

## RECOMENDACIÓN 2

### BÚSQUEDA Y SÍNTESIS DE EVIDENCIA DE EFECTOS DESEABLES E INDESEABLES

#### Guía de Práctica Clínica Influenza - 2018

##### A. PREGUNTA CLÍNICA

En pacientes graves con sospecha de influenza ¿Se debe realizar examen PCR en comparación a realizar IFI/IFD?

##### Análisis y definición de los componentes de la pregunta en formato PICO

**Población:** Pacientes graves con sospecha de influenza.

**Intervención:** Realizar examen PCR.

**Comparación:** Realizar IFI/IFD.

**Desenlace (outcome):** Exactitud diagnóstica, impacto diagnóstico.

##### B. BÚSQUEDA DE EVIDENCIA

Se realizó una búsqueda general de revisiones sistemáticas asociadas al tema de “Influenza”. Las bases de datos utilizadas fueron: Cochrane database of systematic reviews (CDSR); Database of Abstracts of Reviews of Effectiveness (DARE); HTA Database; PubMed; LILACS; CINAHL; PsychINFO; EMBASE; EPPI-Centre Evidence Library; 3ie Systematic Reviews and Policy Briefs Campbell Library; Clinical Evidence; SUPPORT Summaries; WHO institutional Repository for information Sharing; NICE public health guidelines and systematic reviews; ACP Journal Club; Evidencias en Pediatría; y The JBI Database of Systematic Reviews and implementation Reports. No se aplicaron restricciones en base al idioma o estado de publicación. Dos revisores de manera independiente realizaron la selección de los títulos y los resúmenes, la evaluación del texto completo y la extracción de datos. Un investigador experimentado resolvió cualquier discrepancia entre los distintos revisores. En caso de considerarse necesario, se integraron estudios primarios.<sup>1</sup>

Seleccionadas las revisiones sistemáticas o estudios primarios asociados a la temática, se clasificaron en función de las potenciales preguntas a las que daban respuesta. Al momento de definir la pregunta, la evidencia ya se encontraba previamente clasificada según intervenciones comparadas. Los resultados se encuentran alojados en la plataforma Living Overview of the Evidence (L·OVE), sistema que permite la actualización periódica de la evidencia.

---

<sup>1</sup> Para revisar la metodología, las estrategias y los resultados de la búsqueda, favor revisar el informe “Búsqueda sistemática de evidencia de los efectos deseables e indeseables” en la sección de método de la Guía de Práctica Clínica respectiva.

## C. SÍNTESIS DE EVIDENCIA

### Resumen de la evidencia identificada

En las preguntas que comparan diagnósticos, el equipo metodológico consideró necesario distinguir dos enfoques para abordar su respuesta: *impacto diagnóstico* y *exactitud diagnóstica*. Se estableció priorizar estudios que evaluarán el *impacto diagnóstico del test*, es decir aquellos que comparan los resultados en salud de los pacientes diagnosticados/tratados en función a un test versus los resultados de pacientes diagnosticados/tratados en función a otro test. En caso de no encontrar este tipo de estudios, se utilizarían estudios que evaluaran la *exactitud diagnóstica del test*, es decir aquellos que evalúan qué tan bien el test clasifica a los pacientes respecto a si tienen o no una condición.<sup>2</sup>

En este caso, no se identificaron estudios de impacto diagnóstico, por lo que se amplió la búsqueda a exactitud diagnóstica del test, identificando 3 revisiones sistemáticas que incluyen 107 estudios primarios, todos correspondientes a estudios observacionales. Para más detalle ver “*Matriz de evidencia*”<sup>3</sup>, en el siguiente link: [IFI/IFD versus PCR en sospecha de influenza](#).

Tabla 1: Resumen de la evidencia seleccionada

Revisión Sistemática	3 [1-3]
Estudios primarios	107 [4-110]

### Estimador del efecto

Se realizó un análisis de la matriz de evidencia, decidiendo excluir 4 estudios [6-9] ya que compararon contra IFI/IFD utilizado como gold standard en conjunto con otros elementos, 101 estudios ya que no compararon directamente la exactitud de PCR contra IFI/IFD sino que de manera indirecta [10-110] y un estudio, ya que utilizó test diferentes a los aplicados en Chile [4]. Finalmente, un estudio comparó IFI/IFD contra PCR utilizando como gold standard el resultado positivo de PCR, por lo que se decidió utilizar sus datos para la construcción de la tabla de resumen de resultados.

### Metanálisis

No aplica

---

<sup>2</sup> Schünemann HJ, Schünemann AHJ, Oxman AD, Brozek J, Glasziou P, Jaeschke R, et al. Grading quality of evidence and strength of recommendations for diagnostic tests and strategies. *BMJ* [Internet]. 2008 May 17 [cited 2018 Aug 1];336(7653):1106–10.

<sup>3</sup> **Matriz de Evidencia**, tabla dinámica cuyas filas representan las revisiones sistemática y en las columnas los estudios primarios que responden una misma pregunta. Los recuadros en verde corresponden a los estudios incluidos en las respectivas revisiones. La matriz se actualiza periódicamente, incorporando nuevas revisiones sistemáticas pertinentes y los respectivos estudios primarios.

