Transforming Lab Tests Online AU
Australia’s public portal to pathology
A project funded under the Australian Government’s Quality Use of Pathology Program

Building the confidence patients need
Equipping health professionals to make the decisions that matter
Showcasing the valuable work of the lab

Final Report on Stage 2 of the Lab Tests Online AU Project.
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Foreword from Professor Leslie Burnett, Immediate Past Chair, Lab Tests Online\textsuperscript{AU}

Healthcare is undergoing a transformation:

- Our population is ageing, and the burden of chronic disease will increase
- Scientific knowledge is growing rapidly, especially in the areas of laboratory medicine, biology and genetics.
- Patients are becoming increasingly empowered in seeking more information about and control of their own healthcare
- The overall electronic literacy of the population is increasing.
- eHealth is becoming increasingly pervasive.

It was in this environment that Lab Tests Online Australasia was developed. Written and supported by active laboratory professionals, it offers access to independent and authoritative information about laboratory tests, medical conditions and diseases, in an engaging language matched to the educational levels of its readers.

These last five years have seen several changes to Lab Tests Online\textsuperscript{AU}. Our team successfully steered the original product to maturity as a web portal. But we also foresaw the rapid move to mobile smartphones and tablets, and transitioned Lab Tests Online\textsuperscript{AU} as a mobile device enabled service. We have recently released the latest version, in a world-first product that meets the latest web and mobile standards.

We now have a unique service that may enable health connection service providers to provide key information to health consumers in real time, at the moment and place of need. Lab Tests Online\textsuperscript{AU} has the potential to be a key link for these emerging new models of healthcare delivery in the landscape of health information services.
Foreword from Dr Louise Wienholt, Chair, Lab Tests Online\textsuperscript{AU}

Millions of consumers source healthcare information on the internet. The quality and accuracy of this information is variable, and it is often difficult for those accessing it to judge how reputable and accurate the data is.

Lab Tests Online\textsuperscript{AU} fills an important gap in healthcare literature on the internet by providing quality, evidence-based information on pathology tests specifically written for an Australasian audience. Material on the website is written by scientists and pathologists, working in the industry, and it is updated frequently.

This past year has seen a number of important and exciting changes to the website that have enhanced its utility to consumers. In response to user feedback, a full redesign was undertaken to make the information on Lab Tests Online\textsuperscript{AU} easier to navigate and enhancements have been made to make the website responsive for mobile devices.

In addition, we have also partnered with a number of reputable organisations such as Healthdirect Australia, The Better Health Chanel and the NPSMedicineWise to provide information on pathology testing for consumers accessing their websites. Links to Lab Tests Online\textsuperscript{AU} will soon be embedded into consumer pages on the Personally Controlled eHealth Record (PCEHR), which was recently upgraded to accept pathology reports.

As more patients begin to access their personal healthcare information online, Lab Tests Online\textsuperscript{AU} will play an important role in helping patients understand how to read and understand their results and continue to provide educational material on disease-specific medical testing.
Executive Summary

The principal objectives of Stage 2 of the Lab Tests Online\textsuperscript{AU} (LTO\textsuperscript{AU}) Project were to continue the management and support of the Australian website established in Stage 1 and to develop new improvements and features.

A number of specific activities were undertaken to achieve the objectives, namely:

- Additional Australian health consumer representatives were appointed to the LTO\textsuperscript{AU} Board to provide greater input on the new and revised website and content
- A more user friendly mechanism was implemented to enhance the response to consumer and health professional requests
- Partnerships with NPS Medicinewise, Healthdirect Australia, College of Nursing and Better Health Channel were established to further promote the site
- Re-negotiation of the licence agreement with the American Association for Clinical Biochemistry (AACC) to allow greater autonomy and control of the website design and content
- Implementation of a totally revised website largely based on consumer survey feedback and the recommendations of an independent review

The new Australian Lab Tests Online\textsuperscript{AU} website, launched on 1 November 2014 is a significant outcome for LTO\textsuperscript{AU} and further establishes the Australian site as a trusted source of pathology and health related information for consumers and health professionals.
Lab Tests Online Australasia is a successful, not-for-profit educational website delivering independent and authoritative content on pathology tests to consumers and health professionals. Established in 2007, it is the only public information service in Australia delivering comprehensive information on pathology testing that is easily disseminated.

More than three million people (unique visitors) have visited the site over the past five years to enquire about the pathology tests they or someone close to them is having and the implications for their health.

There is no other Australian website where consumers can source reliable information written by practicing pathologists and medical scientists.

