
Sebastian Polak

Contact

Unit of Pharmacoepidemiology and Pharmacoeconomics
Faculty of Pharmacy
Jagiellonian University Medical College
Medyczna 9 Str., 30-688 Cracow, Poland
Tel. +48 (12) 62-05-517 / e-mail: spolak@cm-uj.krakow.pl

- 1995 – 2000 Faculty of Pharmacy Jagiellonian University Medical College, Cracow, Poland

Master Degree in Pharmacy

- Graduated in 2000 with the very good grade (5.0)
- Average of grades over 4,8 (in 1-5 scale) from all study years, Dean's prize in 2000
- Master thesis at the Department of Pharmaceutical Technology and Biopharmaceutics "Using Artificial Neural Networks (ANNs) in pharmaceutical technology – prediction of microemulsion's composition" – 2000 with distinction

PhD Degree in Pharmacy

- PhD thesis at the Department of Toxicology, Unit of Pharmacoepidemiology and Pharmacoeconomics "Using Artificial Neural Networks (ANNs) as a data analysis tool in pharmacoeconomics and epidemiology" – 2006 with distinction

Postgraduate studies**Education and experience**

- 01.2001 – 01.2003 Healthcare Administration Faculty at Public Health Institute Department of Healthcare Medical College, Jagiellonian University, Cracow
- 17-18.05.2001 - Leonardo da Vinci JOINT module „Joint International Training Module on Communication Techniques for SME's”, Department of Telecommunication, Technical University-AGH, Cracow
- 12-14.12.2002 – “Workshop on Pharmaceutical Care in Oncology”, Faculty of Pharmacy, Medical College, Jagiellonian University, Cracow
- Multiple courses on pharmaceutical modeling and simulation and data analysis (Prof. Leon Aarons, Dr Andrew Hooker, Dr Johann Gabrielsson, Prof. Amin Rostami, Simcyp PBPK-IVIVC Workshop)

Experience

- 07-08.2005 – Leonardo da Vinci program beneficiary (Faculty of Pharmacy, Bonn University, Germany)
- 2007 – involved in the Leonardo da Vinci Community Vocational Training Action Programme – eLearning working group
- 2007 – till now – Principal Scientist for Simcyp Ltd. (University of Sheffield spin-off company)

Simcyp develops platform designed to conduct PBPK/ADME computer simulations of chemicals in representative virtual patient populations based on in vitro data

- 2008 – till now – Honorary Lecturer, Faculty of Medicine, University of Sheffield, UK
Lecturer at the Master course in PBPK/ADME modeling
- 2008 – till now – involved in the European Seventh Framework Programme for Research and Technological Development entitled ‘Profiling the toxicity of new drugs: a non-animal-based approach integrating toxico-dynamics and biokinetics’
- international conference invited speaker
- internet based e-learning system for pharmacist continuing development (e-duk@cja - <http://www.e-dukacja.pl/>) – idea, initiation, co-development and administration
- VBoard (<http://papaver.farmacja.cm-uj.krakow.pl/>) - on-line education management system for pharmacy undergraduate students - idea, initiation co-development and administration
- specialized web portal for pharmacist *e-farmacja.net* (<http://www.e-farmacja.net>) – idea, initiation, co-development and administration
- head of the informal Computational Toxicology Group (<http://www.tox-portal.net>)
- Polish National Center for Research and Development *LIDER* program laureate

Other activities

- 1998 - 2000 the head of scientific circle of pharmaceutical technology at the Department of Pharmaceutical Technology and Biopharmaceutics Medical College Jagiellonian University, Cracow, Poland
- Oral presentation of scientific circle research results “An approach to modelling of microemulsion composition by ANN”; 38-th Medicine Students’ Conference “Spectrum 2000” Cracow 25-27.05.2000
- Scientific research presentations during national and international scientific conferences
- Master theses tutor and PhD student advisor
- Publications in peer-reviewed scientific and popular journals
- Reviewer for the professional scientific journals (i.e. Applied Soft Computing, British Journal of Clinical Pharmacology)

