



Cancer Informatics @CI4CC Oct 3

#GCDS2014 Excellent Meeting!



Brandon M. Welch @WelchBM Oct 3

#gcds2014 great meeting, it was nice to have interested parties sitting around the table discussing issues and opportunities of genomic CDS



Robert Freimuth @RobertFreimuth Oct 3

My favorite phrase of the day: "socio-technical progress". So true - often need both components to move a project forward. #gcds2014



Jessie Tenenbaum @jessiet1023 Oct 3

@bfm are these synthesis slides available? #GCDS2014



Cancer Informatics @CI4CC Oct 3

Just phenomenal watching GenomeTV Live. Genomic Medicine Centers Meeting VII (GM7) going on now. #GCDS2014 <http://www.genome.gov/GenomeTVLive/> @ci4cc



Arabgenes @Arabgenes Oct 3

RT @genome_gov: Live now: day 2 of Genomic Medicine Centers Meeting VII: Genomic Clinical Decision Support #GCDS2014 <http://www.genome.gov/GenomeTVLive/>



Blackford Middleton @bfm Oct 3

#gcds2014 great group



Jessie Tenenbaum @jessiet1023 Oct 3

oh crap #GCDS2014



Jessie Tenenbaum @jessiet1023 Oct 3

someone please volunteer me? [#GCDS2014](#)



Jessie Tenenbaum @jessiet1023 Oct 3

I'm not there in person b/c i'm in UK. SO much on this side of the pond and elsewhere [#GCDS2014](#) e.g. [@biosharing](#) [@resdatall](#)- global in scope



Jessie Tenenbaum @jessiet1023 Oct 3

YES- let's make sure to keep international perspective in mind. (don't know who that is who made this point?) [#GCDS2014](#) and [#GA4GH](#)



Luke R. @Irasmus Oct 3

Great point from Dr. Kawamoto to focus on being agile & adding incremental value. Rapidly deliver value exploring this space [#GCDS2014](#)



Brandon M. Welch @WelchBM Oct 3

[@Irasmus](#) [#gcds2014](#) Will be presenting my GCDS prototype at S58: Papers - Personalized Medicine, on Tues Nov 18, from 10:30AM to 12PM



Robert Freimuth @RobertFreimuth Oct 3

Shout out for AMIA Genomics/TBI WG and incoming chair [@jessiet1023](#) at [#gcds2014](#)



Brandon M. Welch @WelchBM Oct 3

#gcds2014 can't reiterate Desiderata #12 enough: Leverage current and developing CDS and genomics standards (and infrastructure & resources)



genome.gov @genome.gov Oct 3

Live now: day 2 of Genomic Medicine Centers Meeting VII: Genomic Clinical Decision Support **#GCDS2014**
<http://www.genome.gov/GenomeTVLive/>



Robert Freimuth @RobertFreimuth Oct 3

Standards are developed by those that show up. One key to a robust std is including wide variety of use cases. Need outreach. **#gcds2014**



Brandon M. Welch @WelchBM Oct 3

#gcds2014 research funding doesn't typically cover standards development, but funding is needed to support this important effort –KK



Robert Freimuth @RobertFreimuth Oct 3

The patient is the constant actor, what is their role? - Marc Williams **#gcds2014**



Mark Hoffman @markhoffmankc Oct 3

#gcds2014 Here is the paper I mentioned about genotype guided prescribing discrepancies
<http://www.ncbi.nlm.nih.gov/pubmed/17926650>



Wojtech Huser @vojtechuser Oct 3

#GCDS2014 to advance: we may create inventory of current GCDS systems (acdmc+commercial) and point to strengths and weaknesses and amalgamate



Brandon M. Welch @WelchBM Oct 3

@Irasmus @RobertFreimuth Yes, we can't allow perfect to be the enemy of good. **#gcds2014**



Robert Freimuth @RobertFreimuth Oct 3

We need a way to demonstrate compliance with a chosen standard. Not enough to claim it - prove it. Meaningful interoperability++ **#gcds2014**



Robert Freimuth @RobertFreimuth Oct 3

@Irasmus It's relatively easy to claim a product is std-based. It's much harder to demonstrate meaningful interoperability. **#gcds2014**



Luke R. @Irasmus Oct 3

w/ all the talk of standards, interop, etc. - curious how many vendors are tuned in AND taking note? **#GCDS2014**



Brandon M. Welch @WelchBM Oct 3

@RobertFreimuth veeeery true, and everyone will never be satisfied with the standards that are defined. **#gcds2014**



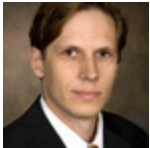
Robert Freimuth @RobertFreimuth Oct 3

@WelchBM Consensus that we need stds, yes. About what they should be? Not yet. No disagreement b/c we're not discussing details. #gcds2014



