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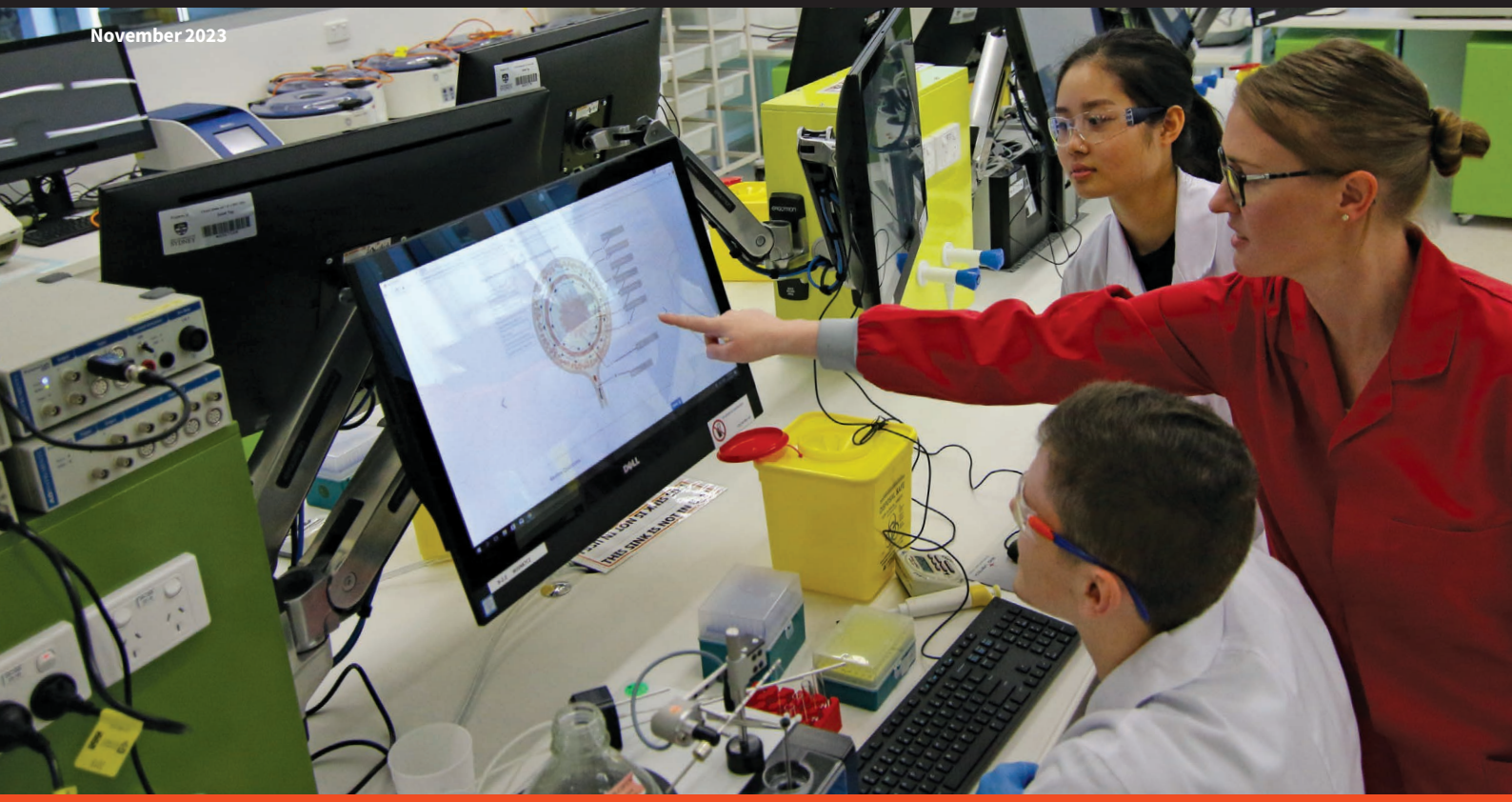
Lt Content Checklist

Lessons, experiments, and Patient Resource Packs

November 2023



Lt is an online learning platform that engages students with real data, inside and outside the lab.