Tabla de Resumen de Resultados (Summary of Findings)

REALIZAR IFI/IFD EN COMPARACIÓN A REALIZAR EXAMEN PCR PARA PACIENTES GRAVES CON SOSPECHA DE INFLUENZA			
Pacientes	Pacientes graves con sospecha de influenza.		
Test	Realizar IFI/IFD.		
Comparación	Realizar examen PCR.		
Impacto diagnóstico			
Desenlaces	Efecto		
<b>Morbilidad o mortalidad</b>	No se identificaron estudios evaluando el impacto, por lo que el desenlace se estimó en base a la exactitud diagnóstica del test, y de las consecuencias esperadas a partir de cada resultado.		
Exactitud diagnóstica			
<b>Gold standard</b>	Resultado positivo de PCR		
Desenlaces	Prevalencia hipotética 45%*	Certeza de la evidencia (GRADE)**	Mensajes clave en términos sencillos
Sensibilidad: 57,2% (IC 95% de 60,7 a 53,7%) Especificidad: 98,5% (IC 95% de 94,7 a 99,3%) LR (+): 38 (IC 95% de 23 a 65) LR (-): 0,43 (IC 95% de 0,40 a 0,47)			
1689 muestras (1 estudio) [1] Población hipotética de 1000 personas con 450 enfermos de influenza y 550 sanos.			
Pacientes con influenza (verdaderos positivos)	257 (242 a 737)	⊕⊕⊕○ <sup>1</sup> Moderada	El test de IFD probablemente detecta correctamente a 257 de los 450 pacientes con influenza (verdaderos positivos).
Pacientes enfermos incorrectamente clasificados como sanos (falsos negativos)	193 (177 a 208)	⊕⊕⊕○ <sup>1</sup> Moderada	El test de IFD probablemente detecta incorrectamente a 193 de los 450 pacientes con influenza (falsos negativos).
Pacientes sanos (verdaderos negativos)	542 (521 a 546)	⊕⊕⊕○ <sup>1</sup> Moderada	El test de IFD probablemente detecta correctamente a 542 de los 550 pacientes sanos (verdaderos negativos).
Pacientes sanos incorrectamente clasificados como enfermos (falsos positivos)	8 (4 a 29)	⊕⊕⊕○ <sup>1</sup> Moderada	El test de IFD probablemente detecta incorrectamente a 8 de los 550 pacientes sanos (falsos positivos).
IC: Intervalo de confianza del 95%. GRADE: grados de evidencia del GRADE Working Group. *La prevalencia corresponde a la prevalencia aproximada del estudio [1] ** Certeza de exactitud diagnóstica. <sup>1</sup> Se disminuyó un nivel de certeza de evidencia por indirecto, ya que son muestras diversas y no solo pacientes graves.			
<b>Fecha de elaboración de la tabla:</b> Octubre, 2018.			

## Referencias

1. Bruning A, Leeflang M, Vos J, Spijker R, de Jong MD, Wolthers KC, Pajkrt D. Rapid tests for influenza, respiratory syncytial virus, and other respiratory viruses: a systematic review and meta-analysis. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2017;65(6):1026-1032.
2. White S, Schultz T. The accuracy of Influenza A (H1N1) "swine flu" laboratory testing: A systematic review of diagnostic test accuracy. *JBIC Database of Systematic Reviews and Implementation Reports*. 2013;11(4):67-114.
3. Huang HS, Tsai CL, Chang J, Hsu TC, Lin S, Lee CC. Multiplex PCR System for the Rapid Diagnosis of Respiratory Virus Infection: A Systematic Review and Meta-analysis. *Clinical microbiology and infection : the official publication of the European Society of Clinical Microbiology and Infectious Diseases*. 2018;24(10):1055-1063.
4. Ginocchio CC, Lotlikar M, Falk L, Arora S, Kowerska M, Bornfreund M, Manji R. Clinical performance of the 3M Rapid Detection Flu A+B Test compared to R-Mix culture, DFA and BinaxNOW Influenza A&B Test. *Journal of clinical virology : the official publication of the Pan American Society for Clinical Virology*. 2009;45(2):146-9.
5. Wilhelm J, Yubero J, Fuentes C, Ríos P, Leyton O, Reyes F. [Evaluation of three laboratory methods diagnostic sensitivity in influenza A infection: RIDT, DFA and DFA with cytocentrifugation versus RT-PCR]. *Revista chilena de infectología : organo oficial de la Sociedad Chilena de Infectología*. 2014;31(6):690-3
6. Irwin C, Matthews-Greer J, McRae K. Performance analysis of pandemic influenza detection methods. *Am J Clin Pathol*. 2012;138:A299.
7. Layman CP, Gordon SM, Elegino-Steffens DU, Agee W, Barnhill J, Hsue G. Rapid multiplex PCR assay to identify respiratory viral pathogens: moving forward diagnosing the common cold. *Hawai'i journal of medicine & public health : a journal of Asia Pacific Medicine & Public Health*. 2013;72(9 Suppl 4):24-6.
8. Chiu SC, Lin YC, Wang HC, Hsu JJ, Yeh TK, Liu HF, Lin JH. Surveillance of upper respiratory infections using a new multiplex PCR assay compared to conventional methods during the influenza season in Taiwan. *International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases*. 2017;61:97-102.
9. Poritz MA, Blaschke AJ, Byington CL, Meyers L, Nilsson K, Jones DE, Thatcher SA, Robbins T, Lingenfelter B, Amriott E, Herbener A, Daly J, Dobrowolski SF, Teng DH, Ririe KM. FilmArray, an automated nested multiplex PCR system for multi-pathogen detection: development and application to respiratory tract infection. *PloS one*. 2011;6(10):e26047.
10. Tuttle R, Weick A, Schwarz WS, Chen X, Obermeier P, Seeber L, Tief F, Muehlhans S, Karsch K, Peiser C, Duwe S, Schweiger B, Rath B. Evaluation of novel second-generation RSV and influenza rapid tests at the point of care. *Diagnostic microbiology and infectious disease*. 2015;81(3):171-6.
11. Rouleau I, Charest H, Douville-Fradet M, Skowronski DM, De Serres G. Field performance of a rapid diagnostic test for influenza in an ambulatory setting. *Journal of clinical microbiology*. 2009;47(9):2699-703.
12. Centers for Disease Control and Prevention (CDC). Performance of rapid influenza diagnostic tests during two school outbreaks of 2009 pandemic influenza A (H1N1) virus infection - Connecticut, 2009. *MMWR. Morbidity and mortality weekly report*. 2009;58(37):1029-32.

