which aspects went well, and where improvements could be made, predominantly around e-learning. Overall, all care

homes reported a positive experience and were keen to be involved in future projects. Summarily, the project was very successful, and identified valuable learning for future developments in the care home sector.



Audit of Wound Care Within the Catchment Area of an English Clinical Commissioning Group

In 2016 WWIL was commissioned by an English collaborative partnership to undertake an audit of wound care delivered in patients' homes and in GP surgeries across a city location. This was the first formal interaction between WWIL and part of NHS England and marks the growing reputation of WWIL across the UK.

We managed the service evaluation jointly with the partners involved. The evaluation was divided into three parts;

1. An observational audit intended to capture a) wound types seen in Primary Care, b) the performance and reporting of wound care practices, c) the use of wound dressings and compression therapies.
2. An educational audit to gauge current educational provision, staff knowledge around wound care and future educational needs.
3. Use of a Health-Related Quality of Life questionnaire to gather information upon patients' perceptions of living with a wound.

Six WWIL staff members performed the observations of wound care over 9.5 days in May 2016.

The audits conducted across nurses and health care assistants delivering wound care within the catchment area provided a rich and complex set of data capturing the care delivered to 98 patients in their own homes and 49 treated in their GP surgery. Staff in GP surgeries and in patients' homes faced a range of wound types during the observational audit with lower leg wounds and pressure ulcers most commonly encountered in patients' homes and venous leg ulcers predominant in GP surgeries.

In almost all observations, regardless of care location, staff wore suitable protective clothing, performed appropriate hand hygiene, disposed of removed dressing material appropriately and used dressing packs.

While most patients regardless of care location were observed to have a package of care including assessment

of their skin, peri-wound skin cleansing and protection and application of emollients to the skin around the wound, these practices were more commonly observed where care was delivered in GP surgeries. The provision of compression therapy was more often seen where patients requiring such an intervention were seen in their GP surgery.

The educational audit was completed by 53 of the 142 invited participants giving an acceptable response rate of 37.3%. Response to the educational audit was higher among Tissue Viability Nurses. Most respondents considered themselves to be competent to assess and manage a range of wound types although over 50% rated themselves as not competent to assess and manage lymphoedema. Health Care Assistants exhibited a preference for further training on pressure ulcer prevention, categorisation and management.

Self-reported Health Related Quality of Life (HRQoL) was higher among the patients treated in their GP surgery compared with those treated in their own homes.

A wide range of wound dressings, cleansers, skin protectors, compression therapies and bandages were observed in both GP surgeries and in patients' homes with many only observed once. Around half of the specific products observed in both care locations were not listed on the relevant wound formularies.

Performance of this audit has empowered WWIL staff to extend their competence in developing and using observational audit tools to record and improve the provision of wound care. This expansion into wound audit enables us to increase our USP through offering such audits as part of our contribution to improving wound health services across Wales and the wider United Kingdom.

Development and Expansion of Laboratory Test Services Within WWIL

In the second half of 2016 laboratory investigations into the effect of medical devices such as beds and compression bandages on tissue loading became part of our 'new' offering both to health services and commercial organisations. Several factors influenced this new area of research activity;

- Demand from commercial organisations for evaluation of the effects of new beds, mattresses and seat cushions aimed at preventing pressure ulcers. This work, typically involving groups of healthy volunteer subjects looks at the pressures exerted across the surface of the body while lying on mattresses, any reductions in skin blood flow that results from the loading of the skin and the effect of the devices upon skin microclimate (local skin temperature and humidity). Currently WWIL has committed projects until at least summer 2017.
- We were approached by Advanced Therapeutics Materials, an SME looking to develop knitted compression hosiery based upon 3D scans of patients' legs. The initial laboratory based study scanned volunteer legs to produce the templates for individualised compression hosiery with the pressures exerted upon the lower leg by the new hosiery measured in our laboratory. This project

builds upon several years' experience of the evaluation of compression therapies.

- Abertawe Bro Morgannwg (ABM) and Hywel Dda University Health Boards requested our support to evaluate a range of mattresses called 'powered hybrids'. These new mattresses can be easily converted from a standard foam mattress through connecting a pump unit into an advanced dynamic mattress that regularly changes the areas of the body that bear weight so helping to prevent pressure ulcers. This evaluation conducted along with the Pressure Ulcer Prevention and Intervention Service (PUPIS) within ABM UHB has successfully completed two phases (examination of mattresses by staff including infection control and manual handling and a laboratory evaluation of the mechanical loading imposed on the body by the powered hybrid mattresses). This work will extend in 2017 to enable clinical evaluation of the two powered hybrid mattresses that performed best in the laboratory tests. This work has allowed WWIL to directly contribute to NHS Wales reaching informed decisions upon future needs for patient support surfaces.