As well as members of the public, Lab Tests Online is widely used by nurses, GPs, practice managers, tertiary students and allied health professionals searching for easily-disseminated scientific information about pathology testing they can trust.

Over the project period, 1,917,595 unique users visited the website. Over the past twelve months 550,000 people visited the site, 76% of whom were new users.

The Lab Tests Online app, launched in November 2012 has seen 10,000 downloads, reflecting the many regular users of the service.

Twelve million Australians have pathology tests annually. The mission of Lab Tests Online is to empower them by delivering the information they need, when and where they need it, to help them take an active role in decision making and be at the centre of their own healthcare.

The benefits of the empowered, educated and informed health consumer are well documented. Pathology tests underpin the whole of healthcare – screening, diagnosis, management and treatment.

By explaining test results in a clear manner with examples and pictures, Lab Tests Online equips consumers with the information they need to have productive conversations with their doctors and others involved in their care and treatment.

This has special benefits for people who depend on regular testing for chronic illnesses such as diabetes, cardiovascular disease, autoimmune diseases, thyroid diseases, leukaemia and those on long-term medication/treatment and management such as polypharmacy and UTIs in aged care. It is also particularly helpful for those with serious illnesses such as cancer.

On the other side of the healthcare equation, Lab Tests Online also provides the medical and health community with accurate, well-written and trustworthy information they can use as a ready reference for themselves or to pass on to their patients.

With the introduction of personally-controlled e-health records (PCEHR), the need for information about pathology tests is set to rise significantly and rapidly.
As part of the PCEHR, members of the public will have their pathology results uploaded automatically by the lab that has performed their tests and made available to them seven days after their doctor has received them.

The PCEHR has the potential to improve the quality, safety, and efficiency of patient care by improving the interactions between healthcare providers and patients.¹

Recent articles in Pulse IT support the benefits of increased consumer engagement leading to better quality and safer health care practice.²,³

Stage 1 of the LTOAU project commenced in 2007 with a principal objective of establishing the Australian website under licence from the AACC. This (Stage 2) project was focussed on continuing the review and addition of Australian content to the site as well as raising the awareness of the site through consumer forums and partnerships with reputable health related websites. The additional objective of updating the site in response to consumer and independent reviews was also a key component for current and future development.
Aims of Stage 2

The principal aims of this stage of the project were:

- To continue to support the LTO\textsuperscript{AU} website including the ongoing promotion to consumers and health professionals

- To maintain and update the content by providing current, relevant, authoritative, independent and readily accessible information covering all pathology disciplines.

- Develop partnerships with other health organisations to enhance the reach of LTO\textsuperscript{AU}

- To further develop the site based on feedback from surveys of consumers, health professionals and an independent review
Developing a strategy to achieve the aims of Stage 2

The ongoing strategy from Stage 1 of the project was reviewed and updated to incorporate the new initiatives for Stage 2. While the website support and promotion of the website had continued between agreements, this phase had a number of new components. A revised strategy was compiled by the LTO\textsuperscript{AU} Executive after consultation with the Advisory Board and the independent reviewer. The detail is outlined in the next three sub-sections.

LTO\textsuperscript{AU} support, maintenance and development

Support team

The LTO\textsuperscript{AU} Executive, Board and Editors continued to support the day-to-day operation and ongoing development of the website throughout the project. This included:

- Writing and loading new articles to the website
- Review and update of all content
- Answering the online and telephone enquiries from consumers

Governance - Appendix 1 lists the members of the Executive and Advisory Board. The Editors are listed in Appendix 2.

Consumer Feedback - Examples of consumer queries and feedback are listed in Appendix 3.

Maintaining and updating content

As per the requirement to review content to maintain our Health on the Net (Hon Code) compliance there was a systematic review by the LTO\textsuperscript{AU} Exec and Editors of all the content over the course of this project.

All articles list a “Last Review” date.

A total of 109 articles were added/reviewed in 2014 compared to the US site with 160.
Strategic initiatives to improve the Lab Tests Online\textsuperscript{AU}

A number of initiatives were undertaken to improve LTO\textsuperscript{AU}, these were developed into a plan based on recommendations from consumer focus group surveys, a LTO\textsuperscript{AU} Executive planning day and an independent report commissioned by the Department of Health.

**Consumer Focus Group Surveys**

In 2011, an independent, accredited consultant was engaged to undertake surveys and meetings with focus groups and provide feedback on the Lab Tests Online\textsuperscript{AU} website. The online survey of users attracted 641 participants which assisted with the makeup and questions for the focus groups.

