Research Article

Evaluation of 'Internship Induction Programme': an application of Kirkpatrick's model

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Abstract

Introduction: Often, interns remain unaware of what is expected of them during internship period and work without a clear aim. Induction is a very important process but in reality in many of the medical colleges, internship induction programme is limited to mere 'Hippocratic Oath taking ceremony' for the interns. In this context the present study conducted with the objectives - To evaluate interns 'Gain in learning' through Internship Induction Program (IIP), to assess the perception of interns regarding benefits to them through IIP, to assess perception of faculty members, administrators involved in IIP regarding benefits to interns and to beneficiaries (patients) in hospital/community and to take the feedback from interns, faculties involved, about the newly launched module for IIP. **Methods:** Study participants were the Interns undergoing IIP(n_1=166) and the faculty from varied disciplines who participated in IIP(n_2=20). Study tool were the Pre & post test questionnaire for interns and feedback proforma with regard to IIP & newly launched 'IIP Module', both for interns and faculties. Evaluation has done as per the guidelines of Kirkpatrick's model of programme evaluation where in first two levels of evaluation were considered. **Results:** Response rate was 100%. Mean Pre-test and post test scores were 6.92±2.55 and 15.03±2.92 respectively (p value<0.05). Absolute learning gain=40.55%, Learning effectiveness score=117%, Class average normalized gain=61%, Effect size=2.95. In feedback analysis for most of the parameters, the rating average was to the right side of the neutral indicating a positive feedback. **Conclusion:** Programme Evaluation of IIP with Kirkpatrick's model revealed it to be successful in achieving its objective of improving knowledge and attitude of interns.

Key words: Internship, Induction, Kirkpatrick, Programme Evaluation

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Introduction

The medical education system in India is one of the largest in the world with a five & half year curriculum which includes an 'Internship' of duration of 12 months. During internship the interns rotate through various departments and receive hands-on training. Only after completion of the compulsory rotating internship the degree of Bachelor of Medicine and Bachelor of Surgery (MBBS) is awarded and a doctor is registered with the Medical Council of India (MCI). The MCI describes internship as "a phase of training wherein a graduate is expected to conduct actual practice of medical, health care and acquire skills under supervision so that he/she may become capable of functioning independently" [1].

Often, interns remain unaware of what is expected of them during this period and work without a clear aim. In the past few years, it has been observed that interns spend their time preparing for postgraduate entrance examinations at the expense of ward work and acquisition of clinical skills [2]. Also the largely hospital-based training probably makes interns insensitive to the needs of society and possibly contributes to brain drain. Medical graduates perhaps find themselves more at home abroad, a feeling which hampers the realization of the objectives stipulated by

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the MCI [3]. Further, many interns have voiced their apprehension in writing prescriptions, filling requisition slips for diagnostic and therapeutic purposes, and writing discharge summaries and patient progress notes. Experience also shows that the institutes who take adequate time at the beginning of the internship to orient the students/interns reap productivity and effectiveness more quickly than those who don't [4].

'Induction' is a very important process and can easily get overlooked in busy organization. What makes a huge difference is having a planned induction programme [5]. But in reality in some of the medical colleges, internship induction programme (IIP) is limited to mere 'Hippocratic Oath taking ceremony' for the interns.

Evaluating educational programs is an emerging profession. The term "Program evaluation" only came into wide use in the mid-60s, when efforts at systematically assessing programs multiplied [6]. Program evaluation is the systematic assessment of the processes and/or outcomes of a program with the intent of furthering its development and improvement [7]. The purpose of this kind of evaluation is to provide information to decision-makers who have responsibility for existing or proposed educational programs [6].

To familiarize new interns with their tasks in wards and their role in the community, an orientation programme is conducted every year before they start their internship, in J N Medical College, Wardha (MS, India). The present study aims at program evaluation of this 'Internship Induction programme' by applying Donald Kirkpatrick Model [8] of programme evaluation.

Objectives

1. To evaluate interns 'Gain in learning' through internship induction programme.
2. To assess the perception/reaction of interns regarding benefits to them through internship induction programme.
3. To assess perception of faculty members, administrators involved in this program regarding benefits to students and to beneficiaries (patients) in hospital/community.
4. To take the feedback from interns, faculties involved, about the newly launched module for internship induction programme.