Professional experience

- 1999-2000 - Technician at the Department of Pharmacoepidemiology and Pharmacoconomics, Faculty of Pharmacy, Collegium Medicum, Jagiellonian University Cracow (development of computer database based on Microsoft Access software)
- 2000 - 2005 - community pharmacy
- 2000 - 2006 – Scientific Assistant
- 2006 – till now – Adjunct
at the Unit of Pharmacoepidemiology and Pharmacoconomics, Faculty of Pharmacy, Jagiellonian University Cracow (research topics – using AI in data analysis; Mathematical modeling of biological processes, Computational toxicology)
- 2007 – till now – Principal Scientist, Simcyp Ltd., Sheffield, UK
- 2007 – till now – Honorary Lecturer, Faculty of Medicine, University of Sheffield, UK

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- 2005 – till now - Editor in Chief of the pharmaceutical portal *e-dukacja.pl*
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Abilities

- Languages – fluency in English, basic German
- Very good computer knowledge (fluency in Microsoft Windows OS and Microsoft Office, very good at Linux OS)
- Very good knowledge of statistics, chemical, data analysis and modeling software – ANN simulators, Simcyp, WEKA, SPSS, TreeAge, Dragon, MMPro, Chemaxon, office tools
- Fluency in Internet technology
- Fluency in pharmaceutical and medical data retrieval and analysis

Conference posters and oral presentations

Skowron A., Brandys J., Szczęsny T., Ramlau R., Żukowska H., Gołdecki M., Mądrzak J., Wolf H., Polak S. „Pharmacoeconomic analysis of the non-small lung cancer treatment” (in polish). Polish Society of Oncology, Gdańsk 27-29.10.2000.

Polak S., Brandys J., Mendyk A., „Usefulness of the artificial neural networks in pharmacoeconomics” (in polish). 3rd Warsaw Days of Pharmacology, Pharmacotherapy and Pharmacoeconomics, Warszawa 6-8.06.2001.

Polak S., Brandys J., Mendyk A., „Artificial neural networks application in pharmacoeconomics” (in polish). XVIII Scientific Convention of the Polish Pharmaceutical Society, Poznań 2001.

Polak S., Skowron A., Brandys J., „Pharmaceutical care role in the health care system quality” (in polish). International Conference „Health and disease – management quality”, Poznań 28-29.09.2001

Panas M., Polak S., „Pharmacy Students Training in Using Pharmaceutical and Medical Databases”, Integration in Pharmacy Education in Europe, Kraków 26-27 IV 2002.

Polak S., Mendyk A., Brandys J. „Using Artificial Neural Network as a Tool for Epidemiological Data Analysis.”, 6th International Conference “Neural Network and Soft Computing”, Zakopane 11-15 .06.2002.

Panas M., Polak S., „Wykorzystanie nowoczesnych środków dydaktycznych w nauczaniu toksykologii studentów Wydziału Farmacji”, VIII Naukowy Zjazd Polskiego Towarzystwa Toksykologicznego, Łódź 8-11 IX 2002.

Polak S., Mendyk A., Brandys J., “Artificial Neural Network as an Internet-based Tool for Initial Screening of Gestational Diabetes Mellitus.”, International Conference on E-health in Common Europe, Kraków 5-6 VI 2003.

Polak S., Skowron A., Mendyk A., Brandys J.: „Artificial Neural Networks in Pharmacoeconomics.” 2nd International Conference on E-health in Common Europe, Kraków 11-12 III 2004.

Polak S., Mendyk A., „Artificial Neural Networks as an Engine of Internet Based Hypertension Prediction Tool.” International Congress on Medical and Care Computetics, The Hague 2-4 VI 2004.

Skowron A., Polak S., Dziurda D., Król M., Ogórka A. „Opieka farmaceutyczna dla pacjentów z nadciśnieniem tętniczym” XIX Naukowy Zjazd Polskiego Towarzystwa Farmaceutycznego, Wrocław 22-24 IX 2004.

Polak S., Skowron A., Brandys J.: „Przygotowanie aptek ogólnodostępnych do prowadzenia opieki farmaceutycznej” XIX Naukowy Zjazd Polskiego Towarzystwa Farmaceutycznego, Wrocław 22-24 IX 2004.

Polak S., Mendyk A., Brandys J. „Internetowy system predykcji ryzyka wystąpienia nadciśnienia tętniczego oparty o sztuczne sieci neuronowe” XIX Naukowy Zjazd Polskiego Towarzystwa Farmaceutycznego, Wrocław 22-24 IX 2004.

Król M., Kosińska K., Skowron A., Polak S., Dziurda D.: „Rola farmaceutów w aptekach ogólnodostępnych w redukcji błędów medycznych” XIX Naukowy Zjazd Polskiego Towarzystwa Farmaceutycznego, Wrocław 22-24 IX 2004.