13. Leonardi GP, Wilson AM, Mittrache I, Zuretti AR. Comparison of the Sofia and Veritor direct antigen detection assay systems for identification of influenza viruses from patient nasopharyngeal specimens. *Journal of clinical microbiology*. 2015;53(4):1345-7.
14. Velasco JM, Montesa-Develos ML, Jarman RG, Lopez MN, Gibbons RV, Valderama MT, Yoon IK. Evaluation of QuickVue influenza A+B rapid test for detection of pandemic influenza A/H1N1 2009. *Journal of clinical virology : the official publication of the Pan American Society for Clinical Virology*. 2010;48(2):120-2.
15. Cheng XD, Yuan Q, Yue QH, Zheng QB, Ma YY, Yang BC, Zhang R, Chen YX, Su MQ, Zhang J, Xia NS, Hao XK. Evaluation of a new rapid influenza A diagnostic test for detection of pandemic (H1N1) 2009 and seasonal influenza A virus. *Journal of clinical virology : the official publication of the Pan American Society for Clinical Virology*. 2011;50(2):153-5.
16. Poepl W, Herkner H, Burgmann H, Pustelnik T, Mooseder G, Popow-Kraupp T, Redlberger-Fritz M. Performance of the QuickVue Influenza A+B rapid test for pandemic H1N1 (2009) virus infection in adults. *PloS one*. 2011;6(12):e28089.
17. Pierro A, Gaibani P, Rossini G, Landini MP, Sambri V. Clinical application of a molecular method based on real time RT-PCR for detection of influenza A(H1N1)v virus. *The new microbiologica*. 2013;36(4):405-8.
18. Sandora TJ, Smole SC, Lee GM, Chung S, Williams L, McAdam AJ. Test characteristics of commercial influenza assays for detecting pandemic influenza A (H1N1) in children. *The Pediatric infectious disease journal*. 2010;29(3):261-2.
19. Zetti ZR, Wong KK, Haslina M, Ilina I. Preliminary evaluation of various rapid influenza diagnostic test methods for the detection of the novel influenza A (H1N1) in Universiti Kebangsaan Malaysia Medical Centre. *The Medical journal of Malaysia*. 2010;65(1):27-30.
20. Olsen SJ, Kittikraisak W, Fernandez S, Suntarattiwong P, Chotpitayasunondh T. Challenges with new rapid influenza diagnostic tests. *The Pediatric infectious disease journal*. 2014;33(1):117-8.
21. Boyanton BL, Almradi A, Mehta T, Robinson-Dunn B. Performance of the Directigen EZ Flu A+B rapid influenza diagnostic test to detect pandemic influenza A/H1N1 2009. *Diagnostic microbiology and infectious disease*. 2014;78(4):360-2.
22. Gröndahl B, Puppe W, Weigl J, Schmitt HJ. Comparison of the BD Directigen Flu A+B Kit and the Abbott TestPack RSV with a multiplex RT-PCR ELISA for rapid detection of influenza viruses and respiratory syncytial virus. *Clinical microbiology and infection : the official publication of the European Society of Clinical Microbiology and Infectious Diseases*. 2005;11(10):848-50.
23. Rashid H, Shafi S, Haworth E, El Bashir H, Ali KA, Memish ZA, Booy R. Value of rapid testing for influenza among Hajj pilgrims. *Travel medicine and infectious disease*. 2007;5(5):310-3.
24. Boivin G, Côté S, Déry P, De Serres G, Bergeron MG. Multiplex real-time PCR assay for detection of influenza and human respiratory syncytial viruses. *Journal of clinical microbiology*. 2004;42(1):45-51.
25. Harada D, Nishiuchi R, Iwasaki Y, Watanabe H, Tokorodani C, Kanazawa A, Kiguchi H, Gotoh S, Miyazawa M, Nakata Y, Morishima T, Kikkawa K. Reliability of a rapid test for the clinical diagnosis of influenza A/H1N1 2009. *Scandinavian journal of infectious diseases*. 2012;44(10):776-81.
26. Pregliasco F, Puzelli S, Mensi C, Anselmi G, Marinello R, Tanzi ML, Affinito C, Zambon MC, Donatelli I, Collaborative Group Influchild. Influenza virological surveillance in children: the use of the QuickVue rapid diagnostic test. *Journal of medical virology*. 2004;73(2):269-73.

