

## ONLINE-ONLY SUPPLEMENTAL MATERIALS

### Appendix Figure A1. Infobutton (context-sensitive decision support) embedded in an electronic health record

Clicking the infobutton ("i" icon) adjacent to a clinically relevant topic (in this example, a medication) opens a direct link to information in a high-yield knowledge resource (i.e., medication information in Micromedex). Users can also select to access different subtopics (e.g., adverse effects, contraindications, or similar information) in this or another knowledge resource (lower left corner).

The screenshot displays an electronic health record (EHR) interface. At the top, there is a navigation bar with options like 'Cancel/Refresh', 'Preferences', and 'View SelectHealth Rx Claim History'. Below this, a status filter is set to 'Outpatient Active' and print options are available. A toolbar includes 'Apply', 'Apply & Print', 'Print List', 'View Med History', and 'Alert Legend'. A notification states: 'Free-text medication or allergy entries will not be checked for interactions. Mouse over to view any free-text allergies.' The patient information shows the date as 1/28/2016, the clinician as LONG, JIE, and the POC as Intermountain Medical Center.

The main section is titled 'Medication Search' and contains a table with the following columns: R, D/C, Row, Medication Name, Dose, Route, Frequency, Start Date, Stop Date, Quantity, Rfl, Type, and Substitution. The table lists several medications, with 'Aricept (donepezil) 10 mg Oral tablet' highlighted. A blue arrow points from the 'i' icon next to this medication to a detailed view window.

The detailed view window for 'Donepezil Hydrochloride' includes a 'DrugPoint® Summary' section with a link to 'View Detailed information in DRUGDEX'. Below this is a 'Dosing & Indications' section with an 'Adult Dosing' subsection, also linked to 'View Detailed information in DRUGDEX'. The dosing information is as follows:

- Alzheimer's disease - Dementia (Mild to Moderate)**
  - Initial, 5 mg orally once daily at bedtime; if suboptimal clinical response, may increase to MAX of 10 mg orally once daily at 4 to 6 weeks [2]
- Alzheimer's disease - Dementia (Moderate to Severe)**
  - (tablets) initial, 5 mg orally once daily at bedtime; titrate to 10 mg orally once daily at 4 to 6 weeks; if suboptimal clinical response, may increase to MAX of 23 mg orally once daily at 3 months [2]
  - (orally disintegrating tablets) initial, 5 mg orally once daily at bedtime; titrate to 10 mg orally once daily at 4 to 6 weeks [2]
- Multi-infarct dementia**
  - 5 to 10 mg ORALLY [24]

On the left side of the detailed view, there is a sidebar with a 'Micromedex' section containing links for 'Adult Dose', 'Adverse Effects', 'Precautions', 'Contraindications', 'Drug Interaction', 'How Supplied', 'Class', 'Dose Adjustments', 'Indications', 'Patient education (English)', and 'Patient education (Spanish)'. Below this are other resource links: 'UpToDate', 'Clineguide', 'Krames', 'Medline Plus', 'Clinical Key', 'MDConsult', and 'Mayo Clinic'. The 'References' section is also visible at the bottom of the detailed view.

## Appendix Table A1. Search Strategy

### MEDLINE, EMBASE, and Cochrane Registry

Database(s): Embase 1988 to 2015 Week 26, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) 1946 to Present, EBM Reviews - Cochrane Central Register of Controlled Trials May 2015, EBM Reviews - Cochrane Database of Systematic Reviews 2005 to May 2015

#	Searches	Results
1	exp Medical Records Systems, Computerized/	58632
2	exp Decision Support Systems, Clinical/	20647
3	exp Decision Making, Computer-Assisted/	122836
4	exp Point-of-Care Systems/	26479
5	((electronic or computerized or computerised or "computer based") adj ("medical record*" or "health record*" or "patient record*" or "patients record*")) or EMR or EHR or EPR).mp.	100494
6	("decision support" or ((electronic* or computer*) adj3 decision*)).mp.	48118
7	((medical or clinical or health) adj "information system*").mp.	23000
8	((knowledge or information) adj2 retriev*).mp.	33689
9	("online health knowledge" or "online health information" or "point of care").mp.	29497
10	HL7.mp.	1408
11	or/1-10	349661
12	(context* adj (aware* or sensitiv* or specific)).mp.	7157
13	11 and 12	414
14	(infobutton* or "info-button*" or clinreflink* or knowledgelink* or dxplain or mindscape or smartquery or activeguidelines).mp.	192
15	13 or 14	550
16	remove duplicates from 15	344