Development of a National Mattress Test Centre

While special pressure redistributing mattresses have become widespread across the NHS, there has been little or no formal evaluation of their technical performance limiting the ability of procurement to judge the relative performance of different products. In 2014 a RESNA (Rehabilitation Engineering and Assistive Technologies Society of North America) standard on full body support surfaces was produced (ANSI/RESNA SS-1:2014) and in 2015 an ISO working group was created to expand the RESNA standard to create an International Standard covering support surface testing with this work due to be published late in 2018 (ISO/TC 173/ WG 11 Assistive products for tissue integrity when lying down).

With the imminent release of an International Standard on mattress testing WWIL is ideally placed to take UK wide leadership through the development of a test laboratory accredited to provide manufacturers with certification around the technical performance of their products. The forthcoming standardisation of mattress performance may be one reason why mattress manufacturers are already requesting technical evaluations from us. Presently, there are two laboratories in the United States capable of undertaking the test procedures detailed in the existing RESNA standard and forthcoming ISO standards. No equivalent laboratory exists in Europe presenting an exciting opportunity to establish the first support surface test facility in Europe within Wales. WWIL holds relevant staff experience in mattress evaluation, and we can expand our laboratory capacity to offer formal testing to the new ISO standards and has a further benefit not open to many laboratories in that we can also offer clinical evaluation of the claims made by manufacturers around the clinical performance of their products.

Understanding the Processes & Outcomes of Wound Treatment

Since WWIL's inception we have gathered detailed records of the processes and outcomes of the care delivered in our NHS out-patient clinics. This work has resulted in the first phase of our Wound Registry that, as of February 2016, holds data on 1782 patients with 12,786 clinic visits. Records showing the size of their wounds at the beginning and end of treatment were available for 1014 patients. Within a specialist wound clinic it was not anticipated that patients would be treated until their wounds had fully healed with patients returning to other care locations once their wounds were approaching healing. Accordingly, a threshold of 0.5cm³ was selected to mark 'healing'. Based upon this threshold 613 (60.4%) achieved healing. The most common wound aetiology seen was venous leg ulcers with 63% healed (281/446). Healing rates for other wound aetiologies ranged from 34% (severe pressure ulcers) to 82.3% (traumatic wounds). Given the challenging nature of

many of the wounds that are treated within our clinics these healing rates are encouraging even where the absolute rate looks low – for example achieving a 34% healing rate for severe pressure ulcers should be considered a success given the multiple morbidities associated with patients who have these wounds and the consequent high loss to follow-up among patients with severe pressure ulcers.

WWIL is well placed within the wound environment given its long-standing collection of wound outcome data for there are very few wound registries that can be used to explore the type of wounds encountered in clinical practice and the outcomes of treatment. As our Wound Registry develops the information it contains will allow us to create robust benchmarks for healing and wound progress against which new processes and interventions can be judged.

Research and Development

During 2016/2017 research activity continues to grow within the Welsh Wound Innovation Initiative Limited.

Research activity includes:

1. Product evaluations
2. Clinical trials including patients
3. Clinical trials collecting biological samples
4. Healthy volunteer studies



During the last 12 months' the team have recruited 150+ patients into evaluative projects. There have been two ongoing projects developing the possibility of diagnostic testing. Diagnostics is a continued interest of WWIL, we have collected over 250 samples to date. Because of completion of a high-profile sample collection study to an exemplary standard, a large pharmaceutical company has confirmed funding for the second phase of the project with a start date in June 2017. The study will involve sequential sampling of a cohort of patients, approximately 120 patients in total. The results of the two projects may lead to the development of biological treatments to expedite healing of the more challenging complex wounds that have a debilitating effect on peoples' lives.

The second project is a collaborative project between Cardiff University and WWIL. Funding has been secured to further develop the identification of markers within wound fluid to help identify healing and non-healing wounds. Early identification of non-healing wounds will allow for prompt intervention and use of appropriate treatments.

In March 2016, a new satellite research clinic was set-up in the Research and Innovation Centre in Aneurin Bevan

University Health Board. This has allowed the patients in the Gwent area to attend a local research clinic, previously many of these patients would have had to travel to our research clinic in Cardiff. Informal feedback has been very positive and we aim to conduct a

more formal patient satisfaction survey during 2017.

Sixteen patients were recruited at the Aneurin Bevan site; these numbers will be included in the University Health Board's overall research activity numbers. Increased research activity will result in funding to support research nurses and increase further the numbers into the National Institute for Social Care and Health Research (NISCHR) portfolio studies.

Two new studies have been given approval by Cwm Taf University Health Board, and we are currently working with the cluster clinic in Cwm Cynon hospital on an evaluative project. Excitingly, during the latter part of 2016 a collaboration between CEDAR (an NHS academic evaluation centre based in Cardiff & Vale University Health Board), WWIL and the 3 Health Boards in South East Wales resulted in securing Research for Patient Benefit grant funding. This is the first study where WWIL will recruit patients across the 3 Health Boards and Professor Harding is Chief Investigator with Mrs. Nicola Ivins being the Principal Investigator for the grant.