27. Ruest A, Michaud S, Deslandes S, Frost EH. Comparison of the Directigen flu A+B test, the QuickVue influenza test, and clinical case definition to viral culture and reverse transcription-PCR for rapid diagnosis of influenza virus infection. *Journal of clinical microbiology*. 2003;41(8):3487-93.
28. Nougairède A, Ninove L, Zandotti C, De Lamballerie X, Gazin C, Drancourt M, La Scola B, Raoult D, Charrel RN. Point of care strategy for rapid diagnosis of novel A/H1N1 influenza virus. *PLoS currents*. 2009;1:RRN1039.
29. Bruning AH, van Dijk K, van Eijk HW, Koen G, van Woensel JB, Krusinga FH, Pajkrt D, Wolthers KC. Evaluation of a rapid antigen detection point-of-care test for respiratory syncytial virus and influenza in a pediatric hospitalized population in the Netherlands. *Diagnostic microbiology and infectious disease*. 2014;80(4):292-3.
30. Stebbins S, Stark JH, Prasad R, Thompson WW, Mitruka K, Rinaldo C, Vukotich CJ, Cummings DA. Sensitivity and specificity of rapid influenza testing of children in a community setting. *Influenza and other respiratory viruses*. 2011;5(2):104-9.
31. Miarka M, Horban A, Maliszewska H, Biliński P, Prus-Kowalczyk W. A clinical utility of a strip test for influenza A/B and comparison with detection by RT PCR. *Acta biochimica Polonica*. 2014;61(3):485-7.
32. Nougairède A, Ninove L, Zandotti C, Thiberville SD, Gazin C, La Scola B, Charrel RN, de Lamballerie X. Interim report on the A/H1N1 influenza virus pandemic in Marseille, France, April-November 2009. *Clinical microbiology and infection : the official publication of the European Society of Clinical Microbiology and Infectious Diseases*. 2010;16(4):322-5.
33. Suntarattiwong P, Jarman RG, Levy J, Baggett HC, Gibbons RV, Chotpitayasunondh T, Simmerman JM. Clinical performance of a rapid influenza test and comparison of nasal versus throat swabs to detect 2009 pandemic influenza A (H1N1) infection in Thai children. *The Pediatric infectious disease journal*. 2010;29(4):366-7.
34. Karre T, Maguire HF, Butcher D, Graepler A, Weed D, Wilson ML. Comparison of Becton Dickinson Directigen EZ Flu A+B test against the CDC real-time PCR assay for detection of 2009 pandemic influenza A/H1N1 virus. *Journal of clinical microbiology*. 2010;48(1):343-4.
35. Herrmann B, Larsson C, Zweygberg BW. Simultaneous detection and typing of influenza viruses A and B by a nested reverse transcription-PCR: comparison to virus isolation and antigen detection by immunofluorescence and optical immunoassay (FLU OIA). *Journal of clinical microbiology*. 2001;39(1):134-8.
36. Crum-Cianflone NF, Blair PJ, Faix D, Arnold J, Echols S, Sherman SS, Tueller JE, Warkentien T, Sanguineti G, Bavaro M, Hale BR. Clinical and epidemiologic characteristics of an outbreak of novel H1N1 (swine origin) influenza A virus among United States military beneficiaries. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2009;49(12):1801-10.
37. Zazueta-García R, Canizalez-Roman A, Flores-Villaseñor H, Martínez-García J, Llausas-Vargas A, León-Sicairos N. Effectiveness of two rapid influenza tests in comparison to reverse transcription-PCR for influenza A diagnosis. *Journal of infection in developing countries*. 2014;8(3):331-8.
38. BinSaeed AA, Siddiqui AR, Mandil AM, Torchyian AA, Tayel SA, Shaikh SA, Habib HA, Al-Khattaf AS. The role of rapid testing and clinical decision in the diagnosis of human influenza A H1N1 infection. *Saudi medical journal*. 2014;35(3):277-84.