### Scopus

#	Searches
1	TITLE-ABS-KEY(((electronic or computerized or computerised or "computer based") W/1 ("medical record*" or "health record*" or "patient record*" or "patients record*")) or EMR or EHR or EPR or ((medical or clinical or health) W/1 "information system*" or "point of care")
2	TITLE-ABS-KEY(context* W/1 (aware* or sensitiv* or specific))
3	1 and 2
4	TITLE-ABS-KEY(infobutton* or "info-button*" or clinreflink* or knowledgelink* or dxplain or mindscape or smartquery or activeguidelines)
5	3 or 4
6	PMID(0*) OR PMID(1*) OR PMID(2*) OR PMID(3*) OR PMID(4*) OR PMID(5*) OR PMID(6*) OR PMID(7*) OR PMID(8*) OR PMID(9*)
7	5 and not 6

Web of Science

#	Searches
1	TS=(((electronic or computerized or computerised or "computer based") NEAR/1 ("medical record*" or "health record*" or "patient record*" or "patients record*")) or EMR or EHR or EPR or ((medical or clinical or health) NEAR/1 "information system*" or "point of care") Indexes=SCI-EXPANDED Timespan=All years
2	TS=(context* NEAR/1 (aware* or sensitiv* or specific))
3	Indexes=SCI-EXPANDED Timespan=All years
4	1 and 2
5	TS=(infobutton* or "info-button*" or clinreflink* or knowledgelink* or dxplain or mindscape or smartquery or activeguidelines) Indexes=SCI-EXPANDED Timespan=All years

CINAHL

#	Searches
1	(MH "Computerized Patient Record")
2	(MH "Decision Support Systems, Clinical")
3	(MH "Decision Making, Computer Assisted+")
4	(MH "Clinical Information Systems+")
5	(((electronic or computerized or computerized or "computer based") N1 ("medical record*" or "health record*" or "patient record*" or "patients record*")) or EMR or EHR or EPR)
6	("decision support" or ((electronic* or computer*) N1 decision))
7	((medical or clinical or health) N1 "information system*")
8	((knowledge or information) N2 retriev*)
9	"online health knowledge" or "online health information" or "point of care"
10	HL7
11	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10
12	(context* N1 (aware* or sensitiv* or specific))
13	S11 AND S12
14	infobutton* or "info-button*" or clinreflink* or knowledgelink* or dxplain or mindscape or smartquery or activeguidelines
15	S13 OR S14 Limiters - Exclude MEDLINE records

ProQuest Dissertations

#	Searches
1	all((((electronic OR computerized OR computerized OR "computer based") NEAR/1 ("medical record*" OR "health record*" OR "patient record*" OR "patients record*")) OR EMR OR EHR OR EPR OR "point of care"))
2	all(((medical OR clinical OR health) NEAR/1 "information system*"))
3	all((context* NEAR/1 aware*) OR (context* NEAR/1 sensitiv*) OR (context* NEAR/1 specific))
4	(1 or 2) and 3
5	all(infobutton* or "info-button*" or clinreflink* or knowledgelink* or dxplain or mindscape or smartquery or activeguidelines)
6	4 or 5 Limited to Dissertations and All Fields Except Full Text