Anatomy

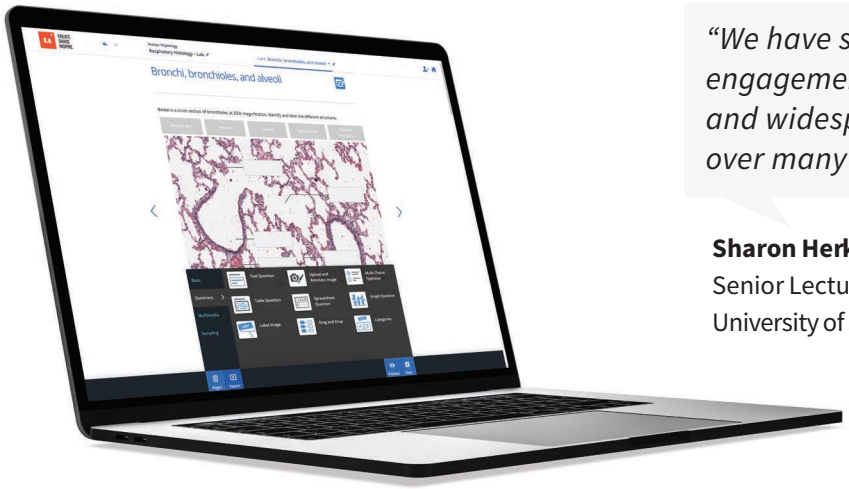
- Cardiovascular System
- Central Nervous System
- Digestive System
- Endocrine System
- Integumentary System
- Lymphatic and Immune
- Muscular System
- Reproductive System
- Respiratory System
- Skeletal System
- Special Senses
- Tissues
- Urinary System

Animal Physiology

- Animal Metabolism
- Cockroach Sensory Nerve
- Cockroach Ventral Nerve Cord
- Earthworm Action Potentials
- Earthworm Smooth Muscle
- Frog Heart
- Frog Nerve
- Frog Neuromuscular Junction
- Frog Skeletal Muscle
- Gin Trap Closure Reflex

- Improved efficiency
- Increased student engagement
- Improved results in theory and clinical practice
- Increased student pass rates*

**Results of using Lt at the School of Nursing, Otago Polytechnic | Te Pūkenga, 2017*



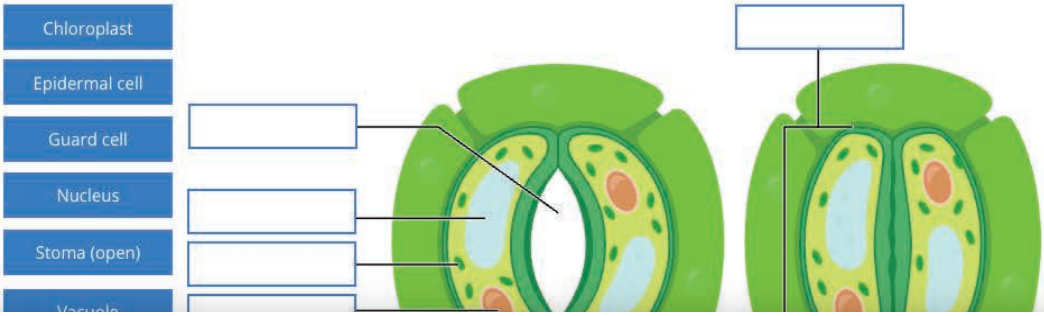
Key:

- Dissection Lab
- Histology Lab
- Model Lab
- Pre-lab
- Lab

"We have seen high student engagement and satisfaction, and widespread adoption over many courses."

Sharon Herkes,
Senior Lecturer, Physiology,
University of Sydney

Plants have specialized pores, called stomata, on their leaves which release water during the transpiration process. Identify key components of the stomata in the illustration below.



Biology

- Acid Rain
- Animal Behavior
- Aquatic Photosynthesis
- Bacterial Transformation
- Biological Membranes
- Cellular Respiration
- CRISPR
- Diffusion through Membranes
- DNA Structure and Replication
- Ecology and Biodiversity
- ELISA: Giant Panda Problem
- Enzyme Action: Testing Catalase Activity
- Exploring the Greenhouse Effect
- Forensic DNA Fingerprinting
- From DNA to Protein
- Genetics of Drosophila
- Interdependence of Plants and Animals
- Introduction to Cells
- Introduction to Microscopy
- Introduction to Molecular Evolution
- Limitations on Cell Size
- Macromolecules: Proteins
- Measuring Primary Productivity
- Metabolization of Sugars by Yeast
- Mitosis and Meiosis
- Modeling Population Dynamics
- Osmosis
- Photosynthesis
- Polymerase Chain Reaction (PCR)
- Population Dynamics
- Population Genetics and Evolution
- The Visible Spectra of Plant Pigments
- Transpiration
- Turnip Peroxidase