39. Nitsch-Osuch A, Wozniak-Kosek A, Korzeniewski K, Zycinska K, Wardyn K, Brydak LB. Accuracy of rapid influenza detection test in diagnosis of influenza A and B viruses in children less than 59 months old. *Advances in experimental medicine and biology*. 2013;788:71-6.
40. Peci A, Winter AL, King EC, Blair J, Gubbay JB. Performance of rapid influenza diagnostic testing in outbreak settings. *Journal of clinical microbiology*. 2014;52(12):4309-17.
41. Tanei M, Yokokawa H, Murai K, Sakamoto R, Amari Y, Boku S, Inui A, Fujibayashi K, Uehara Y, Isonuma H, Kikuchi K, Naito T. Factors influencing the diagnostic accuracy of the rapid influenza antigen detection test (RIADT): a cross-sectional study. *BMJ open*. 2014;4(1):e003885.
42. Biggs C, Walsh P, Overmyer CL, Gonzalez D, Feola M, Mordechai E, Adelson ME, Iacono KT. Performance of influenza rapid antigen testing in influenza in emergency department patients. *Emergency medicine journal : EMJ*. 2010;27(1):5-7.
43. de la Tabla VO, Antequera P, Masiá M, Ros P, Martin C, Gazquez G, Buñuel F, Sánchez V, Robledano C, Gutiérrez F. Clinical evaluation of rapid point-of-care testing for detection of novel influenza A (H1N1) virus in a population-based study in Spain. *Clinical microbiology and infection : the official publication of the European Society of Clinical Microbiology and Infectious Diseases*. 2010;16(9):1358-61.
44. Likitnukul S, Boonsiri K, Tangsuksant Y. Evaluation of sensitivity and specificity of rapid influenza diagnostic tests for novel swine-origin influenza A (H1N1) virus. *The Pediatric infectious disease journal*. 2009;28(11):1038-9.
45. Stripeli F, Sakkou Z, Papadopoulos N, Georgiou V, Gratsia P, Christodoulou I, Tsoia M. Performance of rapid influenza testing in hospitalized children. *European journal of clinical microbiology & infectious diseases : official publication of the European Society of Clinical Microbiology*. 2010;29(6):683-8.
46. Landry ML, Cohen S, Ferguson D. Real-time PCR compared to Binax NOW and cytospin-immunofluorescence for detection of influenza in hospitalized patients. *Journal of clinical virology : the official publication of the Pan American Society for Clinical Virology*. 2008;43(2):148-51.
47. Grijalva CG, Poehling KA, Edwards KM, Weinberg GA, Staat MA, Iwane MK, Schaffner W, Griffin MR. Accuracy and interpretation of rapid influenza tests in children. *Pediatrics*. 2007;119(1):e6-11.
48. Mizuike R, Sasaki T, Baba K, Iwamoto H, Shibai Y, Kosaka M, Kubota-Koketsu R, Yang CS, Du A, Sakudo A, Tsujikawa M, Yunoki M, Ikuta K. Development of two types of rapid diagnostic test kits to detect the hemagglutinin or nucleoprotein of the swine-origin pandemic influenza A virus H1N1. *Clinical and vaccine immunology : CVI*. 2011;18(3):494-9.
49. Angoulvant F, Bellettre X, Houhou N, Dexpert JB, Morin L, Siriez JY, Soole F, de Lauzanne A, Cohen R, Brun-Vezinet F, Alberti C, Mercier JC. Sensitivity and specificity of a rapid influenza diagnostic test in children and clinical utility during influenza A (H1N1) 2009 outbreak. *Emergency medicine journal : EMJ*. 2011;28(11):924-6.
50. Harnden A, Brueggemann A, Shepperd S, White J, Hayward AC, Zambon M, Crook D, Mant D. Near patient testing for influenza in children in primary care: comparison with laboratory test. *BMJ (Clinical research ed.)*. 2003;326(7387):480.
51. Kok J, Blyth CC, Foo H, Patterson J, Taylor J, McPhie K, Ratnamohan VM, Iredell JR, Dwyer DE. Comparison of a rapid antigen test with nucleic acid testing during cocirculation of pandemic influenza A/H1N1 2009 and seasonal influenza A/H3N2. *Journal of clinical microbiology*. 2010;48(1):290-1.

