

Chapter

**THE HISTORY AND FUTURE OF
CYBERNEPHROLOGY AND RELATIONSHIP TO
THE BANFF CLASSIFICATION**

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ABSTRACT

There is hardly anyone in nephrology who does not know what the Banff Classification of Transplant Pathology is. It is the subject of over 1,000 articles and is referenced in over 10,000 publications. On the other hand, cyberNephrology is relatively unknown especially among younger nephrologists. However, Banff would not exist without cyberNephrology, as in the early days of the Banff meetings the major funding came from cyberNephrology, a substantial investment from the National Kidney Foundation (NKF), US, over the ten years from 1997 to 2007 that then continued self funded with student staffing for another eleven years plus to the present day and beyond. The student staffing created a unique positive culture in the cyberNephrology office that led to a major mentoring award and a comfortable empowering atmosphere for young people. This article is about both cyberNephrology the initiative, and cyberNephrology the room.

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INTRODUCTION

KIM SOLEZ AS SEEN BY GOOGLE

Let us begin as Google begins. If you Google the first author in January 2018, this link comes up on top <https://www.ualberta.ca/medicine/about/people/kim-solez> and the text displayed with it depends on whether you are on a desktop machine or a mobile device.

On a desktop machine, this text appears from the 16th paragraph. It is a description of the rationale behind “The Future and All That Jazz” initiative with Mallory Chipman: <https://www.youtube.com/watch?v=YAo2kWqmX6A>.

We may think that all subjects of discourse are of equal value, you talk about what interests you, I talk about what interests me, but actually there are some ideas on which human survival depends and those are more important to keep in circulation. It is not a matter of everyone agreeing on these ideas, just the ideas themselves not being forgotten.

On a mobile device, this text appears from the 8th paragraph describing this Banff Classification-focused slide show from the wall screen in the cyberNephrology office:

The 102-slide PowerPoint slide show playing on the wall screen in office 5B3.09 "204 Years of the Banff Spirit"; <https://www.slideshare.net/ksolez/kim-solez-204-years-of-banff-spirit-november-10-2017>. It updates as my life evolves.

Figure 1. Kim Solez Exponential Timeline. Modified from Ref. 1.



The first slide in the 102-slide slide-show playing on the 60” wall screen in the cyberNephrology office at the University of Alberta Hospital. Modified from Figure 3 in Reference 1 [1].

The 204 year timeline figure had its origin in these two mentor lists <https://www.facebook.com/notes/kim-solez/fifty-celebrity-mentors-musicians-poets-writers-physicians-scientists/10155325600211084/> (celebrities) and <https://www.facebook.com/notes/kim-solez/kim-solezs-mentors-dynamic-alphabetical-list-of-150-consistent-with-dunbars-numb/10152467854781084/> (everyone).

On mobile devices, when Googling Kim Solez one finds a section at top entitled “Videos from the Web” that lists ten videos in this sequence, which bears no relationship to number of views, or views/year:

Kim Solez Medicine Writ Large TEDMED Live 2013 Presentation ...
<https://www.youtube.com/watch?v=sK3LjLP7e2U>

Kim Solez Transplant Pathology Becomes Tissue Engineering ...
<https://www.youtube.com/watch?v=MGRQizyn-c>

Kim Solez Introduction to Tech and Future of Medicine Course Winter ...
<https://www.youtube.com/watch?v=cOFV-1MLtuo>

Kim Solez The Singularity Explained and Promoted Winter 2014 Tech ...
https://www.youtube.com/watch?v=6b_BMomHoVw

Kim Solez The Singularity Explained and Promoted January 2013 ...
<https://www.youtube.com/watch?v=ZIf9KNmQr2I>

Kim Solez Birthday Party June 20 2016 Final Segment - YouTube11:40
<https://www.youtube.com/watch?v=EQAXChXbbUc>

Kim Solez Banff Classification History Background Summer of '63 and ...
<https://www.youtube.com/watch?v=opqH-WXOA20>

Kim Solez Bridge Between Transplantation and Regenerative ...
<https://www.youtube.com/watch?v=LU4jRQRP-CU>

Kim Solez Future of Pathology Tissue Engineering Pathology - YouTube
<https://www.youtube.com/watch?v=zp1EoXxPM-w>

Kim Solez Mallory Chipman Pathology Meets The Future and All That ...

<https://www.youtube.com/watch?v=I8TOJGQanJg>

A similar but non-identical sequence is encountered on a desktop machine if one clicks on “videos” at top when Googling Kim Solez, you get on the first page:

The link to the first author’s YouTube channel:

<https://www.youtube.com/user/KimSolez>

And then these nine videos beginning (as in the list above) with the TEDMED Live Medicine Writ Large presentation from 2013:

Kim Solez Medicine Writ Large TEDMED Live 2013 Presentation ...