Material & Methods

The study was undertaken at Jawaharlal Nehru of Medical College, DMIMS University, Wardha, Maharashtra (India) over a period of 3 months (Including data collection, analysis, report writing) from January to March 2014. The basic study design was 'Quasi-experimental' one-group pre-test/post-test study. The study participants were (a) Interns undergoing IIP (b) Faculty from varied disciplines/subjects participated/contributed to IIP.

Program Details –

- Type of programme - Internship Induction Programme
- Total duration of programme conduction – 5 days
- Target audience – Newly passed out Final MBBS students (Interns) who were about to start their internship
- Resource persons- The faculty for the IIP programme included speakers from varied disciplines like Public health, Medicine, Paediatrics, Surgery, Pharmacology, Obstetrics & Gynaecology. The IIP also had the administrators of higher order like the Dean, Chief Medical Superintendent and Director School of Health Professional education & research, other staff from hospital administration.
- Teaching methods- The programme included interactive sessions, group discussion, role plays, didactic lecture, demonstration, Exposure visits....etc.

Sampling method: Complete enumeration method

Sample: Hence the whole current batch of MBBS students undergoing IIP was taken as sample (n=166). Similarly all faculties (n=20) who were involved with the IIP were also considered as study participants.

Methodology: Before the actual start of internship, the 5 days period out of 365 days is devoted for IIP. It is mandatory for the every 'would be intern' to undergo this induction programme unless of which his/her internship is not started.

As per the guidelines, the IIP was conducted for the present batch of final MBBS passed students. The schedule of the IIP was for five days, which included sessions on various topics like - Doctor patient relationship, Communication skills, Medico legal issues in medical practice, Basic research methods, Hospital

schemes & services, Basic laboratory skills & practices, Basic & Advanced cardiac life support, Infection control in health care, Hospital waste management, Disaster management, Essential obstetric care, Safe injection practices,...etc involving various domains of learning i.e. Cognitive, Psychomotor & Affective.

IIP Module- In addition to the above, a module was being developed and launched for the first time during this IIP. The module was made for interns and its content was based on various sessions of IIP. Each intern is provided with a hard copy of this module at the end of successful completion of five days of IIP.

Evaluation – Evaluation of the programme was done as per the guidelines of Donald Kirkpatrick's model [8] of programme evaluation wherein out of four levels of evaluation, only first two levels i.e. Level 1 of REACTION and Level 2 of LEARNING were considered in the present study on account of feasibility. So the programme evaluation was done using a 'Feedback questionnaire', and a 'Pre & post-test' evaluation.

The feedback questionnaire consisted of both close ended and open ended questions. Likert scale from 1 to 5 was used to rate various parameters. There were two feedback forms. One feedback was taken with regard to IIP wherein the questionnaire involved subjective assessment of the quality of the IIP programme, the content, faculty, time management, ways of improving the programme to make it more target-oriented etc. The other feedback form was for the newly launched IIP module.

Both the types of feedback forms were administered not only to interns but also to the faculty wherein the perception of faculty members from varied disciplines, designated or involved in this induction program was taken regarding the need of such programme, benefits to interns and to patients. Their views were also taken with regard to Module of IIP.

The pre and post-test questionnaire consisted of 20 multiple choice questions derived from the content covered during the programme and of different level of thinking ranging from simple Recall to Comprehension, Analysis and Problem solving type which tested knowledge on various topics related to internship. These questionnaires were administered only to the attendees/Interns.

Both pre test and feedback proforma was internally validated. Individual pre- and post-test question responses were compared using the paired t-test for single sample group (Interns). The difference between scores was considered significant if the p value was <0.05. The data was entered in Ms Excel and analysed using descriptive statistics. The software 'Primer' is also used for applying statistical test.

A written permission from the Institutional Ethic Committee was obtained before starting the study. Verbal informed consent was taken from faculty members for participation in study. For the interns, the participation in the programme from start to end including the pre and post test questionnaire and feedback proforma submission was compulsory.

Results

Total 166 interns of current batch of MBBS participated in the IIP.

Pre-test, Post test analysis

- Mean Pre-test score= 6.92±2.55, Std error of mean=0.198

  Mean Post test score=15.03±2.92, Std error of mean=0.227

  t score= -24.125 degrees of freedom =166 ***P*** value <0.05

As the p value is less than 0.05, it indicates that the difference between the two scores is statistically significant.