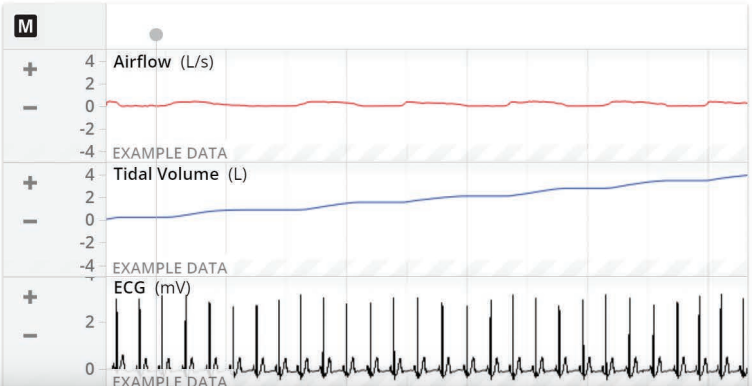
Chemistry

- Acid–Base Titration
- Beer's Law
- Boyle's Law and Charles' Law
- Determining a Chemical Formula
- Determining an Equilibrium Constant
- Determining the K_{sp} of Calcium Hydroxide
- Dissociation Constants
- Electrochemistry: Voltaic Cells
- Electrolytes and Nonelectrolytes
- Evaporation and Intermolecular Attractions
- Identifying an Unknown Diprotic Acid
- Liquid Chromatography
- Measuring and Predicting Heats of Reaction
- Molar Volume of a Gas
- Quantitative Analysis of a Precipitate
- Rate Law Determination
- Standardizing a Solution
- Synthesis and Analysis of Aspirin
- Temperature and State Changes

Clinical Skills

- Assessment Tools
- Clinical Measurements I
- Clinical Measurements II
- CPR
- Fluid and Nutrition
- Health History and General Survey
- Health Literacy
- Health Promotion and Community Nursing
- Hygiene and Personal Care
- Indwelling Catheter
- Intravenous (IV) Fluid Infusion
- Medication Administration I
- Medication Administration II
- Nasogastric Intubation
- Oxygen Therapy
- Peripheral Assessment
- Promoting Comfort
- Safety
- Sterile Fields
- Supporting Elimination
- Therapeutic Communication
- Vital Signs

Key: Lab Preparation Practice Quiz



Analysis

1. Use the scroll bar to locate the "resting" comment and compress the horizontal axis using the x-axis compression buttons.
2. Use the region selector to select the first minute of data. Ensure you do not include the area with no respiratory rate

Exercise Physiology

- Aerobic Fitness Testing
- Anaerobic Fitness Testing
- Cardiorespiratory Effects of Exercise
- Cardiovascular Effects of Exercise
- Energy Expenditure and Exercise
- Energy Metabolism
- Introduction to Fitness Testing

Human Physiology

- Airflow
- Autonomic Nervous System
- Blood Clotting
- Blood Counting
- Blood Pressure
- Body Temperature
- Brain Structure and Reflexes
- Breathing
- Cardiorespiratory Effects of Exercise
- Cardiovascular Effects of Exercise
- Cold Pressor Test
- Diving Response
- Electroencephalography (EEG)
- Electro-oculography (EOG)
- Endocrine Physiology
- Energy Expenditure and Exercise
- Glucose Absorption
- Heart and ECG
- Heart and Peripheral Circulation
- Heart Sounds
- Hoffmanns Reflex
- Kidney and Urine
- Lung Volumes
- Mechanical and Chemical Digestion
- Mechanics of Ventilation
- Muscle and EMG
- Myotatic Reflex
- Peripheral Nerve Function
- Reflexes and Reaction Times
- Reproductive Physiology
- Sensory Illusions
- Sensory Physiology
- Skeletal Muscle Function
- Stroop Test
- Water Balance