Patient involvement in WWIL clinical investigations

WWIL continues to draw upon the strong support of patients who have been part of the wound healing NHS service as well as those who have participated in past clinical studies. A patient panel has been created to expressly bring the patients' views and opinions of living with wounds both to clinical study protocol development and to help guide appropriate product development. We are very fortunate to have people who are willing to share their experiences for the benefit of others, our sincere thanks to every one of you.

Education and Training

One of our key objectives is to provide high quality education and training for all staff involved in wound healing in Wales/UK and internationally such that we build a competent and capable workforce. Following from the Chief Nursing Officer-commissioned National Wound Audit, WWIL delivered a 'train the trainer' programme across Powys to help nursing teams improve their knowledge of pressure ulcer classification and documentation.

WWIL presented at the Betsi Cadwaladr University Health Board (BCUHB) 'Stop Pressure Ulcer' Conference in Llandudno and we are participating in an Annual Professional Review for BCUHB. Further, we have worked in collaboration with a General Practice (GP) in Cwmbran to provide the first wound related e-learning module for the Welsh Deanery programme of education for GPs in Wales. The module focused on accurate assessment and management of individuals with leg ulceration.

WWIL continues to deliver across Wales educational opportunities for the All Wales Tissue Viability Nurses. WWIL organised (in collaboration with the Bond Solon legal training company) study days that addressed the following topics: clinical responsibility and the law and how to respond to complaints. All the days resulted in maximum attendance and also attracted lymphoedema and dermatology nurse specialists.

The University of South Wales joined forces with WWIL and co-hosted the university wound care module at the Welsh Wound Innovation Centre with teaching input from our staff. Further, we continue to contribute to the teaching and supervision of the MSc in Wound Healing, Cardiff University.

Education and training has not been limited to external staff. To ensure that our staff remain up-to-date members of the medical and nursing team attended a Doppler ultrasound workshop to improve diagnosis of leg ulcers and a presentation skills workshop. Maintaining our own CPD will enable us to communicate even more effectively with the clinical and academic communities, along with NHS mentorship training to support the clinical placements of student nurses within WWIL-led NHS clinics.

Locally, we hosted education and training events for various groups including the All Wales Lymphoedema

Service and the Welsh Blood Transfusion Service. We also participated in the Wales Festival of Innovation hosting an event highlighting the contribution of Welsh based companies to improving wound healing. Internationally, we engaged in a major initiative with Hong Kong wherein WWIL was chosen as the external centre of excellence for the overseas corporate scholarship programme for clinical leaders. This involved designing and implementing two bespoke education programmes for two groups of four clinical leaders, each group spending four weeks with WWIL. Both cohorts were evaluated positively and augur well for the establishment of a programme in the future. In addition, healthcare professionals from Malaysia and Australia have visited WWIL to experience wound care within the national centre of excellence.

WWIL continues to support the nine established Lindsay Leg Clubs across Wales. We delivered five workshops during the annual Leg Club conference in Worcester. WWIL also hosted a major event on pressure ulcers among children and young adults as part of the global STOP Pressure Ulcer Day celebrations.

Collaborating with industry and clinicians to develop and translate new clinical services that improve both patient and staff experience of wound care is an equally important strategic objective. Over the past year, we have worked very successfully in partnership with industry to provide a series of three-day workshops in which industry aims to understand the clinical situation and challenges. We believe that these workshops can provide insight for future collaboration and enhance service provision from the commercial arena. These collaboratives are positively received and demand is in fact increasing for additional programmes.



Finally, but not least, last year we reported that the WWIL/Cwmbran GP complex wound clinic initiative had been nominated for awards from the Journal of Wound Care Awards 2016. WWIL are pleased to announce that Sian Cryer, practice nurse, won the Innovation Award accolade along with runner up in the professional education category.

Sian, pictured collecting her award, enjoyed the project so much that she spent a 6-month secondment with the team to further develop her wound healing skills.

Masters in Wound Healing and Tissue Repair (MSc)

Mrs Samantha Holloway has been involved in the education of health professionals at undergraduate and postgraduate level for several years and has worked with the Wound Healing Research Unit since 1997. Her main role is as a Senior Lecturer / Course Director for the Masters in Wound Healing and Tissue Repair. Sam is a Fellow of the Higher Education Academy and sits on the Education Committee for the European Wound Management Association (EWMA) and chairs the Teacher Network on behalf of EWMA. The network is currently exploring the provision of wound care education to undergraduate and post-registration nurses across Europe.

The inception of the Masters in Wound Healing and Tissue Repair was unique and remains one of very few academic courses at Masters level in wound healing. Originally introduced in 1996 as a Postgraduate Diploma in Wound Healing and Tissue Repair, the course has met the needs of a professional group of individuals working in a speciality which previously had no specific professional award particularly at this level of study. In 1999 the course was extended to offer a Masters level award.