Brandon M. Welch @WelchBM Oct 3

#gcds2014 really enjoying this discussion on standards and interoperability for genome CDS, seems like we're coming to a consensus



Vojtech Huser @vojtechhuser Oct 3

#GCDS2014 to propose consensus on building blocks for CDS - everyone OK with VCF as patient genomic input?for report output - I propose XML



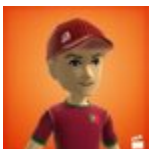
Vojtech Huser @vojtechhuser Oct 3

#GCDS2014 two similar standards are worse than no standard. Improve existing standard. So we all join HL7 genomic group...? @jessiet1023



Jessie Tenenbaum @jessiet1023 Oct 3

Friends don't let friends create new standards. (paraphrasing KK) #GCDS2014



Nathan H. @cabogirao Oct 3

Chute: Value sets are the 'tail', information models to which they are bound, are the 'dog'. Sets have no meaning w/o context. #GCDS2014



liz worthey @lizworthey Oct 3

MW + BM: event monitors embedded in the EHR and PHR systems [#gcds2014](#)



liz worthey @lizworthey Oct 3

MW + BM: system generated alert at the "teachable moment" could be at point of; diagnostic testing, therapy decision, counseling [#gcds2014](#)



liz worthey @lizworthey Oct 3

MW + BM: automated tracking of outcomes versus user decisions, with upload of outcomes to CDS Public Library [#gcds2014](#)



Jessie Tenenbaum @jessiet1023 Oct 3

looking forward to day 2 of [#GCDS2014](#), now starting at <http://www.genome.gov/GenomeTVLive/> [#genomic](#)
[#CDS](#)



Cancer Informatics @CI4CC Oct 2

The Cancer Informatics Community are looking forward to Day 2 of [#gcds2014](#) [@CI4CC](#) <http://www.ci4cc.org>



CHI UMKC @chiumkc Oct 2

CHI Director, **@markhoffmank** participating today at Genomic Medicine Centers Meeting VII in Bethesda, MD
#gcds2014



liz worthey @lizworthey Oct 2

If this was the case NO ONE would offer such tests. Analysis & interpretation together are ~equivalent to the prep & seq lab costs **#gcds2014**



liz worthey @lizworthey Oct 2

IMO: The notion that analysis of a genome or exome costs hundreds of thousands of \$ is an old concept and was never really true... **#gcds2014**



Robert Freimuth @RobertFreimuth Oct 2

Kawamoto: We need standards that would be implemented regardless of whether they are mandated **#gcds2014**



CHI UMKC @chiumkc Oct 2

MT **@markhoffmank** Great **#gcds2014** keynote compared nuclear, aviation & healthcare industries as informative for genomic decision support



Robert Freimuth @RobertFreimuth Oct 2

"CDS" is not synonymous with "alerts" - use it to guide workflow **#gcds2014**



Mark Hoffman @markhoffmankc Oct 2

#gcds2014 "Alert shock" for complex topic vs alert fatigue - great point. Needs to be "point of care" education.



Robert Freimuth @RobertFreimuth Oct 2

It would be hard to study how genetic tests are being ordered due to how they are coded. Need better coding? V
#gcds2014



UF Personalized Med @UFPersonalMed Oct 2

Excellent conversation about implementation needs of genomic clinical decision support! #gcds2014



Robert Freimuth @RobertFreimuth Oct 2

Must provide right info (with right wording) at right time during clinical encounter. Need to know what should be done next. #gcds2014



Robert Freimuth @RobertFreimuth Oct 2

Need "drastic changes" for gathering clinical data - physician is a rate-limiting step #gcds2014



Robert Freimuth @RobertFreimuth Oct 2

Kawamoto: NIH can't fund all implementations; need to demonstrate ROI so institutions will be motivated to do

gCDS themselves [#gcds2014](#)



Robert Freimuth [@RobertFreimuth](#) Oct 2

Patient perspective: How provide educational materials (gDS) for patients? What does the end user experience look like? Content? [#gcds2014](#)



Robert Freimuth [@RobertFreimuth](#) Oct 2

[#gcds2014](#) Session 3 - Implementation Issues for Genomic CDS - [@dancethrulyyf](#) and Ken Kawamoto moderating



Luke R. [@Irasmus](#) Oct 2

Good plug for [#OpenInfobutton](#) at [#gcds2014](#) - important approach to CDS in general, but I think really useful for gCDS



Brandon M. Welch [@WelchBM](#) Oct 2

[@vojtechuser](#) you here at [#gcds2014](#) or are you watching online?