Neuroscience

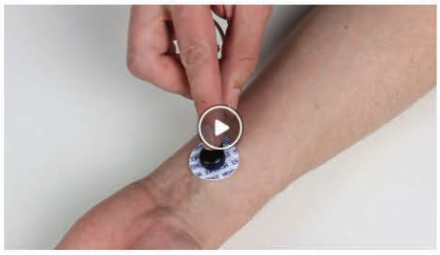
- Autonomic Nervous System
- Biofeedback
- Brain Structure and Reflexes
- Cockroach Sensory Nerve
- Cockroach Ventral Nerve Cord
- Diving Response
- Earthworm Action Potentials
- EDR and Classical Conditioning
- Electrodermal Response (EDR)
- Electroencephalography (EEG)
- Electrooculography (EOG)
- Frog Nerve
- Frog Neuromuscular Junction
- Muscle and EMG
- Peripheral Nerve Function
- Reflexes and Reaction Times
- Sensory Illusions
- Sensory Physiology
- Size-Weight Illusion
- Skeletal Muscle Function
- Stroop Test
- Visual Evoked Potential (VEP)

Nursing

- Blood Pressure
- Childbirth
- COPD
- Diabetes Complications
- Febrile Illness
- Heart Failure
- Muscle
- Myasthenia Gravis
- Myocardial Infarction
- Peripheral Vascular Disease
- Pregnancy
- Renal Failure
- Stroke
- Type 1 Diabetes

Key: ○ Tutorial(s) ● Pre-Lab ● Lab ● Mini Lab ● Case Study ● Patient Education ● Evaluation ● Scenario

Equipment setup



Electrode placement

Pharmacology

- Airways Resistance
- Chick Biventer Cervicis
- Mammalian Atria
- Mammalian Diaphragm
- Mammalian Heart
- Mammalian Jejunum
- Mammalian Uterus
- Stimulated Ileum
- Stimulated Rat Vas Deferens
- Toad Rectus Abdominis
- Unstimulated Ileum
- Unstimulated Ras Vas Deferens
- Vascular Resistance
- Vascular Smooth Muscle

Psychophysiology

- Biofeedback
- Diving Response
- EDR and Classical Conditioning
- Electrodermal Response (EDR)
- Electroencephalography (EEG)
- Electrooculography (EOG)
- Introduction to Psychophysiology
- Muscle and EMG
- Reflexes and Reaction Times
- Sensory Illusions
- Sensory Physiology
- Size-Weight Illusion
- Stroop Test
- Visual Evoked Potential (VEP)

Preclinical Medicine

- Autonomic Nervous System
- Blood Pressure
- Body Temperature
- Brain Structure and Reflexes
- Endocrine System
- Glucose Absorption
- Heart and ECG
- Heart and Peripheral Circulation
- Heart Sounds
- Kidney and Urine
- Lung Volumes
- Muscle and EMG
- Peripheral Nerve Function
- Skeletal Muscle Function

Important Notes

- Lessons from the *"Getting Started with Lt"* module can be included in each course to prepare students to use the platform.
- Some modules may also include multiple Tutorials.

Key: ○ Tutorial(s) ● Pre-Lab ● Lab ● Case Study ● Evaluation

Patient Resource Packs

Overview

What's in a Patient Pack?

Each patient's medical story is different, so each case has different content to use in your teaching. A typical patient pack can include:

- A short clinical summary (similar to a medical letter) and a chronological clinical summary
- Video interviews with patients and relatives as well as health-care professionals (Consultant, Nurse, OT, PT, Specialized Technicians, and Dieticians). Each video includes subtitles and a captioned summary
- Lab test results: SI and non-SI units
- Video of clinical examinations and medical procedures, including subtitles and captions
- Specialized investigations such as chest X-rays, ECGs, MRI, and CT scans
- A discharge summary
- Suggested teaching topics

Combine different patient resources and incorporate your own content to:

- Teach pathophysiology
- Alternate teaching cases across years
- Illustrate a scientific concept, such as how to read an MRI
- Compare different presenting symptoms for the same condition
- Follow a patient's story through your curriculum, building the case's complexity, or examining different aspects of a patient's condition
- Provide supplementary cases for students to expand and consolidate their learning

Typical patient journey

Initial presentation, clinical summary → **Patient history, video interviews** → **Insights from family members, interviews** → **Lab tests, investigations, procedures, scans** → **Diagnosis and treatment plan** → **Nursing, OT care, PT care, dieticians** → **Consultant summary, specialist insights** → **Discharge summary, patient follow-up**

Patient Resource Packs

List of patients currently available in Lt

Alfred Ashmore
Renal function
Kidney failure, polycystic kidney disease, transplant, renal function tests, dialysis, peritoneal dialysis, hemodialysis.