Mendyk A., Horzyk A., Jachowicz R., Polak S.: „Poszukiwanie nowych układów mikroemulsyjnych za pomocą ontologicznych sieci neuronowych” Sztuczna Inteligencja w Inżynierii Biomedycznej, Kraków 19 X 2004.

Polak S., Horzyk A., Mendyk A., Skowron A., Brandys J.: „Perspektywy wykorzystania sieci sonn w farmacji” Sztuczna Inteligencja w Inżynierii Biomedycznej, Kraków 19 X 2004.

Polak S., Skowron A., Brandys J., Mendyk A. “Modeling Effect in Pharmacoeconomics Analysis Using Artificial Neural Networks” ISPOR 7th Annual European Congress, Hamburg 24-26 X 2004.

Polak S., Mendyk A., Król M., Dziurda D. „Does Pharmacy Belong to E-world?” International Workshop E-health In Common Europe, Kraków 17-18 XII 2004.

Polak S., Mendyk A., „Computational Intelligence as Data Analyzing Tool in Healthcare” International Workshop E-health In Common Europe, Kraków 17-18 XII 2004.

Mendyk A., Polak S. “Artificial Neural Network applications in the pharmaceutical sciences” NA4 Biomed meeting in CERN, Geneve 2 II 2005; <http://egee-na4.ct.infn.it/biomed/egee-na4-biomed-050202.html>

Skowron A., Polak S. “Implementation of pharmaceutical care for patients with hypertension in Poland” Fourth International Working Conference on Pharmaceutical Care Research – Beyond the Pharmacy Perspective, Hillerod, Denmark 16-20 II 2005.

Król M., Polak S., Fyda E., Dzik A. “Projekt raportowania i analizy błędów lekowych w aptekach ogólnodostępnych” IX Ogólnopolska Konferencja Jakość w Opiece Zdrowotnej – Bezpieczny Pacjent, Kraków, Polska 19-20 V 2005.

Polak S., Mendyk A., Skowron A., Brandys J. Using artificial neural networks-based models in pharmacoeconomic analyzes. PharmSciFair – The Pharmaceutical Sciences Fair & Exhibition, Nice, France, 12-17 June 2005.

Polak S., Mendyk A., Brandys J. Weryfikacja i rozbudowa internetowego systemu skryningu ryzyka nadciśnienia tętniczego, działającego w oparciu o sztuczne sieci neuronowe. XIV Krajowa Konferencja Naukowa "Biocybernetyka i Inżynieria Biomedyczna", Częstochowa, 21 - 23 września 2005.

Polak S., Mendyk A., Brandys J. Zastosowanie metod obliczeniowych jako narzędzi wykrywania realnych i potencjalnych interakcji lekowych IX Ogólnopolski Naukowy Zjazd Towarzystwa Terapii Monitorowanej, Łódź, 01-03.12.2005.

Polak S., Mendyk A., Brandys J. Neural System for in silico Drug-Drug Interaction Screening. International Conference on Computational Intelligence for Modelling Control and Automation - CIMCA'2005, Vienna – Austria, 28 - 30 November 2005.

Dziurda D., Polak S., Brandys J., Kuschill-Dziurda J. Analiza zużycia leków stosowanych w terapii chorób obturacyjnych płuc. XXIX Zjazd Polskiego Towarzystwa Ftizjopneumonologicznego. Opole, 14-17 IX 2006.

Skowron A., Polak S., Król M., Ogórka A., Brandys J. The impact of pharmaceutical care for patients with hypertension on the patients' knowledge in Poland. 35th European Symposium on Clinical Pharmacy. The Role of Communication in Patient Safety and Pharmacotherapy Effectiveness. Vienna Austria, 18-21 October 2006.

Polak S., Skowron A., Mendyk A., Brandys J. Assesment of the Computational Intelligence Based Models Usefulness for Pharmacoeconomics Needs. 9th Annual European Congress. Denmark, Copenhagen, 28-31 October 2006 (Value in Health, 2006, 9(6)).

Skowron A., Polak S., Brandys J. A Cost Minimization Analysis of Navelbine-Cisplatin versus Gemcitabine-Cisplatin in Advanced Non-Small Cell Lung Cancer in Poland. 9th Annual European Congress. Denmark, Copenhagen, 28-31 October 2006 (Value in Health, 2006, 9(6)).