- **Mean score of 'Gain in learning'** = 8.1
  Thus there is significant improvement in pre test score because of the IIP.
- **Absolute learning gain** = 40.55%
- **Learning effectiveness score** = 117%
- **Class average normalized gain (g)** =61%
  The interns gained 0.61 (or 61%) of the possible percentage points they could have gained from pre to post assessment. It also indicated that the IIP was effective according to the defined criteria by Hake[9] (30%)
- **Average of single student normalized gain (g_{avg})**=59.01%
  On an average, an individual single intern has gained 59.01% of the possible percentage points he/she could have gained from pre to post assessment.
- **Effect size**= 2.95

Effect size is one way to measure the effectiveness of a particular intervention as per the Hattie's research [10], the programs with effect sizes above 0.4 as worth having and those lower than 0.4 as needing further consideration.

Thus the pre-test/post-test model with calculation of various measures of learning gain, including class-average and single-student normalized gains, provides an objective and informative means to document learner performance and demonstrate the effectiveness of the educational intervention.

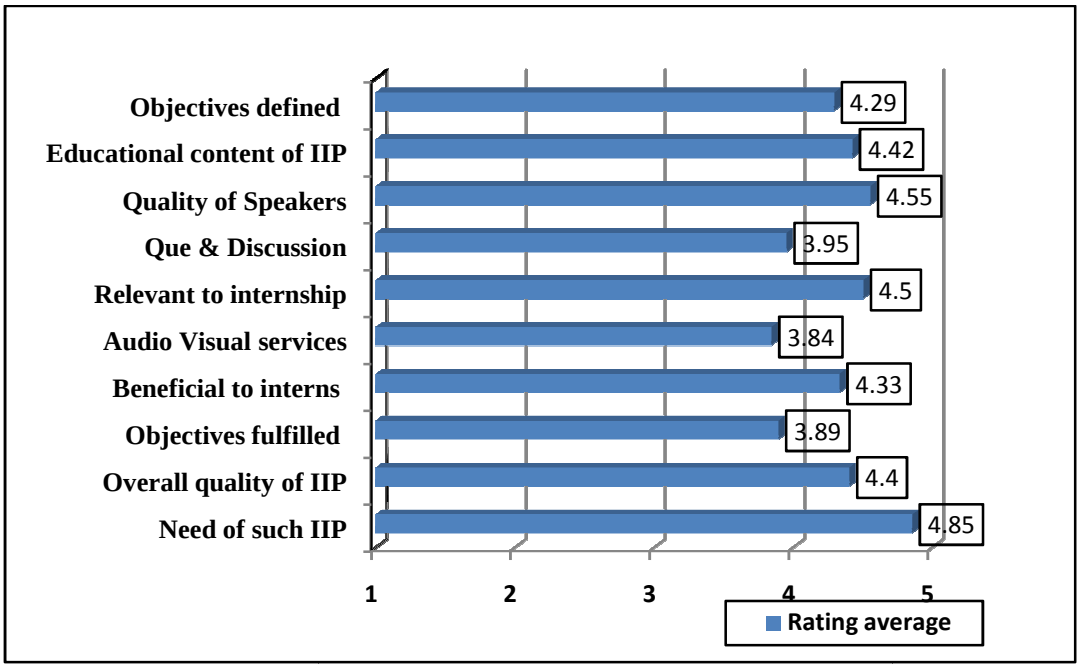
Feedback analysis: Feedback analysis done by calculating 'Rating average' for each individual parameter of feedback proforma which was measured on five point Likert scale, ranging from strongly disagree (score 1) to strongly agree (score 5).

I) Feedback from interns

A) For IIP

From the feedback taken from interns regarding IIP, it was found that maximum score i.e. 4.85 was obtained for 'need of such IIP before the start of internship' followed by quality of speakers (4.55), Relevance of IIP to internship (4.5), ...etc. (Graph I)

Graph I - Horizontal bar diagram showing feedback from interns for IIP on five point Likert scale.



For an open ended question regarding strengths of the IIP programme, most interns suggested that the features that constituted the strength of the IIP program were Module of IIP, sessions on Doctor –patient relationship, communication skills, Clinical skills , Basic research methodology etc. However Many interns did not like long duration of IIP program.

