

## Wisdom of the Crowds: Extending the Domain of Medical Information to Case Banks and Online Forums.



**A**s Evident in earlier Editorials [1,2,3], we at JOCR are striving for a better understanding at Clinical Decision Making and better Patient Care. Human deliberations and Single observations have been highlighted as important concepts in building a comprehensive paradigm for individual patient management [2,3]. A re-view of the quality and direction of current body of 'Selective' literature, which is highly biased towards Evidence Based Medicine (EBM), is needed. EBM has its own role and important place in literature but it might be suffering from a 'Central Control' phenomenon in terms of few 'Chosen' groups of experts who dig the Evidence

and instruct others on how to interpret and utilize 'Evidence'. Here I will like to introduce a concept from Cybernetics called 'Variety' which represents possible alternatives or possible bits of information. The concept of variety is embodied by Ashby's Law which is stated (and also applicable) in many forms. The most useful form for us is as stated by Steve Hickey and Hillary Roberts: "Ashby's Law stipulates that the minimum amount of information needed to give an accurate answer is exactly the amount needed to specify the problem" [4]. This is interpreted as; if the question has lot of variety the answer too will have same amount of variety. A complicated question will not have a simple answer. Management of a complex fracture in patient with multiple comorbidities in a resourcefully challenged situation cannot be resolved by 'Cookbook' approach that EBM will like us to believe. Thus if we need an answer to a complex situation, more information will be needed and on a large scale 'Wisdom of Crowds' will be more effective than a controlled guideline. Every one of us holds a part of knowledge about management of these cases and when put together will be much more helpful than the group statistics of large clinical trials. Again as surgeons we need to predict the individual patient outcome and not what will be the outcome in group of such patients. Here if we have had a patient with similar profile, we can model the current patient according to him and apply it to subsequent similar group of patients. However can we get enough information from group statistics to treat Individual patients? This reverse is not found to be true [5] and thus all our Literature which is based on group studies has to be carefully reviewed and interpreted. Again the Best Evidence as defined by a 'central control' will go against the Ashby's law as a group of experts will surely have less variety than an entire profession and their patients. Representation of this individual variety in patient presentation and management is currently lacking in Literature and the main reason is the group statistical process of approximation and 'rounding off' at all levels of information, practiced in current evidence based literature.

I believe that this variety is extremely important in clinical decision making and should be provided a platform for presentation. We should be able to make informed decisions based on wisdom of the crowds and in principle should be able to publish and use all the available information. The concept of 'Wisdom of Crowds' has been introduced and detailed by James Surowiecki in his book 'The Wisdom of Crowds' and finds wide applicability in business world and is also a model for popular online portals like Wikipedia [Crowd Computing] [6]. EBM will definitely be a part of this Information network; not the most important part but just as important as other parts namely human deliberations, collective individual opinions, patient's perspective and socio-economic aspects. I see no other way in which we will be ever able to build a comprehensive paradigm enabling us to make informed and practical decisions for our patients. Of course there will be a lot of 'Noise' which will be associated with this process but I believe most of us will be very able to detect 'Noise' from 'Value' unlike the same in EBM scenario where we find ourselves so prohibitively unable to sort out the 'Noise' from useful information. Another problem with this paradigm is that EBM is the only front that has been developed and given importance while others are criticized and looked upon negatively. It's high time that we should stop equating Level V

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evidence (expert opinions) with Ego of the opinion holder and rather equate it to his valid Life Experience. We have to redefine the Evidence triangle and possibly construct a 'Circle of Evidence' where all Evidence is at same level differing only in method by which they are generated [7]. Only by promoting and developing the level V evidence we will be able to build a good informative paradigm. Of course we will have the problem of trusting level V and having faith in an individual opinion, but isn't most of our literature is based on trust and faith towards their authors? If Level I to level IV can enjoy this faith, Level V should definitely be delivered from this. In words of Dr. Abram Hoffer "we once more have to learn to think than to calculate. Where are the good old days, when honest physicians honestly reported what they saw in language that any doctor could understand?" [8]