In August 2013, a further online survey was conducted to compare the demographic profiles of LTO\textsuperscript{AU} users from 2011 and to assess if the website was providing the answers to their questions.

The survey showed a dramatic upswing in the age of the general public using the website. Two years earlier, in 2011, 54\% of people using the website were under 40 years old. By 2013, 79\% were over 40 years old with 30\% over 60 (Figure 1).

This suggested that older people were perhaps now more confident in exploring the internet and using it as a health resource and with a greater vulnerability to health issues were more likely to be seeking out reliable information on pathology.

A total of 558 people responded to the 2013 survey and the findings were compared with those of the earlier study. The demographic breakdown of visitors had changed little in that time with 56 per cent being members of the public looking for answers about a health matter; 36 per cent, medical or health professionals seeking an instant reference for themselves or for their patients; and 8 per cent full-time students (Figure 2) (this figure had declined since 2011 which has been attributed to the release of the mobile app in late 2012) wanting help with study.

Figure 1. Demographic (age) comparison of the 2011 and 2013 surveys.
The overwhelming majority of people placed a high level of trust in the information with medical and health professionals giving it a 9 out of 10 rating. About 95 per cent of all people considered it extremely useful or useful. Of the general public, the large majority felt they understood their tests or diagnosis better and felt more confident talking with their doctors. Medical and health professionals found it a useful source of information that saved them time and helped them feel better prepared. Forty-six per cent of the medical and health professionals surveyed used the website regularly.

A number of strategic initiatives for the continued improvement of the Lab Tests Online\(^\text{AU}\) profile and website came out of the 2011 and 2013 surveys. These largely related to:

1. Actively engaging with relevant stakeholder organisations
2. Pursuing options to update the Australian website to ensure it is up-to-date and distinctly Australian.

The above strategic activities are further discussed under Implementation of the Strategic Plan.

**LTO\(^\text{AU}\) Exec Planning Day**

The LTO\(^\text{AU}\) Executive had a face-to-face planning day to analyse the survey results and develop a strategy particularly around partnering and website upgrade.

The plan for the key initiatives is summarised below:

*Partnering*

- Establish links with relevant key organisations, such as:
- Healthdirect Australia
- NPS
- Health Insurance Funds (Bupa, MBF, etc.)
- Health representative groups (Arthritis Foundation, Diabetes Australia, etc.)
- Links on partners’ (above) web sites
• Contributions to partners’ members’ newsletters, health advice, etc.
• Brochures and posters for groups
• Social media
• Video clips on YouTube
• Smart phone app
• Media advertising
• Media editorials

Website

A web professional is to be engaged to conduct a redesign and to explore ways of presenting information so that it is easily accessible. This includes a new tag line on the banner to more effectively express the site’s Australian identity, authority and independence.

Independent Report

In 2013, the Department of Health commissioned an independent study of Lab Tests OnlineAU as part of the Stage 2 Agreement. The review was to assess the effectiveness of Lab Tests Online. The report’s findings confirmed that the Lab Tests Online website was a valuable source of pathology information for consumers and health professionals and has informed the continual improvement of the website and its strategic direction.
Implementation of the Strategic Plan

Promotion of the LTO\textsuperscript{AU} website - Engagement with relevant stakeholder organisations

The LTO\textsuperscript{AU} Executive was actively involved in developing and implementing a strategy in conjunction with the Advisory Board to promote the LTO\textsuperscript{AU} site.

Community health groups initiative

In 2012/2013 a sample of 20 key not-for-profit organisations was compiled to reflect a range of medical conditions including various cancers, heart disease, allergies, coeliac, cystic fibrosis, kidney disease and rural health. From this list, contact was made with 18 of them (two could not be contacted after several attempts). Ultimately, 11 organisations took part.

Ten of these completed the survey:

- Allergy & Anaphylaxis Australia
- Arthritis & Osteoporosis WA
- Cancer Council Victoria
- Cystic Fibrosis WA
- Heart Foundation ACT
- Haemochromatosis Australia Inc.
- Hepatitis NSW
- Kidney Health Australia
- Leukaemia Foundation
- McGrath Foundation

Each participant provided detailed feedback about LTO\textsuperscript{AU}, its usefulness to their members and suggested ways in which it could be improved. Our LTO\textsuperscript{AU} Editor, Dr Bruce Campbell collaborated with them to further develop information where appropriate.