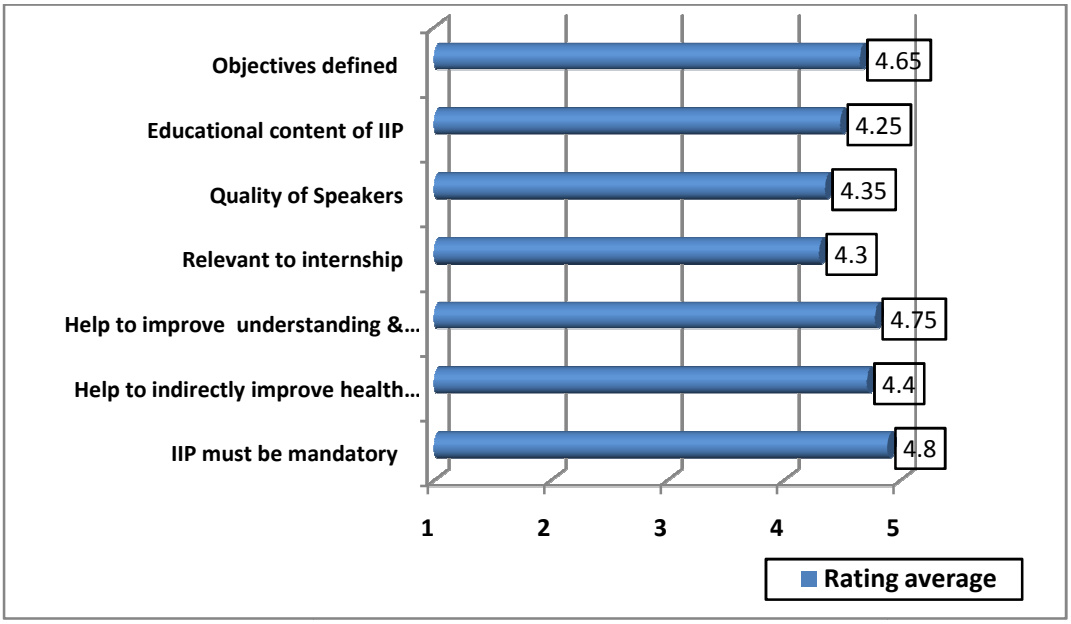
Among the suggestions given by interns regarding improvement in the IIP were, 'giving more focus on clinical/essential procedural skills, a demonstration cum practice session for essential laboratory skills'. Some interns also asked for a session from Nursing faculty in order to know their experience, approach in health care delivery, and their expectations from a would be intern. Most of the interns suggested to concise the schedule of IIP to maximum 3 days if possible keeping it limited to more important topics having practical application.

B) For IIP module

The feedback regarding the module was taken from the interns, two months after the handover of IIP module to them. In this, the module was given the highest feedback score (4.95) for the quality pictures and flowcharts incorporated in it, followed by for logical and appropriate format of various articles (4.8). Some of the other parameters like educational

content of IIP (4.4), relevance of Module to internship (4.75), overall quality of module (4.3), need of the module during internship (3.9) , use of module as a Reference book (3.4) also got the scores that fall to the right of Neutral. (Graph II).

Graph II - Horizontal bar diagram showing feedback from interns for IIP-Module on five point Likert scale.



With regard to suggestions regarding the improvement in Module, or name of topic interns wanted to be added/modified in the module, they expressed that the module was up to the mark and had well covered all the topics that are relevant to internship and knowledge regarding which was worth to be acquired/revised during internship. When the interns were asked their opinion, with regard to any other comprehensive book/module/Reference material they know which can act as a guide during internship, then some of the interns though have given the names of some small books on clinical skills or physical examination of patients like P J Mehta's book, but almost all interns were of the opinion that they didn't come across any comprehensive book which will cover important topics collectively and will be helpful during internship phase except for the newly launched IIP module.