Number of Students who have graduated with an Exit Award (PGCE introduced in 2004): July 1998 – Dec 2016

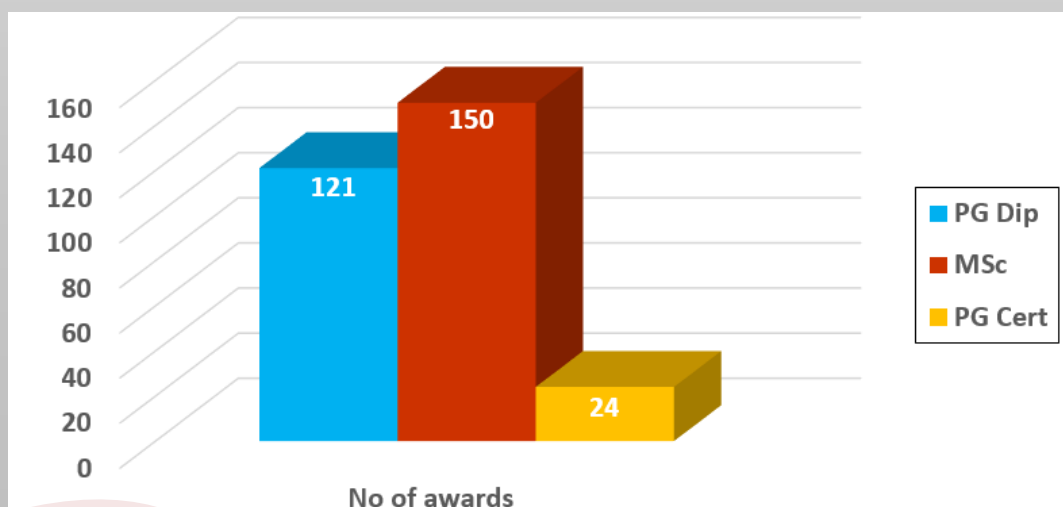
The 'open learning' nature of the Masters in Wound Healing and Tissue Repair allows professionals from a variety of healthcare disciplines to build upon existing knowledge within their own educational framework. The course content addresses theories of wound care and priorities of patient management from the broad perspective of all team members with the aim of fostering a 'team' approach.

Postgraduate Taught Experience Survey: Overall Results

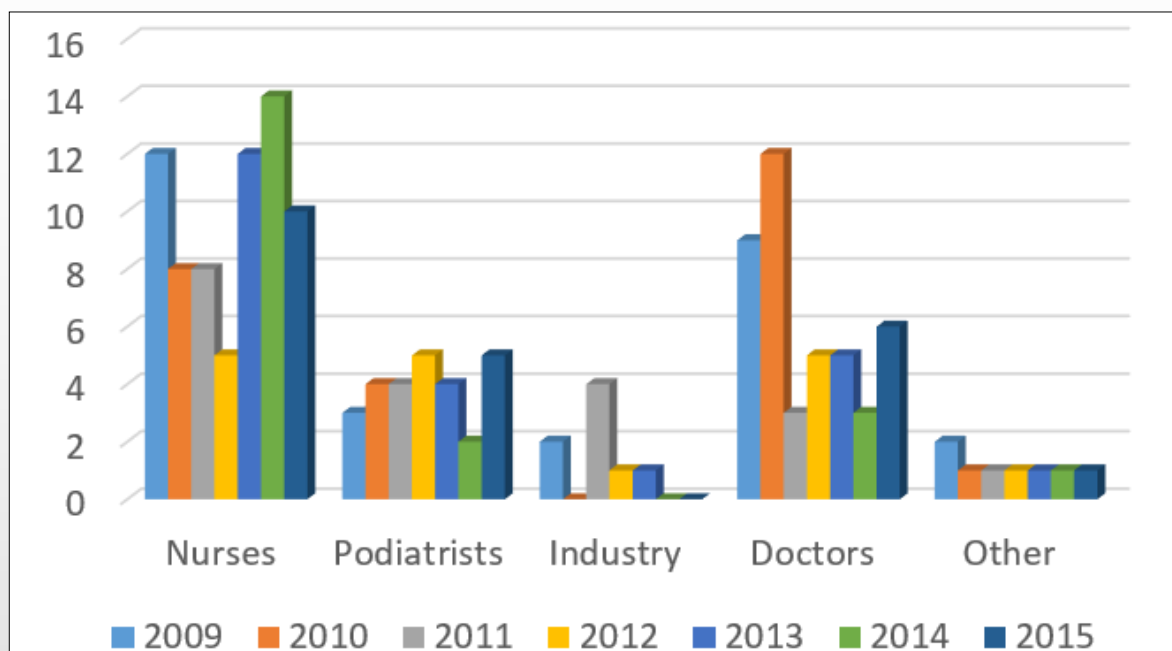
The overall satisfaction rate for the MSC in WHTR for 2015-16 was 100% with 100% satisfaction for 'the course has enhanced my academic ability', 'staff are enthusiastic about what they are teaching' and 'Staff are good at explaining things'.