As the website amendments were made we offered support to those who indicated they would like it. This took the form of newsletter articles, promotional materials and presenters for meetings and conferences.
Lab Tests OnlineAU provided a presenter to a public seminar for people with scleroderma and another presenter was sent to the ARA/RHPA International Scientific meeting in Perth.

Newsletter articles were provided to some organisations’ patient magazines, for example, an item on the regular pathology tests associated with the new biologic agents being used to treat rheumatoid arthritis was prepared for the national magazine Arthritis Australia.

Australian College of Nursing partnership

As evidenced by positive feedback from surveys and the online facility, nurses are among LTOAU’s most enthusiastic users. They assess the website for professional development and find it useful when explaining pathology tests to their patients as well as a quick reference to check on a test. The 2013 online survey confirmed that nurses are the largest professional user group, outnumbering other professionals such as GPs hospital doctors, specialists, practice managers, pharmacists, health educators and lab professionals by more than four to one.

Almost half of nurses using the website worked in hospitals, with primary care and aged care nurses and nurse practitioners making up the rest. Examples of feedback include:

“Updating and increasing my knowledge on blood test results and what they mean in an easy to understand format.”

“Help understand what doctors write in history.”

“Assisting in ensuring tests are taken accurately as we are in a rural facility and bloods are sent off site for testing. Delays occur if done the wrong way.”

“Resource for education for staff and patients. Reminder for myself for tests not regularly done.”

“Straightforward, concise, relevant, easy information that can be used to educate patients.”

In 2014, following meetings with the Australian College of Nursing, Lab Tests OnlineAU was added to the College’s education, membership and web services, and included in its 3LP continuing professional development and learning program. Nurses are now credited with one CPD point per hour’s use of LTOAU.

Educational activities in the 3LP program are categorised under 24 topics, 18 of which are now linked to Lab Tests OnlineAU. These include areas such as aged care, young persons and adolescent health, practice nursing, critical care, infection control and oncology.

Medical Observer – General Practitioners

Since August 2014, the LTOAU Editors have been providing monthly articles on the clinical aspects of pathology to the premier GP news magazine, Medical Observer. Titled ‘Pathology in Practice’, these are short case studies that explain the interpretation of results in specific clinical settings. The articles have been well received and the associated LTOAU branding has proved to be good publicity for the website.

Students and librarians

Mindful that students are the next generation of medical and health professionals, the LTOAU strategy includes undertaking awareness campaigns via university librarians. In addition, presentations have been made to medical and nursing students and at major scientific meetings of a number of colleges and societies. Spikes in LTOAU app downloads associated with these events supports their effectiveness.
Sharing information with NPS MedicineWise

LTO\textsuperscript{AU} approached NPS MedicineWise in 2013 to explore opportunities to share information between the respective sites with a view to enhancing website traffic. NPS acknowledged sections of their site lacked detailed pathology content and likewise it was noted that LTO\textsuperscript{AU} would benefit from links to related NPS material.

Following further negotiation, a Collaboration Deed was signed in February 2014 for a pilot project to share links to the most popular items on each website. The pilot has demonstrated mutual benefit with an immediate increase in referral traffic (from an average of 80 to over 200 per month) and further links are planned.

Partnering with Healthdirect Australia

In 2013 LTO\textsuperscript{AU} applied for and was accepted as an Information Partner by Healthdirect Australia. They are a highly regarded Australian organisation jointly funded by the Council of Australian Governments with a primary objective of “helping consumers manage their own health through leveraging technology to enable timely access to health and related services”.

Healthdirect Australia have since implemented over 300 links to the LTO\textsuperscript{AU} website. This has resulted in averaging over 300 referrals per month from the Healthdirect website.

Building a relationship with Better Health Channel

Better Health Channel is a respected health resource website that draws around 50 million hits annually. The Lab Tests Online\textsuperscript{AU} Executive met with Better Health Channel representatives in late February 2015 and agreed there were a number of areas where mutual benefit could be achieved. Follow-up meetings are planned.

Engaging with the social media community

Social media provides further opportunities to promote and showcase LTO\textsuperscript{AU}.

The LTO\textsuperscript{AU} Project Manager and Communications Manager have actively engaged in both Facebook and Twitter accounts. As shown in Appendix 5, a steady following has been achieved via regular posting of information updates and pathology related items of interest. This in turn has attributed to the increase in visitor traffic to the Lab Tests Online\textsuperscript{AU} website.

Initiatives to improve the Lab Tests Online\textsuperscript{AU} website

The LTO\textsuperscript{AU} Advisory Board agreed that the design and implementation of a new website was seen as an important component of the ongoing improvements.