II) Feedback from Faculty

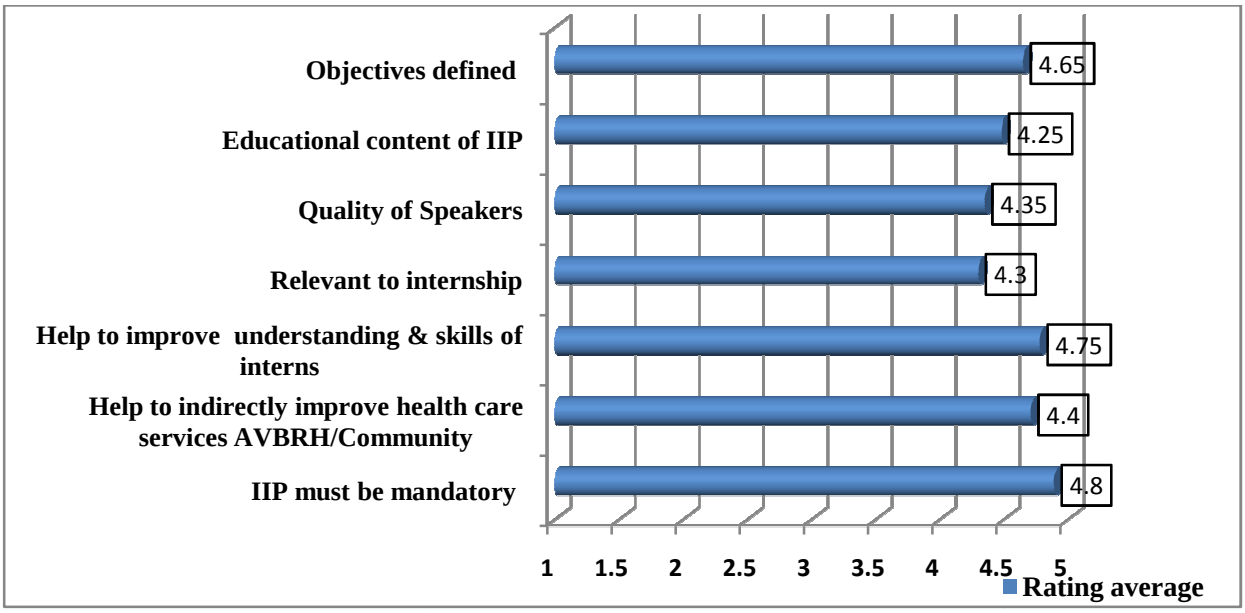
A) For IIP

From the feedback taken from faculty regarding IIP, it was found that maximum score i.e. 4.8 was obtained for the view that 'IIP must be made mandatory' for the institute to conduct and for interns to attend before the start of internship. It was followed by the score 4.75 for the view that IIP will help to improve understanding & skills of interns, and also indirectly help to improve health care services to patients in hospital/people in community (4.55)...etc. (Graph III)

For an open ended question regarding strengths of the IIP programme, different faculty pointed out it as the 'Broad skill based nature of IIP', 'Development of a comprehensive module' for interns, Session on Communication skills, Entrusting responsibilities on interns, development of proper attitude in them for health care delivery,'…etc.

However at the same time some of the senior faculty were doubtful regarding the actual application of knowledge provided in IIP by the interns during internship. The faculty pointed out less interactiveness in the session may be on the part of interns or in some cases the speaker itself, as a weakness of the programme. One faculty also commented about the lengthy nature of the IIP as a weak link.

Graph III- Horizontal bar diagram showing feedback from faculty for IIP on five point Likert scale.



The suggestions given by faculty regarding improvement in the IIP were as follows,

1) Making the IIP more Integrated and modular skill based training to be provided by involving as many departments as possible
2) Postgraduates, Nursing staff to be involved,
3) Optional posting should be made in Pathology & Blood bank
4) Recent problems arising in the medical profession to be included
5) Standard precautions while working in ward is to be given to each intern
6) Assessment of impact of programme at regular intervals is needed.

B) For Module

The feedback regarding the module was also taken from the faculty, who were directly or indirectly involved in the conduction of IIP and development of module. In their feedback, the module was given the highest feedback score (4.55) for the 'Need of module during the internship', followed by Addition of flowcharts, pictures wherever necessary (4.5), Quality of articles (4.45) ...etc Rest of the other parameters like relevance of Module to internship (4.25), educational content of IIP (4.2), overall quality of module (4.2), Use of module as a Reference book (4.25) also got the scores that fell to the right of Neutral.

