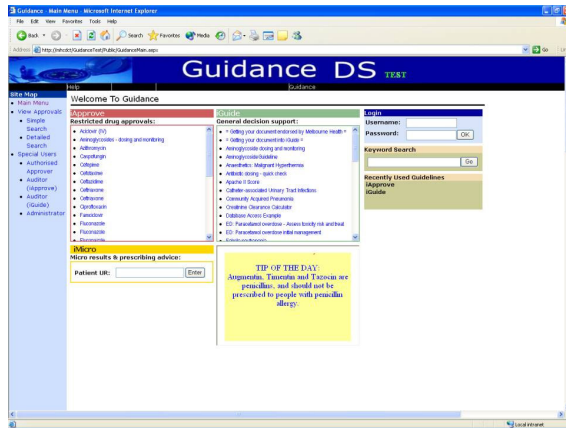


GUIDANCE COMPUTERISED CLINICAL DECISION SUPPORT SYSTEM – GUIDANCE DS®



GUIDANCE DS® is an award winning Clinical Decision Support Software suite of tools for hospitals. The suite was developed in partnership between the Victorian Infectious Diseases Service at Royal Melbourne Hospital in Melbourne, Australia and Medseed Pty Ltd.

GUIDANCE DS® is a web based suite that comes in two versions. There is a “Lite” version that can be implemented by any hospital in a standalone capacity without regard to existing hospital clinical systems. There is also an integrated version that can integrate with a hospital’s Patient Master Index and hospital pathology systems. The integrated versions require some customisation in each local setting.

Software included in the GUIDANCE DS® Suite:

GUIDANCE DS® has been designed in a modular way. Clients can purchase the full system – Lite or Integrated, or purchase any of the component modules. An enterprise version of the Integrated Suite is also available. The modules in the suite are as follows:

1. iApprove® “A hospital restricted drug approval system in a box”
2. iGuide® “A decision support algorithm toolset in a box”
3. iMicro® “An infectious diseases physician in a box”
4. The Guideline Builder “A clinical algorithm/guideline editor”
5. iGuide Library “A set of Evidence Based Medicine clinical algorithms”
6. GUIDANCE Learning “A full set of training services for each module”

Principal Benefits of the GUIDANCE DS® Software Suite

- Reduction in cost of anti-infective agents
- Reductions in orders for drugs to which patients have reported allergies
- Reduced prescribing of excess drug dosages
- Reduced antibiotic susceptibility mismatches
- Reduced mean number of days of excessive drug dosage

- Reduction in adverse events caused by anti-infective agents
- Reduction in total hospital costs
- Reduction in length of hospital stay
- Significant efficiencies in hospital drug approvals
- Significantly enhanced health outcomes
- Significantly reduced training time for hospital medical staff
- Significant ability to conduct audits and research
- Significantly improved access to key clinical indicators for hospital administrators
- Significantly reduced opportunities for medico-legal claims against hospitals

Each GUIDANCE DS® module delivers significant new benefits to clinicians, patients and hospital administrators. These include:

- The iAPPROVE® hospital drug approval system significantly improves the workflow and decision processes for restricted drug approval in the hospital prescribing process. It utilises best practice evidence based medicine clinical protocols and algorithms. The ease of use and ability to easily customise, edit and create new guidelines for hospital drug approvals is a major benefit to senior hospital staff specialists, interns, registrars and other medical staff, including hospital pharmacists. Refer to the detailed description of iAPPROVE® in a later section of this document.
- The iGUIDE® system systematises the construction and deployment process for hospital clinical decision support algorithms. Clinicians can deploy existing best practice clinical algorithms, guidelines or flow charts or construct new ones. This module provides a user-friendly interface to browse the algorithms/guidelines and significantly reduces the learning curve for new interns, residents and registrars as well as staff and visiting consultant physicians. Refer to the detailed description of iGUIDE® in a later section of this document.
- The iMICRO® system contains a comprehensive antimicrobial knowledge base and when integrated with hospital pathology the browser delivers powerful queries of patient microbiology results, plus patient and isolate-specific antimicrobial prescribing recommendations. The system delivers many of the benefits of having an infectious diseases physician on staff for hospitals that do not have this specialty. Where this specialty is present, the system delivers significant efficiencies for these physicians. Refer to the detailed description of iMICRO® in a later section of this document.
- The Guideline Builder is a powerful editor allowing hospitals and content specialists to create, manage and deploy complex clinical algorithms, guidelines, protocols and decision charts without needing to do any programming. Together with the iGUIDE® module the editor enables a hospital to build an effective in-house knowledge representation system across all hospital specialties and sub-specialties.
- GUIDANCE Learning is a comprehensive service available Australia wide to GUIDANCE DS® clients. Clients have access to senior infectious diseases physicians, content development specialists and receive full training for their own physicians, content developers, hospital pharmacists, administrators and auditors. This service builds local capacity and empowers clients to deploy the system in both clinical and research settings.