Negotiating a new licence agreement

To enable the recommended and agreed changes to the LTO\textsuperscript{AU} website, a renegotiation of the AACC Licence Agreement was required to enable greater autonomy from the originators of the website, Lab Tests Online\textsuperscript{US}.

Having been unable to make headway, in 2013, the Lab Tests Online\textsuperscript{AU} Executive initiated a series of meetings with the AACC and provided an example of a concept for a redeveloped website homepage. This had been created by a local website contractor based on the brief supplied.
The AACC responded positively to the design and accepted the reasons to change and suggested a redraft the existing agreement to incorporate the required amendments. The new agreement gives Lab Tests Online\textsuperscript{AU} the autonomy to develop and control all aspects of the AU website while still accommodating the interests of the AACC and their global network of LTO sites. In addition, the best features of the LTO global model (e.g. sharing of content between sites) were retained.

**Implementing the redeveloped website**

After almost two years of planning and development the new Lab Tests Online website was launched on 1 November 2014. The website marks a significant landmark in our journey to become Australia’s public portal to pathology.

The result is a fresh new approach that makes for a more engaging user experience with a cleaner look and with more emphasis on imagery, videos and infographics.

Importantly, the new design uses responsive website technology to ensure accessibility across multiple device platforms – from smartphone and tablet to laptop & PC.

The new website allows for future expansion and development including multiple visual techniques such as video and animation to broaden the options for consumers.

Some specifics of the new design include:

- Easy-to-navigate search boxes
- Greater use of imagery and diagrams
- Key topics highlighted on the home page
- Monthly news items
- Video clips on the home page
- Revamped background information
- New sections specifically designed for an Australian audience; e.g. the first stage in a new section on “Reading your results”

Appendix 4 contains screen-shot examples from the redeveloped website

Other important features of the new setup are that instead of operating from servers in the US via old technology, LTO\textsuperscript{AU} now runs from local servers using the latest Content Management System (CMS) software. This allows additional backup for the Project/Website Manager as other AACB staff are also able to load and change content where required.

**The Lab Tests Online\textsuperscript{AU} app**

LTO\textsuperscript{AU} collaborated with the AACC to develop an app which was launched on November 1, 2012. The Australian app has proven highly successful with more than 10,000 downloads to date, compared with the US app, launched much earlier, with 13,000 downloads. Major users are health professionals and students. The app was reviewed and rated ‘must have’ by leading GP news magazine, Medical Observer that stated: “Lab Tests Online\textsuperscript{AU} is so useful, you’ll wonder how you ever did without it in the past”. It was also listed in the top 20 free medical apps for iPhone by global analyst AppAnnie.

Table 1 compares mobile users of the website and app users. Mobile users of the website engage with their phones and tablets and the percentage has increased substantially during the project period. The app results show that although downloads have consistently increased with spikes related to student lectures and conference presentations, the number of unique users has been less than the total but constant.
Further development of the LTO AU app is pending as it was not included in the new website scope. Currently the app still runs off the old website and is updated separately.

**Challenges encountered**

Like all projects, particularly those involving complex website development, number of challenges were encountered during the course of this project.

**Negotiating agreements**

The agreements with NPS and the AACC took longer than anticipated with a number of versions and review by lawyers before final sign off. While the final agreements were a good outcome, this caused delays in the next phases of the project.

**Go Live issues**

The protracted time frame for the AACC sign off meant a delay in the planned CMS and associated website implementation. The developer had also not fully anticipated the extent and depth of information on the old website. New and innovative ways to display and access the test and conditions information were developed in a successful collaboration between the developer and LTO AU contractors.

While extensive testing for potential “go-live” problems was carried out, there were issues that only became apparent in the first few days post launch.

The main problems were related to broken links with our partner websites – RCPA, Healthdirect Australia and NPS MedicineWise. These were resolved within about two weeks. Other issues mainly related to Google. However, these are now partially resolved. While Google traffic dipped significantly post go live, there has been continued steady improvement and figures are similar to October 2014.
Measuring the impact of the relaunched website

Changes in website sessions/visitor numbers are one of the main performance indicators to assess the impact of improvements and updates. The aim was for a significant improvement in website traffic, but keeping up with new Google search algorithms has proved challenging and makes performance assessment difficult.

Figure 3 shows fluctuations in visitor numbers from January 2012 to March 2015. This variation often mirrors the many changes that Google has introduced to their search algorithms over the same period as shown in the (Figure 4).