In terms of thematic area performance and satisfaction rates these were as follows:

• Teaching and Learning	97%
• Dissertation	94%
• Assessment and Feedback	93%
• Learning Resources and Support Services	93%
• Skills Development	92%
• Engagement	92%
• Organisation and Management	89%
(*18% increase on previous year)	



Professional Background of Masters Students: 2009-2015



The next section gives a flavour of the feedback comments received.

Course feedback from students is positive, as outlined in the following responses to the MSC programme.

I have gained so much knowledge and with this knowledge confidence in my practical role and also in educating others as the course has progressed.

Completing a Master's programme was a requirement of a new work position for me - I was terrified that I would not get past the first module! Everything I have learnt is applicable to my clinical practice and my academic and clinical confidence has grown.

Provides opportunities to develop new skills such as analytical skills, academic writing and research.

It provides a platform to understand a subject in depth resulting in a comprehensive level of specialism. The sense of achievement and fulfilment on graduation day is awesome!

A Master's program takes you to the next level of knowledge in a particular area of practice. Although this provides you with credentials, you're rewarded with knowledge, inspiration and a continued quest for learning.

Provides new opportunities for employment or career progression within your organisation.

Pilot Study on Wound Management Education

In 2016, WWIL was commissioned by the Chief Nurse's Office to undertake a survey to determine the current level of wound management education in the undergraduate nursing curricula in Welsh Universities. The survey was designed to assess:

- That skin health, wound management and principles of asepsis were on the curriculum for each of the three years;
- The number of formal teaching hours over each year;
- The number of skills laboratory or simulation teaching hours over each year;
- What learning outcomes were identified, and ;
- The assessment process.

The findings of the survey were reported back to the parties involved, along with a series of recommendations. It was acknowledged that a significant part of teaching occurs whilst students are on placement, and that classroom training only forms part of the education programme.

National Pressure Ulcer Audit

In late 2015, WWIL co-ordinated the first National Pressure Ulcer audit for Wales on behalf of the Chief Nursing Officer for Wales. An abstract on the audit was submitted by Martin Semple, Nursing Officer, to the International Council of Nurses Congress taking place in June 2017. We are delighted to report that the abstract has been accepted as a formal presentation.

The Congress is the largest nursing professional event in the world, attended by 11,000 nurses over the course of a week, and is a great opportunity to showcase the work and to keep pressing for improvements in wound care. It's also an opportunity to showcase Wales and WWIL's input to the work. We are also waiting to hear from the British Medical Journal on an article documenting this seminal piece of work that was submitted for publication

in the journal. News just in, subject to WWIC meeting the reviewer's recommendations, the article should be published in the near future.



Publications

The WWIL team publish a wide range of articles and abstracts. In the last year, 31 articles were published. Many of these achieve global recognition, with team members being invited to speak at international conferences. Several abstracts have also been accepted for the European Wound Management Association conference which will be held in Autumn, 2017.

Joint PhD Supervision

WWIL is jointly supervising a small number of PhDs with other partners. One of these is Miss Bethan Frugtniet, who was awarded the best PhD presentation prize at the Life Sciences Research Network Wales' (LSRNW) 3rd Annual Drug Discovery Congress, which took place in December 2016.

At the event, Bethan Frugtniet, a 3rd year PhD student, delivered an award-winning presentation on the key findings from her PhD project, 'Validation of nWASP as a therapeutic target in chronic and non-healing human wounds.' The talk explained how the protein nWASP has been identified as an indicator of prognosis of wound healing and as a potential therapeutic target for the treatment of chronic wounds and explored the discovery of a novel connection between nWASP and TrkB signaling.



Bethan said *"This event highlights the fantastic translational research that is being carried out in Wales for the benefit of the patient. The emphasis on producing useful outputs, focused on the patient was a running theme throughout the two days. I am honoured to have been a part of the LSRNW and to have my work recognised through the award of the best PhD presentation prize."*

The following section highlights some of our key operational achievements.

Performance

WWIL uses a balanced scorecard approach to manage its performance ensuring the team is on track to meet our key strategic objectives. The scorecard measures progress against each of the measures and is based on the key drivers of activity, namely;

- Ensuring sustainable funding,
- Developing partnerships and collaborations to drive R&D,
- Ensuring the right level of resources are available to deliver WWIL activity,
- Research and development,
- Engaged customers and
- Education and training.

The scorecard was developed in the last year, with leads assigned to each of the indicators. Performance is updated every month and is reviewed as part of the Executive Management Team meeting as well as at the quarterly Board and Welsh Government review meetings. A copy of the scorecard is included, and confirms that WWIL is on track to achieve all its stated objectives. More detail on each of the performance metrics has been referenced in the separate sections of this report.