Angela Williams
Reproductive physiology/obstetrics and gynaecology
Menorrhagia, IUD (intrauterine device), forms of contraception, treatment of heavy bleeding, hysterectomy, anaemia, blood film, pipelle endometrial biopsy – indications, vaginal swab – indications.

Barry West
Neurological conditions
Stroke, cerebral circulation stroke recovery, rehabilitation, hemianopia hypertension procedures, neurological examination, CN exam, eye exam, CT, MRI.

Ben Wolfe
Type 2 diabetes
Type 2 diabetes, autonomic and peripheral neuropathy, cellulitis, charcot joints.

Betty Flannery
Left ventricular failure, heart failure, weight gain, acute onset of shortness of breath, hyponatremia.

Carol Campbell
Endocrine and metabolic disorders
Type 1 diabetes, hyperglycaemia, hypoglycaemia, insulin, glucose, HbA1c, thyrotoxicosis, Graves disease, reactive arthritis, salmonella, insulin pump.

Charlie Park
Myocardial infarction, angina pectoris, stable angina, bypass surgery, dizziness, cardiovascular disease, coronary artery disease, left main stenosis, triple vessel disease, high cholesterol.

Chris Rawlins
Type 1 diabetes, renal impairment, kidney transplant, colostomy, post transplant, proliferative lymphoma.

David Marks
Myocardial infarction (silent)
Myocardial infarction, silent MI, CABG, PVD (peripheral vascular disease), hypertension.

Emma Smith
Granulomatosis
Glomerulonephritis, Wegener's granulomatosis, septic arthritis, ESR, remission, kidney disease, microscopic polyangiitis, small vessel vasculitis, septic arthritis, pre-eclampsia, preeclampsia, toxemia, PIH.

Frank Foster
Becker muscular dystrophy
Becker muscular dystrophy, X-linked disorders, creatine kinase, OSA, obstructive sleep apnea, degenerative muscle weakness, supportive care.

Gwen Simms
Osteoarthritis, hip, replacement, chronic, pain.

Harry Barker
Glucose-6-phosphate dehydrogenase deficiency, G6PD, Wegeners, laryngitis, laryngeal webs, stridor, hoarseness, iron overload, hepatitis B, hemolysis.

James Hinton
Aortic stenosis, aortic valve replacement, angiogram, ECG.

James Lester
Hypertension, renal artery stenosis, angina pectoris, sympathectomy technique.

Jenny Lincoln
Pregnancy, childbirth, preterm labor, pre-eclampsia, stages of labor.

Joe Hunter
Chronic liver cirrhosis, hepatitis C, decompensation, interferon and ribavirin treatment.

John Wise
Atrial fibrillation, heart failure, irregular heartbeat.

Liam McFadden
Fever, paediatric care, taking a temperature, body temperature, thermoregulation.