Figure 3. Google Analytics data for the period January 2012 to March 2015 – note new website launched on November 1 2014.

Figure 4. Impact of Google algorithm updates on LTO\textsuperscript{AU} website traffic – January 2010 to March 2015

![Monthly sessions graph](image)

![Algorithm updates graph](image)
Summary of outcomes

**LTO^{AU} support, maintenance and development**

LTO^{AU} continues to provide a valuable resource to Australian consumers and health professionals. It is up-to-date and reliable.

The support staff maintain the site on a daily basis and reply to phone and email questions from consumers.

New articles and modules have been added to the LTO^{AU} website some of which relate specifically to Australia.

**Engagement with relevant stakeholder organisations**

Ongoing engagement with a number of relevant stakeholder organisations is now well established.

NPS and Healthdirect Australia are among the new additions to LTO^{AU}’s key partners/supporter network.

Regular articles are published in Medical Observer with LTO^{AU} branding.

**Initiatives to improve the Lab Tests Online^{AU} website**

A LTO^{AU} app was launched in 2012 and has resulted in over 10,000 downloads.

A new agreement with the AACC is in place and a new updated website developed here (and exclusive to Australia) was launched in 2014.

The LTO^{AU} website runs from local servers which are supported and maintained by a Melbourne based provider.
Where to from here?

Lab Tests Online\textsuperscript{AU} continues to provide a valuable resource on pathology testing for Australian consumers and healthcare professionals. As the patient-centric model of healthcare continues to develop, LTO\textsuperscript{AU} is now well positioned to respond and support.

There are a number of further projects that are planned, subject to future funding. These have been incorporated into the LTO strategic plan and are briefly outlined below:

Search Engine Optimisation

As part of future improvements, it is proposed that a Search Engine Optimisation (SEO) specialist be engaged to advise on options to improve website traffic.

Genetics

Genetic testing is revolutionising healthcare. This is an important new area of medicine yet is complex and little understood. Lab Tests Online\textsuperscript{AU} has the expertise and relationships to be able to develop a comprehensive guide to genetic testing, providing background and contextual information as well as information on testing.

How to read your results

With the introduction of personally-controlled e-health records (PCEHR), the need for information about pathology tests is set to rise significantly and rapidly. As stated earlier, more than 12 million Australians have pathology tests annually.

As part of the PCEHR, members of the public will have their pathology results uploaded automatically by the lab that has performed their tests and made available to them seven days after their doctor has received them.

As more Australians are provided with direct access to their test results it is also important to ensure that a reliable source of information is available to help them understand the reports they are reading. Lab Tests Online\textsuperscript{AU} has a basic feature item on this, but a more comprehensive section is required to explain the various reports that are produced, many of which differ significantly between pathology providers.
Test kits

As regulated and non-regulated self-test kits for a range of pathology tests become more widely available both over-the-counter and online, consumers and health professionals need a reliable resource to guide on potential issues and assist with making informed decisions. This is an area that Lab Tests Online can develop to ensure relevant information is available for all forms of pathology testing.

Promotion and engagement with stakeholders

LTO will continue to develop strategies that promote and educate consumers and health professionals on pathology tests, such as newsletter articles, social media and videos.
Conclusion

This Lab Tests Online\textsuperscript{AU}, project has successfully achieved its objectives. The content on LTO\textsuperscript{AU} has been continually updated and new material added.

Successful collaborations with other health organisations have been implemented and the website totally re-developed in accordance with the independent review and consumer recommendations.

Given the greater autonomy provided by new licence agreement and establishment of the website infrastructure in Australia, LTO\textsuperscript{AU} is well positioned to respond to future consumer and health professional needs.
References


3. Pulse IT Nov 2014; Andrew Georgiou, Michael Legg and Glenn Edwards citing Giardina TD, Singh H. Should patients get direct access to their laboratory test results?: An answer with many questions. JAMA 2011;306(22):2502-03.
Appendix 1. Lab Tests OnlineAU Governance

Lab Tests OnlineAU Executive

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Lab Tests OnlineAU Advisory Board

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Appendix 2. Lab Tests Online

The editorial group is responsible for editorial content on the site. All pages are reviewed by a member of the team, each of whom works with other professional colleagues and various information sources to verify that the information is accurate and current. New pages are prepared by invitation from expert authors and subject to verification and editorial scrutiny by a member of the team.