52. Ganzenmueller T, Kluba J, Hilfrich B, Puppe W, Verhagen W, Heim A, Schulz T, Henke-Gendo C. Comparison of the performance of direct fluorescent antibody staining, a point-of-care rapid antigen test and virus isolation with that of RT-PCR for the detection of novel 2009 influenza A (H1N1) virus in respiratory specimens. *Journal of medical microbiology*. 2010;59(Pt 6):713-7.
53. Choi WS, Noh JY, Huh JY, Kee SY, Jeong HW, Lee J, Song JY, Cheong HJ, Kim WJ. The clinical usefulness of the SD Bioline Influenza Antigen Test® for detecting the 2009 influenza A (H1N1) virus. *Yonsei medical journal*. 2011;52(4):683-5.
54. Selim HS, Hashish MH. Performance of a rapid test versus real-time PCR for diagnosis of H1N1 swine flu. *The Journal of the Egyptian Public Health Association*. 2014;89(2):96-9.
55. Reynders M, De Foor M, Maaroufi Y, Thomas I, Vergison A, Debulpaep S, Vandenberg O, Crokaert F. Prospective evaluation of Coris Inlu-A&B Respi-Strip and of BinaxNOW Influenza A&B assay against viral culture and real-time PCR assay for detection of 2009 pandemic influenza A/H1N1v in Belgian patients. *Acta clinica Belgica*. 2012;67(2):94-8.
56. Beckmann C, Hirsch HH. Diagnostic performance of near-patient testing for influenza. *Journal of clinical virology : the official publication of the Pan American Society for Clinical Virology*. 2015;67:43-6.
57. Fuenzalida L, Blanco S, Prat C, Vivancos M, Dominguez MJ, Mòdol JM, Rodrigo C, Ausina V. Utility of the rapid antigen detection BinaxNOW Influenza A&B test for detection of novel influenza A (H1N1) virus. *Clinical microbiology and infection : the official publication of the European Society of Clinical Microbiology and Infectious Diseases*. 2010;16(10):1574-6.
58. Alexander R, Hurt AC, Lamb D, Wong FY, Hampson AW, Barr IG. A comparison of a rapid test for influenza with laboratory-based diagnosis in a paediatric population. *Communicable diseases intelligence quarterly report*. 2005;29(3):272-6.
59. Choi YJ, Nam HS, Park JS, Kim HJ, Park KB, Jeon MH, Kim CJ, Hwangbo Y, Park KS, Baek KA. Comparative analysis of the multiple test methods for the detection of Pandemic Influenza A/H1N1 2009 virus. *Journal of microbiology and biotechnology*. 2010;20(10):1450-6.
60. Ming C, Wei X, Biao A, Han H, Xuezheng L, Hong D. Sensitivity assessment of rapid influenza diagnostic tests for the detection of the 2009 pandemic influenza A (H1N1) virus in clinical specimens. *Laboratory Medicine*. 2010;41(12):731-4.
61. Lee HM, Lee HM, Park HK, Hwang HS, Chun MY, Pai HJ, Oh SH, Kim DA. Diagnostic value of the rapid influenza antigen test for novel influenza A (H1N1). *Scandinavian journal of infectious diseases*. 2011;43(1):43-6.
62. Gao F, Loring C, Laviolette M, Bolton D, Daly ER, Bean C. Detection of 2009 pandemic influenza A(H1N1) virus Infection in different age groups by using rapid influenza diagnostic tests. *Influenza and other respiratory viruses*. 2012;6(3):e30-4.
63. Ivaska L, Niemelä J, Heikkinen T, Vuorinen T, Peltola V. Identification of respiratory viruses with a novel point-of-care multianalyte antigen detection test in children with acute respiratory tract infection. *Journal of clinical virology : the official publication of the Pan American Society for Clinical Virology*. 2013;57(2):136-40.
64. Koul PA, Mir H, Bhat MA, Khan UH, Khan MM, Chadha MS, Lal RB. Performance of rapid influenza diagnostic tests (QuickVue) for influenza A and B Infection in India. *Indian journal of medical microbiology*. 2015;33 Suppl:26-31.
65. Lucas PM, Morgan OW, Gibbons TF, Guerrero AC, Maupin GM, Butler JL, Canas LC, Fonseca VP, Olsen SJ, MacIntosh VH. Diagnosis of 2009 pandemic influenza A (pH1N1) and seasonal



- influenza using rapid influenza antigen tests, San Antonio, Texas, April-June 2009. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2011;52 Suppl 1:S116-22.
66. Pongthanapisith V, Sukasem C, Premchaiporn K, Srichantaratsamee C, Chantratita W. Clinical performance of three rapid diagnostic tests for influenza virus in nasopharyngeal specimens to detect novel swine-origin influenza viruses. *Infection*. 2011;39(2):105-11.
  67. Cruz AT, Demmler-Harrison GJ, Caviness AC, Buffone GJ, Revell PA. Performance of a rapid influenza test in children during the H1N1 2009 influenza a outbreak. *Pediatrics*. 2010;125(3):e645-50.
  68. Hawkes M, Richardson SE, Ipp M, Schuh S, Adachi D, Tran D. Sensitivity of rapid influenza diagnostic testing for swine-origin 2009 a (H1N1) influenza virus in children. *Pediatrics*. 2010;125(3):e639-44.
  69. Berthod D, Genton B, Hatz C, Blum J, de Vallière S. Ability of physicians to diagnose influenza and usefulness of a rapid influenza antigen test in febrile returning travelers: A randomized controlled trial. *Travel medicine and infectious disease*. 2015;13(5):394-9.
  70. Louie JK, Guevara H, Boston E, Dahlke M, Nevarez M, Kong T, Schechter R, Glaser CA, Schnurr DP. Rapid influenza antigen test for diagnosis of pandemic (H1N1) 2009. *Emerging infectious diseases*. 2010;16(5):824-6.
  71. Self WH, McNaughton CD, Grijalva CG, Zhu Y, Chappell JD, Williams JV, Talbot HK, Shay DK, Griffin MR. Diagnostic performance of the BinaxNow Influenza A&B rapid antigen test in ED patients. *The American journal of emergency medicine*. 2012;30(9):1955-61.
  72. Gooskens J, Swaan CM, Claas EC, Kroes AC. Rapid molecular detection of influenza outbreaks in nursing homes. *Journal of clinical virology : the official publication of the Pan American Society for Clinical Virology*. 2008;41(1):7-12.
  73. Gimeno C, Bravo D, Ocete D, Tormo N, Navalpotro D, Costa E, de Lomas JG, Navarro D. Comparison of BinaxNOW Influenza A&B assay and real-time reverse transcription polymerase chain reaction for diagnosis of influenza A pandemic (H1N1) 2009 virus infection in adult patients. *Diagnostic microbiology and infectious disease*. 2010;68(4):456-8.
  74. Nitsch-Osuch A, Woźniak-Kosek A, Brydak LB. Accuracy of rapid influenza diagnostic test and immunofluorescence assay compared to real time RT-PCR in children with influenza A(H1N1)pdm09 infection. *Postepy higieny i medycyny doswiadczalnej (Online)*. 2012;66:752-7.
  75. Scansen KA, Bonsu BK, Stoner E, Mack K, Salamon D, Leber A, Marcon MJ. Comparison of polyurethane foam to nylon flocced swabs for collection of secretions from the anterior nares in performance of a rapid influenza virus antigen test in a pediatric emergency department. *Journal of clinical microbiology*. 2010;48(3):852-6.
  76. Li M, Brenwald N, Bonigal S, Chana K, Osman H, Oppenheim B. Rapid diagnosis of influenza: an evaluation of two commercially available RT-PCR assays. *The Journal of infection*. 2012;65(1):60-3.
  77. Noh JY, Choi WS, Lee J, Kim HL, Song JY, Cheong HJ, Kim WJ. Clinical performance of the Sofia™ Influenza A+B FIA in adult patients with influenza-like illness. *Diagnostic microbiology and infectious disease*. 2015;83(2):130-2.
  78. Yasuda C, Sovann L, Kasper M, Williams M, Wierzbza TF. Epidemiological characteristics, clinical presentation and diagnosis at point-of-care during the first wave of the H1N1 influenza