The additional topics that some of the faculty wanted to incorporate in the future editions of IIP module were - Moral values, Legal issues like Death certificate, injury report, Conflict management at Intern's level, Safe antibiotic practices, Drugs during pregnancy, Use of disinfectants, Antiseptics..etc.

When asked for naming any comprehensive book or module or reference material apart from IIP module that can act as a guide in internship, then almost all faculty were of the view that no comprehensive book or guide is available for guiding internship except for some of the clinical books or laboratory manuals which cover only a limited domain.

Thus the responses from the feedback questionnaires of the interns as well as the faculty staff suggested that the IIP was successful in achieving its objectives, and was useful for each individual's professional activities.

Discussion

An internship is any carefully monitored work or service experience in which a student has intentional learning goals and reflects actively on what she or he is learning throughout the experience.

Many students are unfamiliar with the activities, environment and objectives of internship and providing health care service. Even though the interns have studied for 4 & ½ years the different subjects of medical sciences, these experiences may not have exposed them to hospital administrative work, the need for confidentiality, the importance of teamwork. It is the orientation and training program of the internship that clears the concept with regard to role and responsibilities of intern's in hospital set up as well as in community health centers. The sooner the students/interns understand what the hospital/health centre does and how it operates, the sooner they can assume assigned responsibilities and become productive [4].

In a study from Ireland too, 91% of newly graduating doctors were not prepared for all the skills needed as an intern. While history-taking and examination are well covered during undergraduate teaching, training in professional competence, personal characteristics and formal education during the intern year were found to be lacking.[11]

In the present study, programme evaluation of an IIP was done using Donald Kirkpatrick' model where in Level 1 i.e. Reaction to Learning and Level 2 i.e. Gain in learning or change in knowledge were assessed.

In the results, a significant change was observed in the mean questionnaire score of the interns before and after the IIP. The mean score of 6.92 obtained on the pre-test evaluation improved significantly to 15.03 in the post-test evaluation ($p < 0.05$) suggesting that the participation of fresh interns in an induction program, conducted before their clinical postings, significantly changes their knowledge and attitude towards patient care. Similar findings were quoted by A Goel *et al*[12] *(2010)* wherein the post-test score (median 14.5; range 10-18) represented a significant improvement over the pre-test score (median 13, range 3-16) and all participants felt that the workshop was successful in achieving its objectives.

In the present study the Class average normalized gain (g) 61% and the average of single student normalized gain (g_{avg}) 50.01% were found to be almost similar. In physics education research it has been found that the first two averages g and g_{avg} are usually the same or within 5% for N >20 and that this near equality is associated with low correlation of the single student gain (g_i) with the single student pretest score. [13]

In an another study from Mumbai(MS) , it had been found that medical graduates lacked basic health information, and had an apathy towards matters of public health importance, besides gaps in their knowledge of curative care and rational prescribing. [14]

Though the orientation programme for the interns is being conducted by many medical colleges in India, evaluation has been reported by very few. Further a reorientation and evaluation during the course of internship may be useful in making the programme more effective. In the present study, the IIP had nil drop-out rate for the post-programme analysis and this might be because it was scheduled as the first event on the very first day of their beginning of internship and was made compulsory.

Conclusion

Program evaluation of IIP revealed that it was successful in achieving its objectives, as depicted by the feedback and improved learning score of the interns. Thus it can be concluded that a brief and structured orientation programme before commencement of internship offers a practical means of making the transition of new graduates from students to practicing doctors smoothly. In other words it helps to orient fresh graduates to the hospital milieu. Thus while internship is a time for a graduate to apply theoretical knowledge into practical skills, the 'internship induction program' should be the gate pass to enter in.

Limitation of Study: In line with the conclusion we feel that a follow up subjective and objective assessment of interns during the internship is essential to assess the actual impact of the orientation programme on medical education in the long term. But in the present study, the same thing i.e. Level 3 & 4 of evaluation i.e. of transfer or change in behaviour and result or impact of programme respectively was not done due to time and manpower constraints, hence excluded though these levels represent the truest assessment of any program's effectiveness.

Recommendation: Each and every program or even any activity of a large program should be evaluated over a period of time which acts as a benchmark for further improvement in that program or activity.

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Permission of IRB: Yes

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