**Appendix Table A2. Complete list of original research on context-sensitive decision support**

Citation	Context	Comparison	Outcomes	Duplicate of ...	Detailed Review
Powsner 1989 <sup>42</sup>	Pilot/Lab				N
Powsner 1991 <sup>60</sup>	Pilot/Lab				N
Powsner 1992 <sup>43</sup>	Pilot/Lab				N
Hales 1993 <sup>61</sup>	Clinical				N
Cimino 1997 <sup>62</sup>	Clinical				N
Tarczy-Hornoch 1997 <sup>63</sup>	Pilot/Lab				N
Zeng 1997 <sup>64</sup>	Pilot/Lab	Yes			N
Burkle 1998 <sup>65</sup>	Pilot/Lab				N
Swett 1998 <sup>66</sup>	Clinical				N
Vissers 1998 <sup>67</sup>	Pilot/Lab				N
Doupi 1999 <sup>68</sup>	Pilot/Lab				N
Porcelli 1999 <sup>69</sup>	Clinical				N
Baorto 2000 <sup>46</sup>	Pilot/Lab				N
Cimino 2000 <sup>70</sup>	Clinical				N
Muller 2000 <sup>71</sup>	Pilot/Lab				N
Ruan 2000 <sup>72</sup>	Pilot/Lab				N
Ruan. 2000 <sup>73</sup>	Pilot/Lab				N
Tang 2000 <sup>74</sup>	Pilot/Lab				N
Muller 2001 <sup>75</sup>	Pilot/Lab				N
Cimino. 2002 <sup>47</sup>	Pilot/Lab				N
Price 2002 <sup>76</sup>	Pilot/Lab	Yes			N
Reichert 2002 <sup>77</sup>	Clinical	Yes	Usage	Del Fiol 2006, <sup>29</sup> Reichert 2004 <sup>26</sup>	N
Allen 2003 <sup>78</sup>	Clinical				N
Cimino 2003 <sup>79</sup>	Pilot/Lab				N
Cimino 2003 <sup>25</sup>	Clinical	Yes	Usage		Y
Maviglia 2003 <sup>80</sup>	Clinical	Yes	Usage, Impact	Maviglia 2006 <sup>30</sup>	N
Muller 2003 <sup>81</sup>	Clinical				N
Poon 2003 <sup>82</sup>	Clinical				N
Sinha 2003 <sup>83</sup>	Pilot/Lab				N
Chen 2004 <sup>84</sup>	Pilot/Lab				N
Cimino 2004 <sup>85</sup>	Pilot/Lab				N
Favela 2004 <sup>86</sup>	Clinical				N
Reichert 2004 <sup>26</sup>	Clinical	Yes	Usage, Impact		Y
Rodriguez 2004 <sup>87</sup>	Clinical				N
Ruan 2004 <sup>88</sup>	Clinical				N
Rosenbloom 2005 <sup>27</sup>	Clinical	Yes	Usage, Impact		Y
Chen 2006 <sup>28</sup>	Clinical	Yes	Usage		Y
Cimino 2006 <sup>89</sup>	Clinical	Yes	Usage, Impact	Cimino 2007 <sup>32</sup>	N
Del Fiol 2006 <sup>90</sup>	Pilot/Lab				N
Del Fiol 2006 <sup>29</sup>	Clinical	Yes	Usage		Y
Maviglia 2006 <sup>30</sup>	Clinical	Yes	Usage, Impact		Y

Citation	Context	Comparison	Outcomes	Duplicate of ...	Detailed Review
Poon 2006 <sup>91</sup>	Pilot/Lab				N
Bakken 2007 <sup>92</sup>	Clinical				N
Cimino 2007 <sup>31</sup>	Clinical	Yes	Usage		Y
Cimino 2007 <sup>32</sup>	Clinical	Yes	Usage, Impact		Y
Collins 2007 <sup>93</sup>	Clinical				N
Collins 2007 <sup>94</sup>	Pilot/Lab				N
Del Fiol 2007 <sup>95</sup>	Pilot/Lab	Yes			N
Li 2007 <sup>96</sup>	Pilot/Lab				N
Bobillo 2008 <sup>97</sup>	Pilot/Lab				N
Buck 2008 <sup>98</sup>	Clinical				N
Cimino 2008 <sup>33</sup>	Clinical	Yes	Usage		Y
Del Fiol 2008 <sup>34</sup>	Clinical	Yes	Usage, Impact		Y
Del Fiol 2008 <sup>99</sup>	Pilot/Lab				N
Del Fiol 2008 <sup>100</sup>	Clinical	Yes	Usage, Impact	Del Fiol 2008 <sup>34</sup>	N
Hyun 2008 <sup>101</sup>	Clinical		Usage	Hyun 2013 <sup>40</sup>	N
Cimino 2009 <sup>35</sup>	Clinical	Yes	Usage		Y
Collins 2009 <sup>102</sup>	Pilot/Lab	Yes			N
Del Fiol 2009 <sup>103</sup>	Pilot/Lab	Yes			N
Liu 2009 <sup>104</sup>	Clinical				N
Oppenheim 2009 <sup>36</sup>	Clinical	Yes	Usage		Y
Del Fiol 2010 <sup>37</sup>	Clinical	Yes	Usage		Y
Hulse 2010 <sup>105</sup>	Pilot/Lab				N
Alpi 2011 <sup>106</sup>	Pilot/Lab				N
Calabretto 2011 <sup>107</sup>	Clinical				N
Del Fiol 2012 <sup>108</sup>	Clinical				N
Schnall 2012 <sup>109</sup>	Clinical				N
Cimino 2013 <sup>38</sup>	Clinical	Yes	Usage		Y
Del Fiol 2013 <sup>110</sup>	Clinical				N
Hulse 2013 <sup>111</sup>	Pilot/Lab				N
Hunt. 2013 <sup>39</sup>	Clinical	Yes	Usage		Y
Hyun 2013 <sup>40</sup>	Clinical		Usage		Y
Shibuya 2013 <sup>112</sup>	Clinical				N
Borbolla 2014 <sup>41</sup>	Clinical	Yes	Usage		Y
Devine 2014 <sup>113</sup>	Pilot/Lab				N
Hulse 2014 <sup>114</sup>	Clinical				N
Zhang 2015 <sup>115</sup>	Clinical				N