- pandemic in Cambodia. *The Southeast Asian journal of tropical medicine and public health*. 2012;43(1):68-77.
79. Kasper MR, Putnam SD, Sovann L, Yasuda CY, Blair PJ, Wierzba TF. Short report: Rapid-test based identification of influenza as an etiology of acute febrile illness in Cambodia. *The American journal of tropical medicine and hygiene*. 2011;85(6):1144-5.
  80. Kenmoe S, Tchendjou P, Moyo Tetang S, Mossus T, Njankouo Ripa M, Guillet M, Kfutwah A, Njouom R. Evaluating the performance of a rapid antigen test for the detection of influenza virus in clinical specimens from children in Cameroon. *Influenza and other respiratory viruses*. 2014;8(2):131-4.
  81. Hazelton B, Nedeljkovic G, Ratnamohan VM, Dwyer DE, Kok J. Evaluation of the Sofia Influenza A + B fluorescent immunoassay for the rapid diagnosis of influenza A and B. *Journal of medical virology*. 2015;87(1):35-8.
  82. Nilsson AC, Alemo B, Björkman P, Dillner L, Melhus A, Nilsson B, Widell A. Around-the-clock, rapid diagnosis of influenza by means of membrane chromatography antigen testing confirmed by polymerase chain reaction. *Infection control and hospital epidemiology*. 2008;29(2):177-9.
  83. Eggers M, Enders M, Terletskaia-Ladwig E. Evaluation of the Becton Dickinson Rapid Influenza Diagnostic Tests in Outpatients in Germany during Seven Influenza Seasons. *PloS one*. 2015;10(5):e0127070.
  84. Watanabe M, Nukuzuma S, Ito M, Ihara T. Viral load and rapid diagnostic test in patients with pandemic H1N1 2009. *Pediatrics international : official journal of the Japan Pediatric Society*. 2011;53(6):1097-9.
  85. Nogueira JM, Alberola J, Alcaraz MJ, García de Lomas J, Navarro D. Becton Dickinson Directigen EZ Flu A+B assay in the diagnosis of pandemic influenza A H1N1 2009 virus infection in adult patients. *Influenza and other respiratory viruses*. 2011;5(3):146-7.
  86. Simmerman JM, Chittaganpitch M, Erdman D, Sawatwong P, Uyeki TM, Dowell SF. Field performance and new uses of rapid influenza testing in Thailand. *International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases*. 2007;11(2):166-71.
  87. Faix DJ, Sherman SS, Waterman SH. Rapid-test sensitivity for novel swine-origin influenza A (H1N1) virus in humans. *The New England journal of medicine*. 2009;361(7):728-9.
  88. Kwon D, Shin K, Kwon M, Oh HB, Kang C, Lee JY. Development and evaluation of a rapid influenza diagnostic test for the pandemic (H1N1) 2009 influenza virus. *Journal of clinical microbiology*. 2011;49(1):437-8.
  89. Jokela P, Vuorinen T, Waris M, Manninen R. Performance of the Alere i influenza A&B assay and mariPOC test for the rapid detection of influenza A and B viruses. *Journal of clinical virology : the official publication of the Pan American Society for Clinical Virology*. 2015;70:72-76.
  90. Hara M, Takao S, Shimazu Y. Use of two rapid influenza diagnostic tests, QuickNavi-Flu and QuickVue Influenza A+B, for rapid detection of pandemic influenza A (H1N1) 2009 viruses in Japanese pediatric outpatients over two consecutive seasons. *Diagnostic microbiology and infectious disease*. 2013;75(2):222-4.
  91. Rahman M, Vandermause MF, Kieke BA, Belongia EA. Performance of Binax NOW Flu A and B and direct fluorescent assay in comparison with a composite of viral culture or reverse