<https://www.youtube.com/watch?v=sK3LjLP7e2U>

Kim Solez Introduction to Tech and Future of Medicine Course Winter ...

<https://www.youtube.com/watch?v=cOFV-1MLtuo>

Kim Solez The Future of Medicine - YouTube

<https://www.youtube.com/watch?v=NFqPz4sRmBQ>

Kim Solez The Singularity Explained and Promoted Winter 2014 Tech ...

https://www.youtube.com/watch?v=6b_BMomHoVw

Kim Solez Mallory Chipman Pathology Meets the Future and All That ...

<https://www.youtube.com/watch?v=I8TOJGQanJg>

Kim Solez Technology and the Future of Medicine the Course and ...

https://www.youtube.com/watch?v=BjOIzBR_X3Y

Kim Solez Birthday Party June 20 2016 Final Segment - YouTube

<https://www.youtube.com/watch?v=EQAXChXbbUc>

Kim Solez Shawna Pandya Med Students Future of Medicine ...

<https://www.youtube.com/watch?v=10T92R7CsHM>

Kim Solez Banff Classification History Background Summer of '63 and ...

<https://www.youtube.com/watch?v=opqH-WXOA20>

On a mobile device, when one does an image search on the first author, one is offered a word cloud in blue green boxes to further refine the search: “singularity course, poetry, course, announcement, ago, years, Lorraine Racusen, or technology.” If one clicks on “announcement, years, or doc” then cyberNephrology or NKF cyberNephrology appears in the secondary theme choices.

WHAT (OR HOW MANY THINGS) IS CYBERNEPHROLOGY?

Is cyberNephrology a place or an initiative? What is its relationship to the Banff Classification, Medicine Writ Large, the Technology and Future of Medicine Course, and The Future and All That Jazz initiative? Actually, it is both a room, a highly significant place with rich history and connection to Kim Solez mentoring over 40+ years, and an important medical education and communications initiative which continues to be very active today, with Medicine Writ Large, the Technology and Future of Medicine Course, and The Future and All That Jazz as important spinoffs. Here in Table 1, you see the initiative history and then, in Table 2 below, you see the mentoring history.

The recent acquisition of a 4K camcorder with Sony SmileShutter still image capability has improved considerably the quality of the videos and still images coming out of cyberNephrology and the Technology and Future of Medicine Course and showing on the 60” wall screen in the office.

The 20-video YouTube playlist for the Banff Classification History and Future shows how intertwined Banff and cyberNephrology are: https://www.youtube.com/playlist?list=PLS1ZP4out6bP2x_dUjydyLU2vsWZ52L8z&disable_polymer=true. Most of the videos in the playlist take place in the cyberNephrology office.

NKF cyberNephrology was visioned by the NKF in 1996. Dr. Solez informed the NKF he was already doing the things described in the initiative and was appointed the director. Remarkably insightful, no other voluntary health organization has had similar technology impact. Earlier Internet initiatives in other health disciplines - dermatology, anesthesiology, and nursing - were individual or institutional efforts (Table 1). As a consequence of this NKF initiative, nephrology caught up to and surpassed these other disciplines, with Internet resources superior to those in any other area. Included were: Electronic/Internet versions of NKF publications, professional and patient education and peer support over the Internet using Email and web resources, medical textbooks online, hands-on workshops, symposia, videoconferencing, and technology vision for the future.

cyberNephrology is/was the embodiment of kidney medicine's embrace of technology, with a wealth of offerings for physicians, other nephrology professionals, and patients and families. Thirty-six email discussion groups were created, many of which still exist today, along with many websites. The website <http://www.cybernephrology.org> was created and reflects the breadth of activities but has been static without new content since 2011.

Table 1. The History of Nephrology on the Internet.