The next challenge is how to build this parallel body of Literature with wide opinions from the crowd and answers from both published articles, EBM and expert opinions. There have existed online forum where this is been done since long time and 'IndiaOrth' and the Indian Orthopaedic Research Group (IORG) forums are two such forum I am personally involved with [9, 10]. The outline is similar in these forums, where one surgeons presents his case with clinical and radiological details and other members of the forum comment on it based on personal experiences, literature or combination of both. This 'Academic Philanthropy' has helped provide different perspectives to many on a variety of topics and also allows quick sharing of knowledge and effective use of 'Wisdom of the Crowds' [Content Driven Collaborative Learning]. Another potential advantage of these forums is temporal accumulation of information over time that can lead to development of a 'Swarm Intelligence' algorithm where every piece of information forms a part of the 'Swarm' and leads to emergence of an intelligent informed behaviors related to topic in discussion [11,12]. This will also allow for development of a global knowledge pool which is easily accessible and interpreted [and also algorithms can be developed for extracting and interpreting information from them]. Again this will be a dynamic algorithm which allows for new information to be added and accordingly and automatically adjusts the output guidelines [a kind of collective academic intelligence]. This may sound as contrast between individual opinion and single observations as commented earlier, but a comprehensive decision making paradigm should and must include all aspects of information including EBM. The next step will be to regularize these forums and develop a good publishing format and start publishing these rich case discussions, either a part of a journal or in other citable online format in public domains. This will make this information available to more viewers and also to generations to come as a template of current thought process. At Indian Orthopaedic Research Group we have decided on two such Initiatives. The First initiative is to capture the most important part of such 'Good' information, the Complications. We have launched a new initiative called "Journal of Orthopaedic Complications". This Journal will accept only Complications or Complicated cases and discussions on the cases. I believe complications are the most important learning part of our Medical Lives and they teach us our most important clinical lessons. This Journal will focus on complicated cases from orthopaedics and related fields. More information is available on the Journal website [www.orthocomplications.com](http://www.orthocomplications.com) and we request our readers to contribute to the same [13]. The other initiative is named as "Orthopaedic Case Bank" where we will be able to deposit cases and have provision for discussion of the cases by community of orthopaedic surgeons. To begin with we will be adding cases from the IORG forum and other forums if possible. Here the cases will be adequately formatted and citation will also be generated for the same. This will be like a journal with post publication peer review (open peer review) and indexing will be done for the same. Over a period of time this 'Bank' will grow and will store enough variety of cases which can be grouped together and searched simultaneously. If you wish to have an opinion on a case, it can posted in the Case Bank or a 'Nearest Neighbor' [5] similar to your case can be searched and found to help template an individual treatment plan. Algorithms can be developed based on case characteristics to find the nearest neighbor and also to provide recommendation based on data in the 'Bank'.

We request our readers to write to us on these initiatives and we will be happy to hear your opinions. On



front of JOCR we are happy to share with you that our journal is now included in 'Cross Ref' and from next issue all article will have the 'Digital Object Identifier' (doi) and very soon we will be applying for indexing into Pubmed. We have an overwhelming response from authors and due to technical reasons the issues are delayed, however we will try to sort this from next issue which should be published shortly. With this I apologize for a rather lengthy editorial and leave you to enjoy the current issue of JOCR

Sincerely

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Editor – Journal of Orthopaedic Case Reports

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## Journal of Orthopaedic Complications

Our Complications are cases that teach us the most and have a lasting impression on us. These also include unusual, complex cases that present to us and require specific management option. It is knowledge from these complicated and complex cases helps us in dealing with them in our future and form an important part of our 'Learning Curve'. JOC aims to provide a platform for publication of such complications including intraoperative or post operative complications, surgical infections, delayed presentations, neglected or mis-managed cases, unknown drug side effects or interactions. and other such complicated and complex scenarios. This will give the readers an opportunity to learn from experience of others and possibly avoid complications or treat them effectively and in turn possibly play a role in prevention of such complications. The website is under construction [www.orthocomplications.com](http://www.orthocomplications.com) and will be launched soon with announcement on IORG channels. For any query please write to [drashokshyam@yahoo.co.uk](mailto:drashokshyam@yahoo.co.uk)