Shaded articles were included for detailed review.

## REFERENCES cited in Appendix Table A2 only

(References 1-59 are cited in the main text)

60. Powsner SM, Miller PL. From patient reports to bibliographic retrieval: a Meta-1 front-end. *Proceedings - the Annual Symposium on Computer Applications in Medical Care*. 1991:526-530.
61. Hales JW, Low RC, Fitzpatrick KT. Using the Internet Gopher Protocol to link a computerized patient record and distributed electronic resources. *Proceedings - the Annual Symposium on Computer Applications in Medical Care*. 1993:621-625.
62. Cimino JJ, Elhanan G, Zeng Q. Supporting infobuttons with terminological knowledge. *Proceedings/AMIA Annual Fall Symposium*. 1997:528-532.
63. Tarczy-Hornoch P, Kwan-Gett TS, Fouche L, Hoath J, Fuller S, Ibrahim KN, et al. Meeting clinician information needs by integrating access to the medical record and knowledge resources via the Web. *Proceedings/AMIA Annual Fall Symposium*. 1997:809-813.
64. Zeng Q, Cimino JJ. Linking a clinical system to heterogeneous information resources. *Proceedings/AMIA Annual Fall Symposium*. 1997:553-557.
65. Burkle T, Ruan W, Michel A, Dudeck J. On the way to a Web based hospital information system: concepts for the use of a medical data dictionary to present context sensitive information in an intranet environment. *Stud Health Technol Inform*. 1998;52 Pt 2:917-921.
66. Swett HA, Mutalik PG, Neklesa VP, Horvath L, Lee C, Richter J, et al. Voice-activated retrieval of mammography reference images. *Journal of Digital Imaging*. 1998;11:65-73.
67. Vissers MC, Hasman A, Stapert JW. Presenting treatment protocols with Web technology. *Stud Health Technol Inform*. 1998;52 Pt 1:521-524.
68. Doupi P, Cimino JJ. PHL5/7412: On-line medication information for patients: The pharmacy infobutton. *J Med Internet Res*. 1999;1:XCLXXI-XCLXXII.
69. Porcelli PJ, Lobach DF. Integration of clinical decision support with on-line encounter documentation for well child care at the point of care. *Proceedings / AMIA*. 1999;Annual Symposium.:599-603.
70. Cimino JJ, Li J, Mendonca EA, Sengupta S, Patel VL, Kushniruk AW. An evaluation of patient access to their electronic medical records via the World Wide Web. *Proceedings / AMIA*. 2000;Annual Symposium.:151-155.
71. Muller ML, Ganslandt T, Eich HP, Lang K, Ohmann C, Prokosch HU. Integrating knowledge based functionality in commercial hospital information systems. *Stud Health Technol Inform*. 2000;77:817-821.
72. Ruan W, Burkle T, Dudeck J. A dictionary server for supplying context sensitive medical knowledge. *Proceedings / AMIA*. 2000;Annual Symposium.:719-723.
73. Ruan W, Burkle T, Dudeck J. An object-oriented design for automated navigation of semantic networks inside a medical data dictionary. *Artificial Intelligence in Medicine*. 2000;18:83-103.
74. Tang PC, Young CY. ActiveGuidelines: integrating Web-based guidelines with computer-based patient records. *Proceedings / AMIA*. 2000;Annual Symposium.:843-847.
75. Muller ML, Ganslandt T, Eich HP, Lang K, Ohmann C, Prokosch HU. Towards integration of clinical decision support in commercial hospital information systems using distributed, reusable software and knowledge components. *Int J Med Inform*. 2001;64:369-377.
76. Price SL, Hersh WR, Olson DD, Embi PJ. SmartQuery: context-sensitive links to medical knowledge sources from the electronic patient record. *Proceedings / AMIA*. 2002;Annual Symposium.:627-631.