S. Polak, A. Skowron, A. Mendyk, J. Brandys Novel machine learning based tools for pharmacoeconomics use – theoretical introduction and practical example. IV Konferencja Naukowa Polskiego Towarzystwa Farmakoeconomicznego "Bridging East and West", Warszawa, 6 grudnia 2006

Renata Jachowicz, Joanna Szymura-Oleksiak, Jerzy Brandys, Aleksander Mendyk, Sebastian Polak, Miłosz Polak. Training for industrial and clinical pharmacy at the Faculty of Pharmacy Jagiellonian University Cracow. Trends in Pharmacy Education EAFP Annual Conference, 20-21 September 2007, Madrid, Spain.

Polak M., Polak S. Bezpieczeństwo danych w dokumentowaniu opieki farmaceutycznej na przykładzie aplikacji FONT. XX Naukowy Zjazd PTFarm, Katowice 2007

Dziurda D., Polak S., Skowron A., Brandys J. Analiza farmakoterapii przeciwbakteryjnej w Polsce. XX Naukowy Zjazd PTFarm, Katowice 2007

Dziurda D., Polak S., Bielska B., Kosińska K. Optymalizacja antybiotykoterapii szpitalnej – rola farmaceuty klinicznego i zastosowanie zaawansowanych technik edukacji. XX Naukowy Zjazd PTFarm, Katowice 2007

Mendyk A., Polak S., Józwiakowski P., Jachowicz R., Brandys J. System e-duk@cja. XX Naukowy Zjazd PTFarm, Katowice 2007

S. Polak, M. Jamei, D. Turner, G. T. Tucker, A. Rostami-Hodjegan. Impact of Variability in Estimates of Drug Diffusion Coefficient on the Prediction of Fraction Absorbed from the Gut (fa) Using the ADAM Model (Simcyp v7.1). EUFEPS & COST B25 Conference on Bioavailability and Bioequivalence: Focus on Physiological Factors and Variability. October 1-2, 2007, Athens, Greece

S. Polak, M. Jamei, D. Turner, G. T. Tucker, A. Rostami-Hodjegan. Impact of Variability in Estimates of Drug Diffusion Coefficient on the Prediction of Fraction Absorbed from the Gut (fa) Using the ADAM Model (Simcyp v7.1). Poster number 12. EUFEPS Conference on Optimising Drug Discovery and Development together with European Biosimulation Network of Excellence (BioSim) and EU Microdosing AMS Partnership Programme (EuMapp) Integrating Systems Approaches into Pharmaceutical Sciences. December 5-7, 2007, Basel, Switzerland

Polak, S. Pharmaceutical e-learning in industry and at the academia – different targets, same problems. 2nd European Workshop on Computer-Aided Learning in the Pharmaceutical Sciences. 6-7 November 2008, Vienna, Austria

Polak S., et al. Prediction of the in vivo behaviour of modified release formulations of metoprolol from in vitro dissolution profiles using the ADAM model (SimcypV8). ISSX Meeting, Drug Metabolism Review, Volume 40, Supp 1, 2008.

Polasek T., et al. Incorporating inter-individual variability into the prediction of phenytoin clearance from albumin-adjusted in vitro data. ISSX Meeting, Drug Metabolism Review, Volume 40, Supp 1, 2008.

Wisniowska B, Polak S, Brandys J, Extrapolating factors for different in vitro hERG systems. Central European Congress of Life Science EUROBIOTECH 2008, Kraków 17-19.10.2008; Acta Biochimica Polonica 2008, vol. 55 suppl. 4

Sebastian Polak, Barbara Wisniowska, Jerzy Brandys. Modelling and simulation in the drug discovery, research and development. Toxicity prediction. 5th German-Polish Symposium "New Challenges for Pharmaceutical Sciences", Poznan 15-16.05.2009

Barbara Wisniowska, Sebastian Polak, Jerzy Brandys. Bayesian classification methods for proarrhythmic liability prediction. 5th German-Polish Symposium "New Challenges for Pharmaceutical Sciences", Poznan 15-16.05.2009

Sebastian Polak, Barbara Wisniowska, Jerzy Brandys. Decision trees algorithms for the in silico prediction of hERG potassium channels inhibition (in polish). Polish Society of Toxicology Workshop “New trends in toxicology”, Lodz 1-2.06.2009