Dale Yuzuki [@DaleYuzuki](#) Oct 2

RT [@Irasmus](#): [@atulbutte](#) - "the best knowledge bases today don't track if we were right or not". Great point!
[#GCDS2014](#)



Robert Freimuth @RobertFreimuth Oct 2

@vojtechuser Of course, then we'd need to create a standard for the structured representation. I'd love to get that done. #gcds2014



Brandon M. Welch @WelchBM Oct 2

@lizworthey #gcgs2014 We're all over here: #gcds2014



Robert Freimuth @RobertFreimuth Oct 2

@vojtechuser Maybe "that don't output structured results" instead, as PDF likely won't go away completely #gcds2014



Atul Butte @atulbutte Oct 2

@vojtechuser I bet most labs don't even email PDF. They probably fax results. PDF might be an upgrade! #gcds2014



Vojtech Huser @vojtechuser Oct 2

#GCDS2014 let's conclude with: genomic labs that output PDF should lose CLIA certification at their next renewal cycle.



Brandon M. Welch @WelchBM Oct 2

@Irasmus @jessiet1023 in my opinion, i don't see a difference. To me it's all genetic information, that's what matters to CDS #gcds2014



Luke R. @Irasmus Oct 2

@WelchBM @jessiet1023 agreed - is there a reason not to work on ACMG now while continuing to refine approach for WGS in the future #gcds2014



Robert Freimuth @RobertFreimuth Oct 2

"CDS should be considered 'power tools for the mind'" - @bfm at #gcds2014



Robert Freimuth @RobertFreimuth Oct 2

@WelchBM @jessiet1023 We have to build list-agnostic systems or we'll be redeveloping them every year. Scalability++ #gcds2014



Brandon M. Welch @WelchBM Oct 2

@jessiet1023 #gcds2014 i'm sure we can build solutions that are forward/backward compatible to cover ACMG now and WGS in future



Jessie Tenenbaum @jessiet1023 Oct 2

interesting recurring disparate views on use of ACMG list vs really looking across whole genome #GCDS2014



Atul Butte @atulbutte Oct 2

@DSHaywitz Yes, \$FMI way down from IPO. But wondering how academics can build genomic decision support, w/ \$\$\$+ in companies #gcds2014



Brandon M. Welch @WelchBM Oct 2

@RobertFreimuth @jessiet1023 although, starting off with genomeCDS we need to limit accomplish-able scopes then move forward #gcds2014



Jessie Tenenbaum @jessiet1023 Oct 2

different types of #standards (<http://bit.ly/1CHBvdb>), and different contexts or levels- the data, the rules, interpretation #GCDS2014



Brandon M. Welch @WelchBM Oct 2

@RobertFreimuth @jessiet1023 #gcds2014 agreed, many possibilities across the span of medicine. Would be foolish to limit potential of genome



Alice Rathjen @dnatimes Oct 2

#gcds2014 academics focus on standards but transparency would be more helpful.



Robert Freimuth @RobertFreimuth Oct 2

@WelchBM @jessiet1023 I'd use gCDS to help geneticists ID and focus on "interesting" things as well. Lots of possibilities. #gcds2014



Atul Butte @atulbutte Oct 2

Wow, just realized the market cap worth of Foundation Medicine > the entire NHGRI budget!
<http://www.genome.gov/27558680> #gcds2014



Brandon M. Welch @WelchBM Oct 2

@jessiet1023 never enough geneticists, use CDS to assist non-geneticist but CDS won't do it all, geneticists will be important #gcds2014



Robert Freimuth @RobertFreimuth Oct 2

@atulbutte @WelchBM Standards are only a tool that help us communicate. Still lots of room for human insight in genomic CDS. #gcds2014



Atul Butte @atulbutte Oct 2

@WelchBM @RobertFreimuth Standards great, but is that rate-limiting step? We have DICOM and RadLex in radiology. Is that enough? #gcds2014



Jessie Tenenbaum @jessiet1023 Oct 2

what will be CDS and what will be training a boatload more geneticists? have them like radiologists? #GCDS2014



Brandon M. Welch @WelchBM Oct 2

@atulbutte @RobertFreimuth A take away from #gcds2014: we need to define standards for genome CDS?



Robert Freimuth @RobertFreimuth Oct 2

@atulbutte "The good thing about standards is that there are so many to choose from" #gcds2014



Brandon M. Welch @WelchBM Oct 2

#gcds2014 variant interpretation (e.g. pathogenic, benign) vs clinical interpretation (e.g. causes disease X)



Atul Butte @atulbutte Oct 2

@RobertFreimuth Did you say standards? <http://xkcd.com/927/> #gcds2014



Robert Freimuth @RobertFreimuth Oct 2

Standards standards standards! (Sorry... I feel better now) #gcds2014



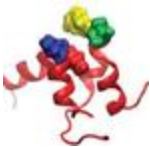
Mark Hoffman @markhoffmankc Oct 2

@dnatimes @atulbutte who will do the work - why not both? Concept - academia, develop to scale - industry
#gcds2014



Atul Butte @atulbutte Oct 2

@WillisCD @Irasmus The data are scattered. The actual outcome of the patient sits in a very different place from the genome... #gcds2014



Chris Willis PhD @WillisCD Oct 2

Just give me the #data! RT @Irasmus @atulbutte - "the best knowledge bases today don't track if we were right or not" Great point! #GCDS2014



Mark Hoffman @markhoffmankc Oct 2

#gcds2014 Growing sense that SMART on FHIR is building momentum as standard that can be scaled.