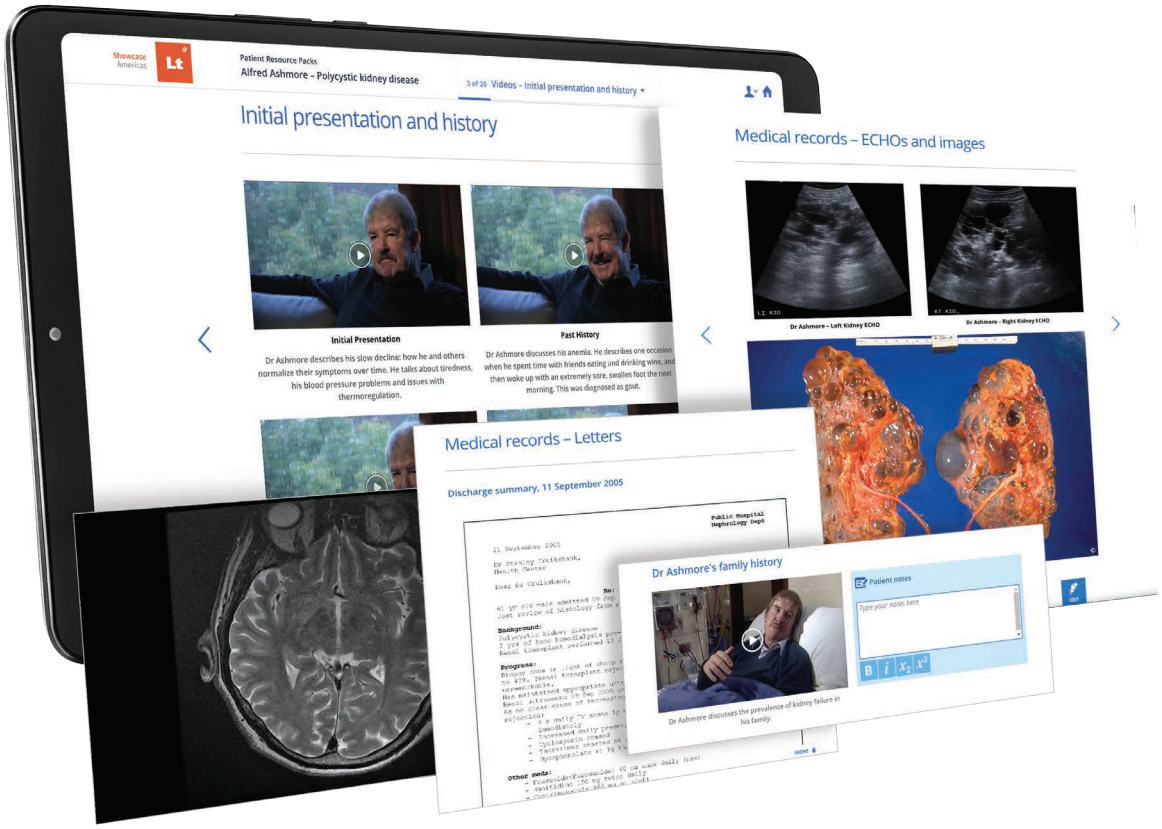
Mary Montgomery
COPD, chronic bronchitis, emphysema, pulmonary fatigue, lung volume, breathlessness.

Max Chaves
Pulmonary fibrosis, restrictive lung disease, dyspnea, lung transplantation, steroid therapy, spirometry.

Mike Miller
Myocardial infarction, STEMI, coronary artery disease, atherosclerosis, fibrinolysis, smoking, cardiac arrest, defibrillation, catheterisation laboratory, coronary angiogram, angioplasty, acute S-T elevation.

Nick Blair
Guillain-Barré syndrome, neurological examination, neurophysiology reports, lumbar puncture, rehabilitation, physiotherapy, occupational therapy, immunoglobulin therapy.

Penny Parker
von Willebrands disease, tranexamic acid, heavy menstruation, ablation therapy, menorrhagia.



List of patients currently available for Lt continued:

Pete Winslow

Peripheral neuropathy.

Rachel Pearson

Myasthenia gravis, diplopia, blurry vision, cranial nerves, eye movements, facial nerve palsy - differential diagnoses, fistula - indications, immunoglobulin therapy, plasmapheresis, immunosuppressive therapy.

Sam Dixon

Claudication, endarterectomy, atherosclerosis, peripheral vascular disease, vascular studies,
abdominal aortic aneurysm, peripheral artery disease, triple A, atherosclerosis, plaque.

Sarah King

Urodynamic stress incontinence

Incontinence, bladder irritation, urinary tests, pelvic floor exercises, depression.

Thomas Alexander

Aortic incompetence, valve replacement, bicuspid aortic valve disease (BAVD), bradycardia, heart murmur.

Tim Scott

Myocardial infarction, STEMI, acute coronary syndrome, coronary artery disease, hyperlipidaemia.

Zac Thayer

Respiratory hyper-responsiveness, asthma, childhood, eczema.

> *"Lt's real patient case studies make theory highly clinically relevant and engaging for our students."*
>
> **Jack Simpson**,
> Lecturer, Nursing, University of the West of Scotland

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Privacy and consent

All of our patients have provided written, informed consent for their medical story to be used to support health professional learning. Because these are real people, we have given each patient and their family members pseudonyms to protect their identities.

Our patients have all viewed and approved the content to be used to develop learning resources. This gives you the freedom to use these detailed real-life resources to create and customize comprehensive medical cases suited to your teaching process.

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