Key highlights are as follows:

- The financial position is improving through a combination of increasing our funded activities and reducing costs, and importantly WWIL remains financially sustainable.
- Recruitment of patients to meet the needs of research activity is increasing, and demonstrates that WWIL can deliver a wide range of studies and evaluations.
- Capacity planning has developed to enable WWIL to scale up capacity as new projects come onstream.
- The Wound Registry continues to expand, and provides a wealth of information on wound healing which is of great interest and will yield benefits to future patients.
- WWIL staff write many publications, demonstrating the expertise throughout the UK and internationally. In addition, staff are regularly invited to present at conferences worldwide.
- WWIL has signed an increased number of bespoke contractual agreements, both with local and international companies.
- Education and training activities continue to grow, with WWIL providing bespoke training and education for a wide range of audiences. Participant feedback confirms high levels of satisfaction.

The scorecard as at February 2017 is shown below.

Driver	Measure	Lead	YTD	Latest month/ Feb	Rating
Sustainable Funding	No of bids/grants submitted & achieved	EMT	5		G
	No of successful Contracts achieved	EMT	15		G
	Quarterly income v target. Cumulative income exceeds expenditure	FD/COO			G
	Delivery of financial and efficiency savings plans	COO			G
Partnerships & collaborations to drive R&D	Patient Numbers to match trial/evaluation specification requirements	CRD	468	69	G
	Compliance with process development, sign off and turnaround times	COO			A
	No of successful joint applications/joint ventures	EMT	2		A
Right Level of Resource	Available capacity to meet workflow	EMT			A
	No of appraisals and development plans that meet WWIC's outcomes	EMT	16	2	G
	Sustainable infrastructure to support operational requirements	EMT			G
Research & Development/ Innovation & Improvement	Wound registry number of users and volume of data captured	SSD/PM	19,600	250	G
	No of publications	EMT	34	3	G
	No of new ideas/patents and pathways developed	EMT	1		G
	No of jobs created	EMT		29	G
	Compliance with R&D process	MD/CRD/CM			G
	No of new commercial links and sustainability of established contacts	EMT	116	23	G
	No of joint PhDs with commercial/research partners	MD	3		G
Engaged Customers	Number of customers with contractual agreements; NDA's and Memorandum of Understanding	EMT	32	3	G
	Number of social media contacts	EMT	992	60	G
	Number of website hits	EMT	2447	126	G
Education & Training	No of participants and course costs achieved	CD	95	1	G
	No of staff trained/ access e-learning (including with joint venture) with positive feedback/evaluation	EMT	309	55	G
	No of accredited courses/certificates/CPD	DET/SH	54		G
	Teaching and lecturing activity - Pre and Post Reg	SH			G
	External examinations	EMT		3	G
	No of meetings attended/reports & feedback shared	EMT	26	10	G

Finance

The following section outlines the report of the Independent Auditors to the Board.

We have audited the financial statements of WWII Limited (a company limited by guarantee) for the year ended 31 July 2016. The financial reporting framework that has been applied in their preparation is applicable law and the Financial Reporting Standard for Smaller Entities (effective January 2015) (United Kingdom Generally Accepted Accounting Practice applicable to Smaller Entities).

Respective responsibilities of directors and auditors

As explained more fully in the Statement of Directors' Responsibilities, the directors are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view. Our responsibility is to audit and express an opinion on the financial statements in accordance with applicable law and International Standards on Auditing (UK and Ireland). Those standards require us to comply with the Auditing Practices Board's Ethical Standards for Auditors.

Scope of the audit of the financial statements

An audit involves obtaining evidence about the amounts and disclosures in the financial statements sufficient to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or error. This includes an assessment of: whether the accounting policies are appropriate to the company's circumstances and have been consistently applied and adequately disclosed; the reasonableness of significant accounting estimates made by the directors; and the overall presentation of the financial statements. In addition, we read all the financial and non-financial information in the Report of the Directors to identify material inconsistencies with the audited financial statements and to identify any information that is apparently materially incorrect based on, or materially inconsistent with, the knowledge acquired by us in the course of performing the audit. If we become aware of any apparent material misstatements or inconsistencies, we consider the implications for our report.

Opinion on financial statements

In our opinion the financial statements:

give a true and fair view of the state of the company's affairs as at 31 July 2016 and of its surplus for the year then ended;

have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice applicable to Smaller Entities; and

have been prepared in accordance with the requirements of the Companies Act 2006.

Opinion on other matter prescribed by the Companies Act 2006

In our opinion the information given in the Report of the Directors for the financial year for which the financial statements are prepared is consistent with the financial statements.

Matters on which we are required to report by exception

We have nothing to report in respect of the following matters where the Companies Act 2006 requires us to report to you if, in our opinion: - adequate accounting records have not been kept, or returns adequate for our audit have not been received from branches not visited by us; or - the financial statements are not in agreement with the accounting records and returns; or - certain disclosures of directors' remuneration specified by law are not made; or - we have not received all the information and explanations we require for our audit; or - the directors were not entitled to prepare the financial statements in accordance with the small companies regime and take advantage of the small companies' exemption from the requirement to prepare a Strategic Report.

Nigel Williams BCOM FCA (Senior Statutory Auditor)
for and on behalf of Graham Paul Limited (Statutory Auditor)
Court House Court Road Bridgend
CF31 1BE

WWII Limited (A Company Limited By Guarantee) (Registered Number: 08760652) Trading As Welsh Wound Innovation Initiative.