Atul Butte @atulbutte Oct 2

Radiology isn't perfect, but you could argue that it captures environment (and maybe more disease risk) better than genetics #gcds2014



Robert Freimuth @RobertFreimuth Oct 2

How do we capture how much [@atulbutte](#) ate at the Cheesecake Factory last night? How do we capture environmental vars for genomics? [#gcds2014](#)



Alice Rathjen @dnatimes Oct 2

Big issue at [#gcds2014](#) via [@atulbutte](#) is who will run with genetic info - academia or industry.



Luke R. @Irasmus Oct 2

[@atulbutte](#) - "the best knowledge bases today don't track if we were right or not". Great point! [#GCDS2014](#)



Robert Freimuth @RobertFreimuth Oct 2

[#GCDS2014](#) session 2: How do we manage knowledge for genomic CDS? Watch it at <http://www.genome.gov/GenomeTVLive/>



Mark Hoffman @markhoffmankc Oct 2

[#gcds2014](#) Clem McDonald - genetic test kit makers need guidance on allele and SNP representation



Brandon M. Welch @WelchBM Oct 2

[#gcds2014](#) ...aaaand here's another manuscript describing the various CDS applications of genomic information <http://www.mdpi.com/2075-4426/3/4/306> ...



Mark Hoffman @markhoffmankc Oct 2

@markhoffmankc re-correcting hashtag - needs to be #gcds2014



Nathan H. @cabogirao Oct 2

Great keynote by Dan Masys at the #GCDS2014 conference, btw. You can see why his AMIA 'year in review' sessions are always packed.



Nathan H. @cabogirao Oct 2

In DC for the #GCDS2014 conference so far, some pretty interesting discussion about clinical decision support as it relates to genomic data.



Brandon M. Welch @WelchBM Oct 2

#gcds2014 Here is a manuscript with some proposed data elements for genomic CDS
<http://www.mdpi.com/2075-4426/4/2/176/htm> ...



Erwin Bottinger @ErwinBottinger Oct 2

providers say CDS works best if short with precise clinical action advice #GCDS2014 @BronfmanInsti
@ErwinBottinger



Luke R. @Irasmus Oct 2

@WelchBM same here, glad I'm not the only one geeking out :) #GCDS2014



Robert Freimuth @RobertFreimuth Oct 2

Masys discusses the "ideal state" of genomic CDS at #GCDS2014 - watch it live at <http://www.genome.gov/GenomeTVLive/>



Brandon M. Welch @WelchBM Oct 2

@RobertFreimuth "support" is the keyword of CDS, it isn't called "clinical decision force" or "clinical decision requirement" #GCDS2014



Robert Freimuth @RobertFreimuth Oct 2

Masys - emphasis of genomic decision support is on "decision support", rule-based systems do not mandate clinical decisions #GCDS2014



Brandon M. Welch @WelchBM Oct 2

Very interesting commentary from D. Masys at #GCDS2014 on airline and nuclear disasters leading to change in these respective industries



Robert Freimuth @RobertFreimuth Oct 2

Masys - we must anticipate multiple somatic genomes for each individual over their lifetime #GCDS2014



Brandon M. Welch @WelchBM Oct 2

At NIH #GCDS2014. I feel like a 14 yr old girl at a OneDirection concert.. I love this stuff!



Robert Freimuth @RobertFreimuth Oct 2

Dan Masys keynote: "Tales of Tenerife and 3 Mile Island: Lessons from Other Industries for Genomic CDS"
#GCDS2014



Robert Freimuth @RobertFreimuth Oct 2

NHGRI Genomic CDS meeting is kicking off. Watch it live at
<http://www.genome.gov/GenomeTVLive/> #GCDS2014



Dale Yuzuki @DaleYuzuki Sep 30

RT @genome_gov: Thurs/Fri tune into NHGRI's live webcast of GM7 meeting: Genomic Clinical Decision Support
#GCDS2014 <http://1.usa.gov/YDn9eY>



genome_gov @genome_gov Sep 30

Thursday/Friday tune into NHGRI's live webcast of GM7 meeting: Genomic Clinical Decision Support #GCDS2014
<http://1.usa.gov/YDn9eY>



Jackie Odgis @jodgis Sep 30

Watch the "Genomic Medicine VII: Genomic Clinical Decision Support" meeting LIVE at
<http://www.genome.gov/GenomeTVLive/> on Oct. 2-3 #gcds2014