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Senior Scientist - Haematology

Tony Jennings
Senior Scientist - Microbiology

Dr David Kanowski
Pathologist - Chemistry

Dr Tee Beng Keng
Pathologist - Haematology

Dr Daman Langguth
Pathologist - Immunology

Dr Chiyan Lau
Registrar - Genetics
Appendix 3. Consumer Feedback

Sample of consumer comments submitted via the website feedback option

From 4/1/14 to 10/8/14 (return email addresses removed)

SUBMISSION: Survey Data #2377
SELF ID: Patient, Family member or Friend
REFERRING URL: http://www.labtestsonline.org.au/lab/
COMMENT:
I have problem with Hi GGT in liver and bone disorders I wondering if there is any help.

SUBMISSION: Survey Data #2376
SELF ID: Patient, Family member or Friend
REFERRING URL: http://www.labtestsonline.org.au/understanding/analytes/fibrinogen/
COMMENT:
I want to know how to test for Matrix Metalloproteinase and TIMP.

SUBMISSION: Survey Data #2375
EMAIL: No Response Necessary
SELF ID:
REFERRING URL: http://www.labtestsonline.org.au/learning/index-of-conditions/lyme
COMMENT:
I am positive for Lymes, from symptoms, rash and igenex results and never been overseas, when are you going to except the fact it is here, I have a professional friend that also has it, also never been overseas, what about birds migrating from Europe full of parasites ??

SUBMISSION: Contact Us #161414
SELF ID: Patient, Family member or Friend
REFERRING URL: http://www.labtestsonline.org.au/contact
COMMENT:
Hi I am confused and also my doctors are confused. My Problem... I have been tested for Coeliacs and blood test for tTG IgA (Anti-tissue Transglutaminase) has come back highly positive. But after checking at another lab it has come back negative. Even after checking a third time (blood taken at same time) one lab always positive and one always negative, I know you can't give a definite answer, but is it more logical that as long as one lab consistently comes back positive then it most likely to be Coeliacs as their tests might be more sensitive etc or is it more logical that I am consistently getting false positives from one lab. Thanks.
SUBMISSION: Was This Page Helpful #161253
SELF ID: Other
REFERRING URL: http://www.labtestsonline.org.au/understanding/conditions/heart/
COMMENT: Not all pages state the normal and high range. I am a student and don’t know where to locate these ranges for all tests.

SUBMISSION: Contact Us #159035
SELF ID: Patient, Family member or Friend
REFERRING URL: http://www.labtestsonline.org.au/site/
COMMENT:
Hi
Could you please provide me with some details what we have to do to check my 3 y.o. child for Measles virus.
Also, do we have to provide a blood request from our Doctor?

SUBMISSION: Survey Data #946
SELF ID: Patient, Family member or Friend
REFERRING URL: http://www.labtestsonline.org.au/understanding/analytes/hpylori/
COMMENT:
Hello, I would like to know why it takes 7 days for H.pylori results to be available.

SUBMISSION: Survey Data #945
EMAIL: No Response Necessary
SELF ID: Patient, Family member or Friend
REFERRING URL: http://www.labtestsonline.org.au/contact
COMMENT:
Apart from being easy to navigate and being written in easy to understand language, I am impressed with the volume of information on your site.
I have been diagnosed with CFS and used your site to understand what I was being tested for. Also I enjoyed reading your synopsis of CFS. I think it sounds current and unbiased. Well done.

SUBMISSION: Contact Us #157804
SELF ID: Patient, Family member or Friend
REFERRING URL: http://www.labtestsonline.org.au/
COMMENT:
Hi, my sister has recently been diagnosed with Pyrrole disorder which is genetically transmitted. I believe my son may also have this condition which is tested by urine which is wrapped in foil and frozen immediately. My son lives in Canberra. Do you have any collection centres which provide this test in Canberra? Many thanks.
Hi, I was wondering if you are aware of any places in Australia which offer take home PCR tests for HSV?

Hi, I have been having few health issues since 6 years. Could you refer me to any doctor that is specialised in fungal infections as no doctor is willing to do a fungal culture test?

I wanted the preparation for this test.

Serum (and urine) creatinine levels are low in multiple sclerosis. How can renal function be assessed in these patients?

The position taken on oats is too simplistic as it is impossible to test without an oat challenge and 2 biopsies who reacts to oats. A better statement would be:

1 in 5 people with coeliac disease have an autoimmune reaction to the avenin in oats. The only way people who react to oats can be confirmed is by biopsy before and after a gluten challenge. This is not practical or desirable for many people so the approach taken in Australia is that oats are not safe for people on a gluten free diet.
The statement that coeliac disease affects 0.5% of Australians is out of date. New estimates are 1 in 70.