Abbreviated Balance Sheet 31 July 2016.

	Notes	2016 £'000	2015 £'000
FIXED ASSETS			
Tangible assets	2	69	93
CURRENT ASSETS			
Debtors		119	22
Cash at bank		697	169
		<u>816</u>	<u>191</u>
CREDITORS			
Amounts falling due within one year		<u>346</u>	<u>284</u>
NET CURRENT ASSETS/(LIABILITIES)		<u>470</u>	<u>(93)</u>
TOTAL ASSETS LESS CURRENT LIABILITIES		<u>539</u>	<u>-</u>
ACCRUALS AND DEFERRED INCOME		<u>539</u>	<u>-</u>
NET LIABILITIES		<u>-</u>	<u>-</u>
RESERVES		<u>-</u>	<u>-</u>

The abbreviated accounts have been prepared in accordance with the special provisions of Part 15 of the Companies Act 2006 relating to small companies.

The financial statements were approved by the Board of Directors on 16th January 2017 and were signed on its behalf by Fiona Peel, Chair of the Welsh Wound Innovation Initiative Limited.

**NOTES TO THE ABBREVIATED ACCOUNTS
FOR THE YEAR ENDED 31 JULY 2016**

1. ACCOUNTING POLICIES

Basis of preparing the financial statements

The directors believe that preparing the financial statements on the going concern basis is appropriate because:

the Company has secured grant funding to 31st March 2019 and the cash flow forecast to 31st July 2017 projects that funds will be available for the 2016/17 financial year; and

the Company will continue full trading in the 2016/17 financial year and is forecasting significantly increased revenue from that trading.

Accounting convention

The financial statements have been prepared under the historical cost convention and in accordance with the Financial Reporting Standard for Smaller Entities (effective January 2015).

Exemption from preparing a cash flow statement

Exemption has been taken from preparing a cash flow statement on the grounds that the company qualifies as a small company.

Income

Welsh Government grant income is accounted for when drawn down from Cardiff University. The contributions from Welsh Local Health Boards are accounted for on the accruals basis.

Other operating income consists of commercial income from running education and training courses.

Tangible fixed assets

Depreciation is provided at the following annual rates in order to write off each asset over its estimated useful life.

Plant and machinery etc - 25% on cost, 20% on cost and 10% on cost

Deferred tax

Deferred tax is recognised in respect of all timing differences that have originated but not reversed at the balance sheet date.

Hire purchase and leasing commitments

Rentals paid under operating leases are charged to the income and expenditure account on a straight line basis over the period of the lease.

2. **TANGIBLE FIXED ASSETS**

	Total £'000
COST	
At 1 August 2015 and 31 July 2016	110
DEPRECIATION	
At 1 August 2015	17
Charge for year	24
At 31 July 2016	41
NET BOOK VALUE	
At 31 July 2016	69
At 31 July 2015	93

3. **ULTIMATE CONTROLLING PARTY**

The controlling party is Cardiff University.

The directors regard Cardiff University to be the ultimate parent company by virtue of being the sole member subject to the guarantee. The directors do not consider there to be an ultimate controlling party of the company.

4. **COMPANY STATUS**

The company is a private company limited by guarantee and consequently does not have share capital. The sole member for the purposes of the guarantee is Cardiff University.

Celebrating with Local Partners

Frontier Medical Group

In February, the WWIL Team attended a ceremony to open the new Head Office of the Frontier Medical Group and celebrated the company's 50th anniversary. Professor Keith Harding, along with the then Economy Minister, Edwina Hart, were invited to the ceremony, in recognition of the close partnership with Frontier. The organisation has evolved into a leading local employer and an innovator in the medical devices industry.

At the event, Professor Keith Harding said "We have a relationship with Frontier that goes back nearly 20 years as we worked together on developing and proving the clinical efficacy of the Repose® products. All the team at the Welsh Wound Innovation Centre look forward to this relationship continuing as we work together to develop clinically effective products to reduce the prevalence of pressure ulcers."



Direct Healthcare Services

WWIL has also had a strong collaboration with Direct Healthcare Services, and were delighted at the news that they earned royal recognition with a prestigious Queen's Award for Enterprise in Innovation for their Intelligent Pressure Care Management solution. The Queen's Award for Enterprise is the highest official UK award for British businesses, and to win the award businesses must demonstrate outstanding commercial success and a unique approach to a invention, service or product.

Receiving the award, Graham Ewart, Managing Director, said: "Delivering genuine innovation that makes a real difference



to both patients and the lives of our hardworking healthcare professionals is at the very heart of everything we do, so we are incredibly honoured to receive such a prestigious award. We are even more proud that our solution has been of huge benefit to the NHS, helping patients and saving valuable time and resources."

WWIL worked successfully with Direct Healthcare Services as part of the Care Home project, and look forward to continued partnership work in the future.