Year	Nephrology Specific Developments	General Medical Internet Developments
1992		WWW Invented
1993		NURSENET created (Norris) GASNET created (Ruskin)
1994	NEPHROL, RPS- ONLINE and ISN-ONLINE created (Solez/Hales)	Global Dermatology Grand Rounds created (Drugge) Global Health Network University proposed (LaPorte) MEDLAB-L created (Letendre) CCM-L created (Crippen)
1995	HDCN created (Daugirdas)	Internet Dermatology Society founded (Drugge)
1996	NKF cyberNephrology visioned	
1997	NKF cybernephrology created and ISN Informatics Commission (Solez) NEPHNPPT and RENALRD created	PubMed/Free Medline searching initiated Global Health Network Supercourse begins (LaPorte)
1998	NEPHKIDS and NEPHDEVEL created	
1999		
2000	Schrier Atlas goes online, Technology and the ISN: cyberNephrology and the Informatics Commission published [2]	

Year	Nephrology Specific Developments	General Medical Internet Developments
2001	2001 KDOQI online, ARABNEPHROL created	www.cyber-medicine.org created (Solez, Katz)
2002		HINARI initiated (WHO)
2003	KDIGO initiated	
2004	UKidney	
2005	Solez et al. article Kidney International [3]	
2006		
2007		
2008	Renal Fellow Network formed, Precious Bodily Fluids	
2009		
2010	Renal Fellow Network partners with NKF	
2011	Sparks et al. article AKJD [4]	Technology& Future of Medicine Course begins (Solez) singularitycourse.com
2012	FOAMed created	
2013		Fig1 created, Solez TEDMED Live talk Medicine Writ Large
2014	NephJC created	QXMD created
2015		
2016		Technology&Future Med course taught to entire first year med class at UAlberta
2017	Topf et al., The Evolution of the Journal Club: From Osler to Twitter AJKD article [5], Sparks and Topf; NephMadness After 5 Years: A Recap and Game Plan for the Future [6] (In press 2018)	Future&All That Jazz, an extension of the Technology&Future Med course, Performs at TERMIS-AM in Charlotte NC

Table 2. List of the 34 trainees of Kim Solez with medical publications (Updated to January 2018) *

Rienhoff, H.Y., Jr. 1973-75 22 Publications
 Quarles, P.A. 1973-75 1 Publication
 Fox (Nuovo), J 1973-75 2 Publications
 Vernon, N. 1974-79 4 Publications
 Ideura, T. 1977-79 94 Publications
 Racusen, L.C. 1979-83 141 Publications, Past-president of the Renal Pathology Society, and recipient of the Jacob Churg award for achievements in Renal Pathology, Catalan Society of Transplantation Gold Medal 2017
 Malis, C.D. 1982-84 11 Publications
 Kone, B.C. 1984-86 103 Publications, Past Dean of University of Florida College of Medicine, selected to "Best Doctors in America" 2005-2014 and to Marquis "Who's Who In America"
 Marcussen, N. 1991-92 163 Publications, 1992 Publication Award University of Aarhus, 2011 Danish Society of Transplantation Award
 Trpkov, K. 1993-1997, 107 Publications, received numerous teaching awards and is featured at the Great teachers at the University of Calgary Web-site
 Gibson, I.W. 1994-96 73 Publications, Educator & Mentor of the Year Award University of Winnipeg
 Abdulkareem, F.B. 1996-97 50 Publications, Professor/Head, Department of Anatomic & Molecular Pathology, University of Lagos, Nigeria
 Pakasa, N. 1996-97 12 publications
 Afrouzian, M. 1997-99 13 Publications
 Sis, B. 2003-04 102 Publications, CAP Junior Scientist Award, WTC Domestic Young Investigator Award, Gloria Gallo Award by the Renal Pathology Society
 Taheri, D. 2004-06 47 Publications
 Aryal, G. 2005 14 Publications
 Azhir, A. 2006 19 Publications
 Riopel, J. 2006-07 19 Publications
 Sheldon, V. 2007-2011 1 Publication
 Pant, A.D. 2009-10 6 Publications
 Blanco, P. 2008-11 2 Publications
 Osasan, S.A. 2009-11 10 Publications
 Kuttikat, P. 2011-14 1 Publication
 Bernier, A. 2012 3 Publications
 Lockwood, R. 2012 3 Publications
 Colak A 2012 1 Publication
 Saliba, K.A. 2012-13 3 Publications
 Joudeh, A. 2012 9 Publication
 Husain, S. 2011-12 2 Publications
 Monroe, D. 2013 1 Publication
 Dong, A. 2014 2 Publications
 Fung, K. 2014 1 Publication
 Rakhmetova, A 2015-17 1 Publication
 Baishya, P 2017 1 Publication

*This list excludes trainees with common names where publication stats are hard to determine Wong, A., Wong, J., McGraw, D., Anand, M., Takeda, K., Taira, T. and Nishi, T. and trainees who were on papers with Dr. Solez in the 70s, 80s, or 90s and never again appeared in the medical literature Kramer, E.C., Finer, P.M., Riela, A.R., Ponchak, S., Buono, R.A., D'Agostini, R.J., Stawowy, L., Slatnik, I., and Bond, C. Jr. If those individuals are included the total number of trainees with publications rises to 50.