Barbara Wiśniowska, Sebastian Polak. Cardiotoxicity prediction algorithms. 1st International Workshop Computational Pharmacy. Krakow 19.06.2009

Malidi Ahamadi, Sebastian Polak. Modelling drug absorption through the skin – clinical trials simulation. 1st International Workshop Computational Pharmacy. Krakow 19.06.2009

Polak S., Ahamadi M., Ghobadi C., Mishra H., Jamei M., Rostami-Hodjegan A. Prediction of Human Pharmacokinetics Following Dermal Administration: Integration of a Skin Absorption Module to the Simcyp Population-Based ADME Simulator with the Aim of Avoiding Animal Studies. 7th World Congress on alternatives and animal use in the life sciences. Rome, Italy 30.08 – 3.09.2009

Peer-reviewed scientific journals

Polak S., Brandys J., Mendyk A. „Artificial neural networks as the data analysis tool in epidemiology and health economics” (in polish). Polish Cardiological Review, 2002, 1(4): 79-83.

Panas M., Polak S., Brandys J. „Chosen databases usefulness in the practitioners practice” (in polish). Przegląd Lekarski, 2002, 4-5(59).

Panas M., Polak S., „Micromedex databases – differences and similarities with chosen information sources” (in polish). Farmacja Polska, 2002, 58 (17).

Polak S., Mendyk A., “Artificial Intelligence Technology as a Tool for Initial GDM Screening.”, Expert Systems with Applications, 26/4, 2004 pp. 455-460.

Brandys J., Dziurda D., Kuschił-Dziurda J., Polak S.: „Internet systems for the drug dispensing enhancement” (in polish). Farmacja Polska 60 (15), 2004 pp. 699-708.

Brandys J., Polak S., Mendyk A., Polak M. An e-learning system for pharmacist continuing education in Poland. Pharmacy Education, 6 (1) 2006, pp: 65-70.

Polak S., Mendyk A., Polak M., Brandys J. Information technologies in the pharmacists education. Part I – internet based student management system (in polish). Farmacja Polska, 2006, 62(15): 683-688.

Dziurda D., Polak S., Brandys J., Kuschił-Dziurda J. Lungs obturative diseases - drug consumption analysis. Pneumonologia i Alergologia Polska, 2006, 3(74): 267-268.

Polak S., Mendyk A., Polak M., Brandys J. Information technologies in the pharmacists education. Part II – edukacja internet based education system. Farmacja Polska, 2006, 62(17): 799-804.

S. Polak, A. Skowron, A. Mendyk, J. Brandys Novel machine learning based tools for pharmacoeconomics use – theoretical introduction and practical example. Farmakoeconomika, 2006, 10(4).

Polak S., Skowron A., Mendyk A., Brandys J. Artificial Neural Networks based modeling for pharmacoeconomics application, Applied Mathematics and Computation, 2007, 203(2): 482-492.

Polak S., Mendyk A. Artificial neural networks based Internet hypertension prediction tool development and validation, Applied Soft Computing J., 2008, 8(1): 734-739.

Dziurda, D., Polak, S., Skowron, A., Kuschił-Dziurda, J., Brandys, J. Analysis of non-hospital antibacterial pharmacotherapy in Poland, International Journal of Infectious Diseases Volume 12, Issue 5, September 2008, Pages 483-489.

Dziurda, D.R., Polak, S., Skowron, A., Kuschił-Dziurda, J., Brandys, J. Antibacterial drug prescription for outpatients: Age, seasonal and pulmonary disease dependency, Acta Poloniae Pharmaceutica - Drug Research, 2008, 65(3): 391-397.

Polak, S., Wisniowska, B. Computer based drug development – molecule development, HIT targeting, physico-chemical characteristic and biological activity assessment (in polish). Farmacja Polska, 2009, 65(3): 214-223.

Wisniowska, B., Polak, S. Computer based drug development – toxicity prediction (in polish). Farmacja Polska, 2009, 65(6): 445-452.

Polak S., Wiśniowska B., Brandys J. Collation, assessment and analysis of literature in vitro data on hERG receptor blocking potency for subsequent modeling of drugs cardiotoxic properties, *Journal of Applied Toxicology* 2009, 29(3): 183-206.