National Diabetic Foot Network

The Welsh Government recently published the Diabetes Delivery Plan 2016-2020: 'The best standard of care for everyone with diabetes'. The Delivery Plan outlines key recommendations on how to prevent and manage diabetic foot disease to reduce the significant burden of diabetic foot problems which may cause distressing and disabling ulceration and amputation.

A National Diabetes Foot Coordinator has been appointed by the Diabetes Implementation Group to oversee the implementation of foot services. Central to achieving this goal is development of a Diabetic Foot Network that will shape the future provision of care, providing a world class diabetic foot service to all its residents.

The Diabetic Foot Network will, in future, hold its meetings at WWIC as the opportunities between the two to work collaboratively to identify new ways of working, from education, prevention and new ways of treatment is clearly a shared goal.

Bevan Commission Project

Community Wound Assessments and Management for Housebound Patients using 'WoundCare' 3-D Camera Technology (The CAMPCO project).

The CAMPCO project was set up in February 2016 following £7.5K grant funding from the Bevan Commission's Exemplar scheme. The project aims at trialling the feasibility of providing a community based service for wound assessment and management using new and novel software which enables 3-dimensional image capture of wounds, and provides a platform for monitoring progress in wound healing. The study population is housebound patients who find it difficult to attend hospital or GP clinics. Our main collaborators for the conduct of this feasibility study are the district nursing team from Cardiff and Vale University Health Board and General Practice Commissioning Solutions Limited are providing the technology support.

Progress so far

The study has been fully set up and patients have already been recruited. Following the initial pilot recruitment, useful feedback regarding the 3-D software 'WoundCare' was well received by the Software Company and relevant changes have been made to ease the process of image capture. The technology to remotely access wound images of patients and provide advice to district nurses is almost complete, to enable further recruitment of patients.

Future prospects

If successful, the project can provide the basis for development of a new service for wound care, wherein many assessments that currently require a hospital appointment can be made nearer to the patients and/or in their own homes.

What it's Like to Work in WWIL - From a new member of the team



Kirsten Mahoney, RGN, Dip Dn, BSc, MSc, IP

Clinical Operational and Procurement Lead

I have worked within primary care in Cardiff and Vale Health Board Primary Care for over 20 years and due to a specialist interest in wounds I became a Clinical Nurse Specialist in Wound Healing in 2007. I have recently had the opportunity to be seconded into WWIL as the Clinical Operational and Procurement lead. This has been a very exciting prospect and has allowed me to use my NHS knowledge and expertise in a unique way. My main remit is to provide partnership working across Private and NHS facilities to identify gaps in service provision and improve wound care practice across Wales.

When you are working in clinical practice it is often easy to highlight areas that need improvement that will enhance knowledge in wound care and ultimately improve patient and clinical outcomes. It is not always easy, however, to be able to facilitate the principles of prudent health care and make organisational change to improve clinical and patient outcomes. My role has given me the opportunity to access the diverse expertise that exist within WWIL, which includes education, research and clinical and work in collaboration with stakeholders across Wales. As I am fairly new in post I am still identifying opportunities for development and am working on several new interesting projects with different agencies both NHS and non- NHS so watch this space for future developments.



The Year Ahead

WWIL has now consolidated its position as a national centre addressing academic, clinical and commercial aspects of wound healing. Going forward we will continue to focus in these three areas of work but hope to see more Higher Education Institutes (HEIs) in Wales becoming members and increasing our range of collaborations and joint grant applications. Clinically we will work more extensively with NHS Wales and Health Boards and Trusts to raise the standard and consistency of clinical care with the ultimate aim of all units of NHS Wales management joining WWIL. Commercially, we are now able to demonstrate our contributions to both job creation and job security for individuals and organisations working in this field and will increase the national and international profile of Wales in the area of wound healing.

As well as delivering better outcomes for patients, our goal is to see a number of national centres established in wound healing around the world and we collaborate and share best practice to increase the rate of adoption of teaching, research, clinical programmes and commercial offerings available. This work has already started as a result of our links with the Australian Wound Innovation Centre in Brisbane and we are looking at supporting additional wound initiatives in Asia and America.

Closer to home, we are seeking to develop our R&D capacity in collaboration with partners, principally in the diagnostic arena. We further intend to build on our existing laboratory testing capacity and consider this a real strength of the WWIL brand. Building on our reputation we are also developing licensing agreements such that we can support a sustainable income stream for WWIL's future. There are also significant opportunities, in our opinion, to NHS Wales through the adoption of an all-Wales bed management strategy and we are uniquely placed to provide advice and guidance on such a development.

Much has been achieved by the dedicated and fantastic team we have in WWIL. Much more needs to be done for patients with wounds for them to have confidence of access to a comprehensive research base, competent healthcare professionals and services and an appropriate range of effective interventions. This model is new, this subject is an orphan child in modern medicine. However, we believe that we have and we will continue to make a difference, and we look forward to reporting on our progress in next year's report.