- transcription polymerase chain reaction for detection of influenza infection during the 2006 to 2007 season. *Diagnostic microbiology and infectious disease*. 2008;62(2):162-6.
92. Gordon A, Videa E, Saborio S, López R, Kuan G, Reingold A, Balmaseda A, Harris E. Performance of an influenza rapid test in children in a primary healthcare setting in Nicaragua. *PloS one*. 2009;4(11):e7907.
  93. Bellmann-Weiler R, Beikircher B, Kurz K, Theurl I, Weiss G. Accuracy of bedside antigen tests in the diagnosis of new influenza A/H1N1v infection. *Clinical microbiology and infection : the official publication of the European Society of Clinical Microbiology and Infectious Diseases*. 2011;17(2):235-7.
  94. Poehling KA, Griffin MR, Dittus RS, Tang YW, Holland K, Li H, Edwards KM. Bedside diagnosis of influenzavirus infections in hospitalized children. *Pediatrics*. 2002;110(1 Pt 1):83-8.
  95. Gordon A, Videa E, Saborío S, López R, Kuan G, Balmaseda A, Harris E. Diagnostic accuracy of a rapid influenza test for pandemic influenza A H1N1. *PloS one*. 2010;5(4):e10364.
  96. Talbot HK, Williams JV, Zhu Y, Poehling KA, Griffin MR, Edwards KM. Failure of routine diagnostic methods to detect influenza in hospitalized older adults. *Infection control and hospital epidemiology*. 2010;31(7):683-8.
  97. Keitel K, Wagner N, Lacroix L, Manzano S, Gervais A. Performance characteristics of a rapid immunochromatographic assay for detection of pandemic influenza A (H1N1) virus in children. *European journal of pediatrics*. 2011;170(4):511-7.
  98. Uyeki TM, Prasad R, Vukotich C, Stebbins S, Rinaldo CR, Ferng YH, Morse SS, Larson EL, Aiello AE, Davis B, Monto AS. Low sensitivity of rapid diagnostic test for influenza. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2009;48(9):e89-92.
  99. Kim YK, Uh Y, Chun JK, Kim C, Kim HY. Evaluation of new hemagglutinin-based rapid antigen test for influenza A pandemic (H1N1) 2009. *Journal of clinical virology : the official publication of the Pan American Society for Clinical Virology*. 2010;49(1):69-72.
  100. Al Johani SM, Al Balawi M, Al Alwan B, Al Hefdh R, Hajeer A. Validity of two rapid point of care influenza tests and direct fluorescence assay in comparison of real time PCR for swine of origin Influenza virus. *Journal of infection and public health*. 2011;4(1):7-11.
  101. Brotons P, Launes C, Iñigo M, Peris N, Selva L, Muñoz-Almagro C. Performance of a rapid multi-analyte 2-photon excitation assay in children with acute respiratory infection. *Diagnostic microbiology and infectious disease*. 2014;79(2):190-3.
  102. Stein J, Louie J, Flanders S, Maselli J, Hacker JK, Drew WL, Gonzales R. Performance characteristics of clinical diagnosis, a clinical decision rule, and a rapid influenza test in the detection of influenza infection in a community sample of adults. *Annals of emergency medicine*. 2005;46(5):412-9.
  103. Lee GC, Jeon ES, Kim WS, Le DT, Yoo JH, Chong CK. Evaluation of a rapid diagnostic test, NanoSign® Influenza A/B Antigen, for detection of the 2009 pandemic influenza A/H1N1 viruses. *Virology journal*. 2010;7:244.
  104. Diederer BM, Veenendaal D, Jansen R, Herpers BL, Ligtvoet EE, Ijzerman EP. Rapid antigen test for pandemic (H1N1) 2009 virus. *Emerging infectious diseases*. 2010;16(5):897-8; author reply 898.
  105. Watcharananan S, Kiertiburanakul S, Chantratita W. Rapid influenza diagnostic test during the outbreak of the novel influenza A/H1N1 2009 in Thailand: an experience with better test performance in resource limited setting. *The Journal of infection*. 2010;60(1):86-7.

106. Mitamura K, Kawakami C, Shimizu H, Abe T, Konomi Y, Yasumi Y, Yamazaki M, Ichikawa M, Sugaya N. Evaluation of a new immunochromatographic assay for rapid identification of influenza A, B, and A(H1N1)2009 viruses. *Journal of infection and chemotherapy : official journal of the Japan Society of Chemotherapy*. 2013;19(4):633-8.
107. Nutter S, Cheung M, Adler-Shohet FC, Krusel K, Vogel K, Meyers H. Evaluation of indirect fluorescent antibody assays compared to rapid influenza diagnostic tests for the detection of pandemic influenza A (H1N1) pdm09. *PLoS one*. 2012;7(3):e33097.
108. Hazelton B, Gray T, Ho J, Ratnamohan VM, Dwyer DE, Kok J. Detection of influenza A and B with the Alere™ i Influenza A & B: a novel isothermal nucleic acid amplification assay. *Influenza and other respiratory viruses*. 2015;9(3):151-4.
109. Lewandrowski K, Tamerius J, Menegus M, Olivo PD, Lollar R, Lee-Lewandrowski E. Detection of influenza A and B viruses with the Sofia analyzer: a novel, rapid immunofluorescence-based in vitro diagnostic device. *American journal of clinical pathology*. 2013;139(5):684-9.
110. Boivin G, Hardy I, Kress A. Evaluation of a rapid optical immunoassay for influenza viruses (FLU OIA test) in comparison with cell culture and reverse transcription-PCR. *Journal of clinical microbiology*. 2001;39(2):730-2.