Barbara Wiśniowska, Sebastian Polak hERG in vitro interchange factors—development and verification *Toxicology Mechanisms and Methods* 2009, 19(4): 278-284.

Jamei M, Turner D, Yang J, Neuhoff S, Polak S, Rostami-Hodjegan A, Tucker G. Population-based mechanistic prediction of oral drug absorption. *AAPS J.* 2009, 11(2): 225-37.

Polasek T.M., Polak S., Doogue M.P., Rostami-Hodjegan A., Miners J.O. Assessment of inter-individual variability in predicted phenytoin clearance. *Eur J Clin Pharmacol.* 2009 DOI 10.1007/s00228-009-0703-y

Book chapters

Polak S., Mendyk A., Brandys J. „Using Artificial Neural Network as a Tool for Epidemiological Data Analysis.”, *Advances in Soft Computing – Neural Network and Soft Computing*, Springer-Verlag, Heidelberg, Germany, 2003.

Polak S., Mendyk A., “Artificial Neural Networks as an Engine of Internet Based Hypertension Prediction Tool.” in *Medical and Care Compunetics part 1 – Studies in Health Technology and Informatics*, IOS Press, Amsterdam, The Netherlands, 2004.

Polak S., Skowron A., Mendyk A., Brandys J.: „Artificial Neural Networks in Pharmacoconomics.” in *Transformation of Healthcare with Information Technologies*, IOS Press, Amsterdam, The Netherlands, 2004.

Polak S., Mendyk A., Król M., Dziurda D. „Does Pharmacy Belong to E-world?” Overcoming the barriers to e-health growth in Enlarged Europe. Eds. Duplaga M., Zieliński K. *Zarządzanie i Zdrowie*, Kraków, 2004.

Polak S., Mendyk A., „Computational Intelligence as Data Analyzing Tool in Healthcare” Overcoming the barriers to e-health growth in Enlarged Europe. Eds. Duplaga M., Zieliński K. *Zarządzanie i Zdrowie*, Kraków, 2004.

Polak S. Dokumentowanie procesu opieki farmaceutycznej; Brandys J. – red. APTEKA PLUS PACJENT Farmaceuta jako profesjonalny doradca. Dr Josef Raabe Spółka Wydawnicza, Warszawa, 2005.

Polak S. Wyszukiwanie informacji – dostępne bezpłatne i komercyjne bazy danych. Brandys J. – red. APTEKA PLUS PACJENT Farmaceuta jako profesjonalny doradca. Dr Josef Raabe Spółka Wydawnicza, Warszawa, 2005.

Polak S., Mendyk A., Brandys J. Neural System for in silico Drug-Drug Interaction Screening. *Proceedings of International Conference on Computational Intelligence for Modelling Control and Automation*. IEEE Computer Society, Los Alamitos USA, 2006.

Polak S., Brandys J., Mendyk A. E-learning w doświadczeniach krakowskiego Wydziału Farmacji. *Przeszłość i perspektywy farmacji pod redakcją Anity Magowskiej*. Kontekst, Poznań 2007.

Polak S. Antykoncepcja, testy owulacyjne i ciążowe. Brandys J. – red. APTEKA PLUS PACJENT Farmaceuta jako profesjonalny doradca. Dr Josef Raabe Spółka Wydawnicza, Warszawa, 2007.

Polak S. Technical aspects of the pharmaceutical practice, in „Pharmaceutical practice”. Edited by Renata Jachowicz, PZWL Warszawa 2007, 369-384.

Polak S., Skowron A., Turska W., Wiśniowska B. Pharmaceutocal care practice (in polish). Edited by Agnieszka Skowron. *Czasopismo Aptekarskie Publishing House*, Warszawa 2009 (in press).

Popular science publications

Brandys J., Polak S., Mendyk A., Polak M. „e-duk@cja system” Alma Mater, 2005, 70: 25-26.

Polak S., Mendyk A., Józwiakowski P. Directly from the Local Pharmaceutical Board – pharmacists longlife education. Forum Farmaceutyczne, 2005, 9(16).

S. Polak, A. Mendyk, e-duk@cja – solid educational brand, (in polish). Aptekarz Polski, 2007, 10(20).

S. Polak, e-duk@cja system report, (in polish). Aptekarz Polski, 2008, 26(4).

A. Mendyk, S. Polak, M. Polak, e-duk@cja system – yesterday, today, tomorrow, (in polish). Aptekarz Polski February 2009.