Principal Features of the GUIDANCE DS® Software Suite

GUIDANCE DS® was developed in the .NET environment. Hospitals can deploy the systems without recourse to expensive network administration costs for installation and support. All that is needed is an Internet Browser on computers in the target departments.

Previous clinical decision support systems like Arden Syntax, GLIF and the UK Prodigy system are often complex and inflexible hard coded systems. GUIDANCE DS® clients do not need any programming capability. Content specialists can be trained in a single day to represent existing clinical algorithms, guidelines, protocols or flow charts in eDSML format and then navigate it with the inbuilt browser in each of the GUIDANCE DS® module.

Whilst GUIDANCE DS® was built in a tertiary teaching hospital infectious diseases environment, the software has been built for extension to any medical specialty. For example the iAPPROVE® module has equal applicability in medical oncology, rheumatology and other specialties. Hospital drug approvals and concomitant savings and reduction of adverse incidents can be experienced across multiple departments. Lastly with GUIDANCE DS® even small to medium size hospitals can easily build and maintain valuable knowledge bases. This flexibility allows clinicians to easily accommodate local, country specific or regional variations in medical practice and standards.

GUIDANCE DS® suite can be installed as separate single modules, or any combination of modules can be run as an integrated suite. Each module was developed in the .NET framework, so the client workstations need only the Microsoft Internet Explorer (v5 or later) in order to use the system. Up to 200 users can be accommodated without installing any new software on the client workstation machines (subject to database Client Access Licenses).

Each of the components of GUIDANCE DS® can be configured as a stand-alone application, or integrated at two levels. Integration of the hospital's Patient Master Index (PMI) allows identification of current patients and confirmation of their UR numbers against other identifiers, as well as algorithm access to demographic information such as age and sex. Integration with the hospital's pathology databases (microbiology, biochemistry etc) allows the algorithms to find and display recent results for a large number of tests for each specific patient, without the user having to seek the data separately or transcribe it into the decision support pathways.

Please refer to our Resources page for additional downloads and GUIDANCE DS® documentation.

Detailed description of our iAPPROVE® Product

iAPPROVE® is the GUIDANCE DS® restricted drug approval system. A clinician wanting approval for a particular drug logs on and identifies the patient. iAPPROVE® leads them through a series of questions, and finally either generates an approval number to go on the patient's drug chart, or not, as is the case. The actual algorithms are completely customisable by the content experts, and the electronic Decision Support Markup Language (eDSML) interface allows the easy inclusion of virtually any kind of background information, intranet or Internet link so that the user is given true decision support rather than a simple yes or no answer.

iAPPROVE® records all the steps taken by every user for every patient, and all the resulting information is available to authorised users as ‘physician’, ‘pharmacists’ and ‘auditors’. Tabulations of approvals by ward, unit, drug, time and date etc are available via a few mouse clicks. With integration to the PMI patient identification is made more consistent and reliable. With integration to the pathology databases the approval algorithms can include patient-specific tests results as needed.

So far iAPPROVE® algorithms have been prepared for Ceftriaxone/ cefotaxime, Vancomycin, Imipenem/meropenem, Ticarcillin-clavulanate/ Piperacillin-tazobactam, Azithromycin, Cefepime, Ceftazidime, Rifampicin, Norfloxacin, Ciprofloxacin, Gatifloxacin/ Moxifloxacin, Liposomal Amphotericin, Aciclovir / Famciclovir/ Valaciclovir, Fluconazole / Voriconazole / Itraconazole/ Caspofungin, and for Gentamicin and Tobramycin dosing. iApprove can easily be adapted by hospitals themselves to include rheumatoid drugs, chemotherapy, immunosuppressants or others.

A pilot program for ceftriaxone operated at the Royal Melbourne Hospital for 2 years, and iAPPROVE® includes all the functionality of that pilot, plus more features. The pilot was successful in improving appropriateness of antibiotic prescribing (see Robertson *et al* MJA 2003, Apr 21: 178(8); 386-90). It also produced significant cost savings and has gained ready acceptance from residents and pharmacists alike.