77. Reichert JC, Glasgow M, Narus SP, Clayton PD. Using LOINC to link an EMR to the pertinent paragraph in a structured reference knowledge base. *Proceedings / AMIA*. 2002;Annual Symposium.:652-656.
78. Allen M, Currie LM, Graham M, Bakken S, Patel VL, Cimino JJ. The classification of clinicians' information needs while using a clinical information system. *AMIA*. 2003;Annual Symposium Proceedings/AMIA Symposium.:26-30.
79. Cimino JJ, Li J. Sharing infobuttons to resolve clinicians' information needs. *AMIA*. 2003;Annual Symposium Proceedings/AMIA Symposium.:815.
80. Maviglia SM, Strasberg HR, Bates DW, Kuperman GJ. KnowledgeLink update: just-in-time context-sensitive information retrieval. *AMIA*. 2003;Annual Symposium Proceedings/AMIA Symposium.:902.
81. Muller ML, Burkle T, Irps S, Roeder N, Prokosch H-U. The diagnosis related groups enhanced electronic medical record. *Int J Med Inform*. 2003;70:221-228.
82. Poon EG, Wang SJ, Gandhi TK, Bates DW, Kuperman GJ. Design and implementation of a comprehensive outpatient Results Manager. *Journal of Biomedical Informatics*. 2003;36:80-91.
83. Sinha U, El-Saden S, Duckwiler G, Thompson L, Ardekani S, Kangarloo H. A customizable MR brain imaging atlas of structure and function for decision support. *AMIA*. 2003;Annual Symposium Proceedings/AMIA Symposium.:604-608.
84. Chen ESS. Knowledge discovery in clinical information system log files and the implications for wireless handheld clinical applications. [Ph.D.]. Ann Arbor: Columbia University; 2004.
85. Cimino JJ, Li J, Allen M, Currie LM, Graham M, Janetzki V, et al. Practical considerations for exploiting the World Wide Web to create infobuttons. *Stud Health Technol Inform*. 2004;107:277-281.
86. Favela J, Rodriguez M, Preciado A, Gonzalez VM. Integrating context-aware public displays into a mobile hospital information system. *IEEE Transactions on Information Technology in Biomedicine*. 2004;8:279-286.
87. Rodriguez M, Preciado A. An agent based system for the contextual retrieval of medical information. *Advances in Web Intelligence, Proceedings*. Berlin: Springer-Verlag Berlin; 2004. p. 64-73.
88. Ruan W, Buerkle T, Dudeck JW. Mapping various information sources to a semantic network. *Medinfo*. 2004;MEDINFO. 11 (Pt 1):430-433.
89. Cimino JJ. Use, usability, usefulness, and impact of an infobutton manager. *AMIA*. 2006;Annual Symposium Proceedings/AMIA Symposium.:151-155.
90. Del Fiol G, Williams MS, Maram N, Rocha RA, Wood GM, Mitchell JA. Integrating genetic information resources with an EHR. *AMIA*. 2006;Annual Symposium Proceedings/AMIA Symposium.:904.
91. Poon SK, Rocha RA, De Fiol G. Rapid answer retrieval from clinical practice guidelines at the point of care. Paper presented at: 19th IEEE International Symposium on Computer-Based Medical Systems, CBMS 20062006; Salt Lake City, UT.
92. Bakken S, Roberts WD, Chen E, Dilone J, Lee N-J, Mendonca E, et al. PDA-based informatics strategies for tobacco use screening and smoking cessation management: a case study. *Stud Health Technol Inform*. 2007;129:1447-1451.
93. Collins S, Bakken S, Cimino JJ, Currie LM. Information needs related to antibiotic prescribing while using CPOE. *AMIA*. 2007;Annual Symposium Proceedings/AMIA Symposium.:916.
94. Collins S, Bakken S, Cimino JJ, Currie L. A methodology for meeting context-specific information needs related to nursing orders. *AMIA*. 2007;Annual Symposium Proceedings/AMIA Symposium.:155-159.