Hello, I live in the US. After my patents visited Australia in January, they both became very sick, presenting symptoms related to Ross River or Barmah Forest. They have been to several doctors here, however, there are no tests available for RRV or BFV. Can we purchase these tests from you? If so how much are they and are they easy to use/read?

Please tell me where I can get a scientific nickel poisoning test on the Gold Coast, Qld?

This page was a nice overview for a professional. To make it patient centred and friendly, give the ranges as you have them... acidosis is... alkalosis is... and the next sentence. The first and last sentence of the next paragraph... and then if they want to know more a link to all the rest of the info. Simple is patient friendly.

Hi, Can you test to see if someone has whooping cough immunity? If so do you do these tests or know someone who does?
SUBMISSION: Was This Page Helpful #151696
SELF ID: Patient, Family member or Friend
REFERRING URL: http://www.labtestsonline.org.au/learning/test-index/fobt
COMMENT:
I am looking for dietary instructions. I can’t find any info on what not to eat.

SUBMISSION: Was This Page Helpful #151683
SELF ID: Healthcare Professional
REFERRING URL: http://www.labtestsonline.org.au/understanding/analytes/bnp/tab/sample/
COMMENT:
would like estimation of appropriate ranges or use for diagnosis or monitoring
Sample of feedback on website from consumers and Health Care Professionals

“In a mine field of unhelpful sites, finally I found yours. Thank you for such insightful and easily found information. Now I can amend my own health in conjunction with my doctor.”
Patient, Family member or Friend

“As a phlebotomist, I am constantly asked for explanations of tests requested by the GP and have frequently referred them to LabTestsOnLine; I also use the site for my own information and knowledge.”
Healthcare Professional

I found your site after a yahoo search for a blocker drug given to me by my doctor for heart palpitations (he has sent me to have a lot of blood tests) and as i was interested to know what i was being tested for and as i did not understand the test referral form i looked up all the tests using your search panel thankyou for giving me peace of mind it was so easy once again i thankyou
Patient, Family member or Friend

I am a med student and I LOVE your site - it is bookmarked as a favourite! Any chance of making an iphone app of the data on the site? Thank you for such a great resource!
Healthcare Professional

I like the way you’ve structured the page so it is easy to scroll through and read, I like the colour scheme of white, grey, green and black, and I love how (for some of the words) instead of loading an entire new page, you can click on one of the linked words and it will come up with a little box on the screen simply defining the word.
I also like the amount of spacing between the bullet points and the paragraphs, which makes it easier to read.
Patient, Family member or Friend

One of the conditions I have is CVID - Common Variable Immune Disorder. It would be good to see this added and PID for Primary Immune Deficiencies. You could contact the IDFA Immune Deficiencies Foundation of Australia for more information. It is a great site! Thanks.
Patient, Family member or Friend

Great info, easy to read and understand. Very useful in interpreting results. Thankyou
Healthcare Professional

I haven’t recommended this site to any patients as I’m a medical student, but when I’m a doctor I’m sure I will.
Healthcare Professional

Excellent site. Very professionally constructed website with easy navigation.
Patient, Family member or Friend

Thank you - this site was simple and informative and a great resource. It was a non-threatening and simple way to become informed about my recent blood test without taking up valuable doctor time or making my next visit sound like an inquisition. It’s great to have some knowledge about your own health.
Patient, Family member or Friend

Hello, I just completed your survey via Survey Monkey, but that was before I had a chance to more thoroughly investigate the website. I wish to mention that I think this site is very comprehensive, the tone is right and the pitch of the information is spot on. Also, the quality of the links is outstanding - the links take you to reputable sites and provide information that can be relied upon.
Patient, Family member or Friend
Appendix 4. Screen-shots from the current Lab Tests Online\textsuperscript{AU} website:

Homepage
AT A GLANCE

Why get tested?
To determine if your kidneys work normally and to monitor treatment for kidney disease

When to get tested?
As part of a routine blood test if you have nonspecific health complaints or if your doctor thinks that you may have kidney disease; at intervals to monitor treatment for kidney disease or kidney function while on certain medicines

Sample required?
A blood sample drawn from a vein in the arms.

Last Review Date: March 25, 2013
Appendix 5. Facebook and Twitter summaries for LTO\textsuperscript{AU}

Facebook
Twitter
Lab Tests Online AU
EXPLAINING PATHOLOGY

www.labtestsonline.org.au