Detailed description of our iGUIDE® Product

iGUIDE® is a highly flexible algorithm representation system, able to represent almost any kind of guideline, protocol or flowchart, or even simple text or html documents. As iGUIDE® also uses eDSML to record the algorithm content, it is easy for the content experts to create new guidelines, and edit or adapt existing ones without having to alter the GUIDANCE DS® application itself in any way.

Like iAPPROVE®, iGUIDE® records every step taken by every user inside every algorithm, and summary information is available to authorised users designated as ‘auditors’. This means that the content expert can monitor not only the end results of guideline use, but also the actual steps taken and answers given by the clinician end-users. These functions are useful both to guide algorithm creation and improvement, and also to assess how changes in practice relate to guideline use.

As with iAPPROVE®, iGUIDE® can operate in stand-alone mode, but is intended to be integrated to both the PMI and pathology databases. Integration with these hospital datasets embeds the guideline algorithm into clinical workflow patterns. So it becomes just as easy to gain decision support as it does to check patient results elsewhere.

Detailed description of our iMICRO® Product

iMICRO® is an “Infectious Diseases physician in a box”. It contains a comprehensive antimicrobial knowledge base, providing a patient and isolate-specific antimicrobial recommendation that takes into account the patient’s allergies and the isolate’s drug sensitivities. iMicro also includes a grid to allow testing of proposed antimicrobial therapy for multiple microbial isolates and a creatinine clearance/dosage adjustment calculator. When fully integrated to the PMI and pathology databases a very powerful results browser that allows all the microbiology test results for each patient to be displayed, searched and reorganised at the click of the mouse.

Like the other parts of the GUIDANCE DS® suite, iMICRO® records full auditing information for every user and every patient, accessible to authorised ‘auditors’. As it also uses eDSML, the whole knowledge base is easily updated and edited by local content experts. A pilot project called “Advise” with much of the functionality of iMICRO® has been in use in the ICU of the Royal Melbourne Hospital since January 2002. A cost saving of \$100,000 in the first year was noted in the comparison of pre- and post-implementation audits for a single drug alone, ceftriaxone.

Detailed description of our BUILDER Product

eDSML is a dialect of the eXtensible Markup Language (XML), developed through a PhD project at Monash University by one of Medseed’s founders. The eDSML language is freely available for public use and consequently is a non proprietary, very powerful and flexible way to represent virtually any kind of flowchart, protocol or algorithm.

The GUIDANCE DS® modules (iAPPROVE®, iGUIDE® and iMICRO®) read eDSML in the same way that Internet Explorer reads html documents. The eDSML format also allows easy linking of html files to the specific steps in the decision pathway, and the built-in html browser in iGUIDE® and iAPPROVE® means that links can be included to html, MS-Word or PDF files on the hospital’s own intranet, or anywhere on the Internet.

The Guideline Builder is a free-standing eDSML authoring tool that allows content experts to create GUIDANCE-ready eDSML via a visual interface. It comes with a comprehensive manual, tutorials, and an on-line help system, and requires no computer programming skills. Within a couple of hours an enthusiastic clinician can become an independent eDSML author, so that any clinical unit can independently create, update and edit their own guidelines without the need to employ computer programmers. Copyright in new eDSML documents created with the Guideline Builder remains with the author, and is independent of the Builder itself. This way any hospital or agency can build and maintain its own knowledge base inexpensively.

Pricing

The standalone version of iAPPROVE® retails at \$40,000 excluding GST. Where integration with your PMI or hospital pathology system is required, Medseed will provide quotation for the integration based on the nature of your existing systems and the degree of customisation needed in your particular setting. To order or obtain a quotation for iAPPROVE® email us at guidancesales@medseed.com.

The standalone version of iGUIDE® retails at \$30,000 excluding GST. Where integration with your hospital pathology system is required, Medseed will provide quotation for the integration based on the nature of your existing systems and the degree of customisation needed in your particular setting. To order or obtain a quotation for iGUIDE® email us at guidancesales@medseed.com.

iMICRO® retails at \$40,000 excluding GST and integration/customisation. This solution requires integration with your hospital pathology system. Medseed will provide a quotation for the necessary integration based on the nature of your existing systems and the degree of customisation needed in your particular setting. To order or obtain a quotation for iMICRO® email us at guidancesales@medseed.com.

A complete suite of iAPPROVE®, iGUIDE® and iMICRO® is also available. A price for the full suite is available on request by email us at guidancesales@medseed.com

The BUILDER (eDSML editor) is provided free of cost with any GUIDANCE DS® module.

If you are interested in a reseller license or distribution rights for countries other than Australia, email us at contactus@medseed.com.