95. Del Fiol G, Haug PJ. Use of classification models based on usage data for the selection of infobutton resources. *AMIA. 2007;Annual Symposium Proceedings/AMIA Symposium.*:171-175.
96. Li J, Cimino JJ. Auditing dynamic links to online information resources. *AMIA. 2007;Annual Symposium Proceedings/AMIA Symposium.*:448-452.
97. Bobillo F, Delgado M, Gómez-Romero J. Representation of context-dependant knowledge in ontologies: A model and an application. *Expert Systems with Applications.* 2008;35:1899-1908.
98. Buck MD. Development and impact of computerized clinical decision support alerts on prescribing for elderly outpatients. [Ph.D.]. Ann Arbor: The University of Utah; 2008.
99. Del Fiol G, Haug PJ. Infobuttons and classification models: a method for the automatic selection of on-line information resources to fulfill clinicians' information needs. *Journal of Biomedical Informatics.* 2008;41:655-666.
100. Del Fiol G. Context-aware prediction of clinician information needs using "infobuttons.". [Ph.D.]. Ann Arbor: The University of Utah; 2008.
101. Hyun S, Currie LM, Hodorowski JK, Joyce MP, Lee N-J, Velez O, et al. Nurses' use and perceptions of usefulness of National Cancer Institute's tobacco-related Cancer Information Service (CIS) resources. *AMIA. 2008;Annual Symposium Proceedings/AMIA Symposium.*:985.
102. Collins SA, Currie LM, Bakken S, Cimino JJ. Information needs, Infobutton Manager use, and satisfaction by clinician type: a case study. *J Am Med Inform Assoc.* 2009;16:140-142.
103. Del Fiol G, Haug PJ. Classification models for the prediction of clinicians' information needs. *Journal of Biomedical Informatics.* 2009;42:82-89.
104. Liu X, Xu Y, Li Z, Liu L, Zhang X. ESCPP: An evaluation and alerting system for the compatibility between practice guidelines and practicing medicine using Arden syntax. Paper presented at: 1st International Conference on Information Science and Engineering, ICISE20092009; Nanjing.
105. Hulse NC, Haug PJ. Metadata extraction routines for improving infobutton performance. *AMIA Annu Symp Proc.* 2010;2010:326-330.
106. Alpi KM, Burnett HA, Bryant SJ, Anderson KM. Connecting knowledge resources to the veterinary electronic health record: opportunities for learning at point of care. *Journal of Veterinary Medical Education.* 2011;38:110-122.
107. Calabretto JP, Lewis B, Reeve J. A preliminary investigation of an integration tool to improve access to information resources in clinical software. *Electronic Journal of Health Informatics.* 2011;6.
108. Del Fiol G, Huser V, Strasberg HR, Maviglia SM, Curtis C, Cimino JJ. Implementations of the HL7 Context-Aware Knowledge Retrieval ("Infobutton") Standard: challenges, strengths, limitations, and uptake. *Journal of Biomedical Informatics.* 2012;45:726-735.
109. Schnall R, Cimino JJ, Bakken S. Development of a prototype continuity of care record with context-specific links to meet the information needs of case managers for persons living with HIV. *Int J Med Inform.* 2012;81:549-555.
110. Del Fiol G, Curtis C, Cimino JJ, Iskander A, Kalluri ASD, Jing X, et al. Disseminating context-specific access to online knowledge resources within electronic health record systems. *Stud Health Technol Inform.* 2013;192:672-676.
111. Hulse NC, Long J, Tao C. Combining infobuttons and semantic web rules for identifying patterns and delivering highly-personalized education materials. *AMIA Annu Symp Proc.* 2013;2013:638-647.
112. Shibuya A, Inoue R, Nakayama M, Kasahara S, Maeda Y, Umesato Y, et al. An Approach to Medical Knowledge Sharing in a Hospital Information System Using MCLink. *Journal of Medical Systems.* 2013;37.



113. Devine EB, Lee C-J, Overby CL, Abernethy N, McCune J, Smith JW, et al. Usability evaluation of pharmacogenomics clinical decision support aids and clinical knowledge resources in a computerized provider order entry system: A mixed methods approach. *Int J Med Inform.* 2014;83:473-483.
114. Hulse NC, Long J, Xu X, Tao C. Enabling locally-developed content for access through the infobutton by means of automated concept annotation. *AMIA Annu Symp Proc.* 2014;2014:700-708.
115. Zhang Y, Li H, Duan H, Zhao Y. Mobilizing clinical decision support to facilitate knowledge translation: a case study in China. *Comput Biol Med.* 2015;60:40-50.