HOW KIM SOLEZ- AND/OR EDMONTON-ORIENTED IS CYBERNEPHROLOGY?

To our knowledge the only instance of the use of the word cyberNephrology for something not Kim Solez - and/or Edmonton - oriented is QxMD Medical Director Daniel Schwartz's presentation at the World Congress of Nephrology 2015 in Cape Town during the session: "Challenges in education and training of nephrologists for the developing countries".

<https://www.slideshare.net/danielschwartz14019/cybernephrology>.

The Sparks et al. article from AJKD in 2011 "Embracing the Internet as a Means of Enhancing Medical Education in Nephrology" [4] is not Kim Solez- or Edmonton-oriented, but does not use the word cyberNephrology. The AJKD article in press "NephMadness After 5 Years: A Recap and Game Plan for the Future" [6] also does not use the word cyberNephrology.

HOW IMPORTANT IS THE SHARED ROOM STATUS OF CYBERNEPHROLOGY AS A SOCIAL/EDUCATIONAL EXPERIMENT? – DR. SOLEZ SHARING THE ROOM WITH STUDENTS AND TRAINEES AGE 17-33?

It is important that people realize that such a configuration is possible and what its advantages are. It is certainly not for everyone. Lean Process expert Dr. Richard Zarbo [7] visited the room and declared that its myriad of beautiful art and artefacts from Dr. Solez and the trainees were compatible with Lean Processes (Figure 2).

This space also has animal friends: a Sony Aibo robotic dog and a robotic cat named Orange, as well as a buddy bench nearby the office to encourage friendship and discussion among strangers in the workplace and to combat social isolation (Figure 3).

Undergraduate students and medical trainees are encouraged to learn without limitations and to work along-side experts with the same respect and trust flowing in both directions. It is a place where the young generation is entrusted with discussing and deliberating the future on a coequal basis without encountering bias against them from previous generations. The types of interactions and empowering discussions that take place in cyberNephrology are rarely found elsewhere. See the chapter-enhancement video at <https://www.youtube.com/watch?v=SbeIatn3Pv8> .

Figure 2. Dr. Richard Zarbo visiting cyberNephrology in April 2016.



Figure 3. Buddy Bench Around the Corner from cyberNephrology.



WHAT IS THE FUTURE OF THE CYBERNEPHROLOGY EMAIL DISCUSSION GROUPS?

Not only are most young people today unaware that there is such a thing as an Email discussion group, but when the concept is explained to them they are skeptical that such a cumbersome communication vehicle could actually still be in use in 2018! Despite all the self-praising that goes on in the remaining Email discussion groups, should Dr. Solez become unable to continue to manage the current groups, they should be converted to some more modern form of communication involving social media.

HOW WAS LOCAL PERFORMANCE IN THE NEPHMADNESS COMPETITION?

UAlberta Nephro Fellows stood overall 3rd among 32 programs in NephMadness [6] in 2017. See Figure 4.

Figure 4. NephMadness rankings in 2017.

https://www.tourneytopia.com/ajk

3	Nephron333	614804	48	
4	dsawinski	614940	45	
5	Etcarey	614857	44	

More Standings

Featured Entries

Rank	User	Entry ID	Points	Commer
6	VCUrine	614957	43	0
13	ECUNeph	602812	41	0
36	UAlbertaNeph	614874	36	0
68	UCSF_Fellows_First	614802	34	0
83	HCMC_Nephrons	615051	33	0
83	PennKidney	614668	33	0
83	VandyNeph	614750	33	0
114	WUNephrology	614867	32	0
114	BIDMC	614770	32	0
168	Duke Fellowship	608128	30	0
168	nyu2020	615098	30	0
168	WRNMMC Neph	615021	30	0
168	WRNMMC Neph	615022	30	0

HOW IS IT THAT AN ENTITY THAT IS TWENTY-ONE YEARS OLD IS NOT JUST RESTING ON ITS LAURELS BUT INSTEAD REMAINING CENTRALLY INVOLVED IN SUCH CUTTING-EDGE INITIATIVES AS TISSUE ENGINEERING PATHOLOGY, THE FUTURE AND ALL THAT JAZZ, MEDICINE WRIT LARGE, AND TOLERANCE FROM INDUCTION OF ALLOGRAFT CHIMERISM?

We do not think Kim Solez would respect himself when he looked in the mirror every morning if that were not the case. There has to always be a multifaceted futuristic thrusting forward, especially in the areas of regenerative medicine and artificial intelligence [8-12]. The students and medical trainees in cyberNephrology are happy to be a part of that.

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