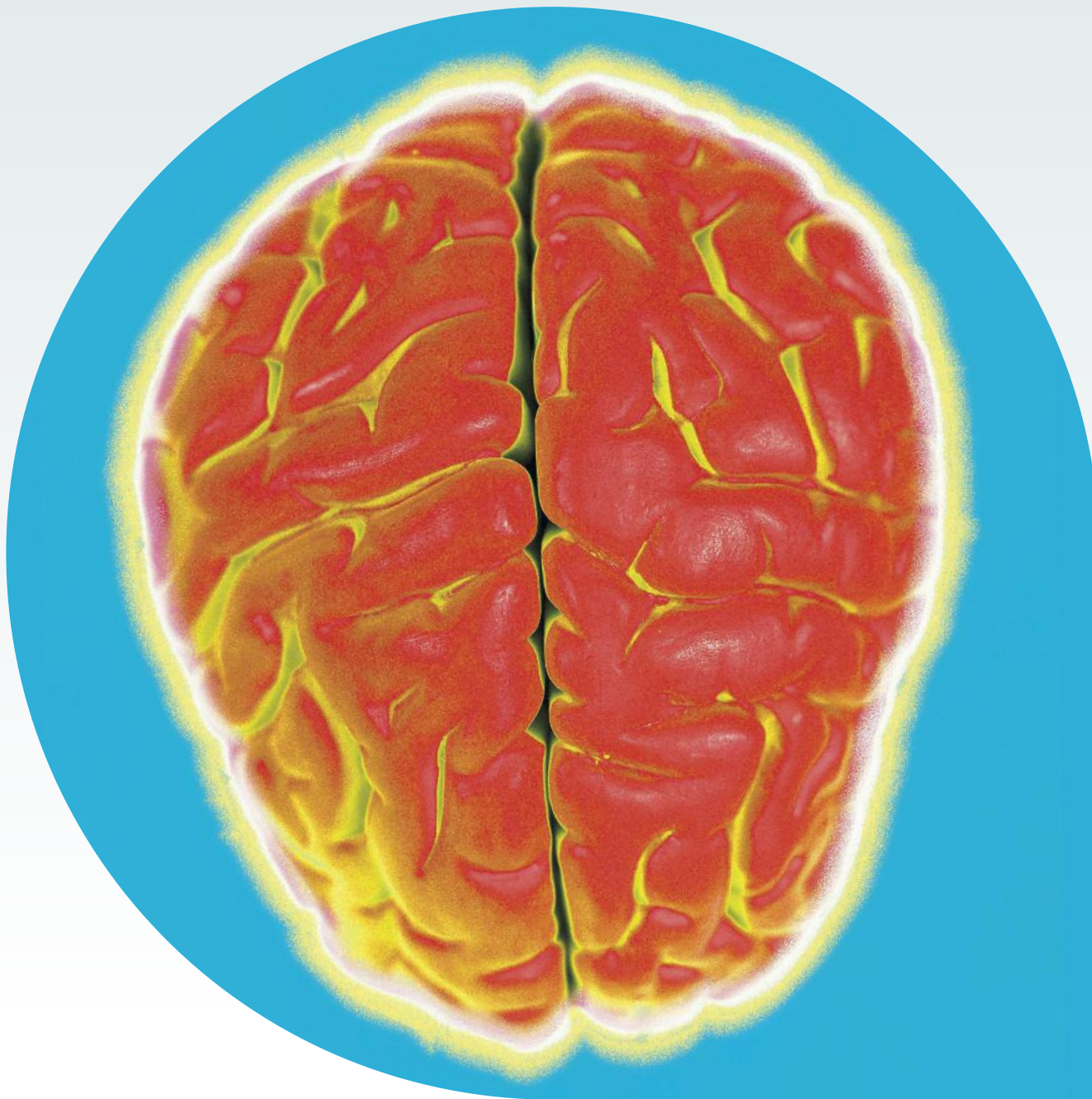


A core curriculum for psychology in undergraduate medical education



A report from the Behavioural & Social
Sciences Teaching in Medicine (BeSST)
Psychology Steering Group

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2 Executive summary

1. Behavioural and social sciences (B&SS) are relevant to medicine because they can improve understanding of patients' health and illness decision-making and the presentation of symptoms.
2. B&SS can be used to support learners and the learning environment of medical education.
3. There are many barriers, attitudinal and conceptual, that have prevented better use of the B&SS in medical education to date.
4. Recent developments of a curriculum in the United States of America (US) plus General Medical Council (GMC) recommendations that recognise the contribution of the B&SS has fostered a more favourable environment to introduce a core curriculum for psychology.
5. This report used a novel methodology to achieve consensus from medical, education and psychology specialists in the United Kingdom (UK) and outside of the UK regarding key psychology topics.
6. A range of core and applied British Psychological Society (BPS) curriculum topics are recommended for inclusion in undergraduate medical curricula. Each topic was ascribed a priority rating. The core curriculum has been endorsed by the BPS.

Chris Bundy (Chair) BeSST committee and Psychology Steering Group (August 2009).

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4 Forewords

Foreword by Professor Richard Hays, Keele University

One of the main challenges facing doctors is how to translate scientific discovery into effective clinical practice and improve the health of both individuals and populations. In modern medicine this process often begins with the science of test tubes, cell cultures, molecules and organisms, where laboratory science shows that, at least in controlled situations, investigations and treatments are beneficial for most people who are not well. However, effective practice is much more than what happens in controlled situations. People with health problems often do not respond so predictably, and so more is needed in the basic toolkit of doctors if they are to succeed in translating biomedical science into something that improves health.

What more is needed? The first is an understanding of how people think and behave. Each person with a problem is to some extent unique, both physically and psychologically, and so doctors need to understand how to work with their patients, to obtain relevant information efficiently, to reach the most appropriate diagnoses and to facilitate health improving behaviour that, in combination with the biomedical science, makes people healthier. The second is an understanding of how society and its sub groups function. Different populations of people can have quite different belief systems, based on ethnicity, religion and culture. These differences can result in variations in how disease and illness should be investigated and managed. As national populations become increasingly diverse, doctors need to understand how to recognise, work with, and perhaps at times challenge views and beliefs of individuals and groups of people. The health care system is also a complex place, with its own hierarchies, belief systems and both gateways and barriers to effective care. Doctors need to understand the sociology of both the world in which they live and the world in which they work if they are to perform well.

This BeSST report proposes a curriculum in psychology for basic medical education – that which produces graduates ready for postgraduate experience and further training – that addresses the need for doctors to achieve this broader understanding. The content is carefully selected, based on extensive consultations with those that teach behavioural and social science in medical schools, and grounded in reality through discussions with a broader audience of medical teachers, including clinicians. It is a comprehensive document that shares the expertise and experience of many who are daily involved in teaching behavioural science to medical students.

Medical schools regularly receive copies of suggested core curricula in almost every possible subject within medical curricula. These are difficult to deal with as they are generally overwhelming in scope and depth; if all were followed, basic medical education would have to become even longer and more intense. This document however is a welcome addition, as it is written from an undergraduate perspective, and so has scope and depth that are difficult to argue with. It also provides information on how to include behavioural and social science in medical curricula and how to deliver the content in a way that engages students and makes the material relevant to clinical care. This is a valuable resource for medical schools designing or revising their curricula.



Professor Richard Hays

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Keele University, United Kingdom

Foreword by Professor John Spencer, Newcastle University

A colleague of mine once estimated that if all the 'core curricula' proposed by specialist societies, Royal Colleges, and sundry '-ologies' over the past couple of decades were fully implemented, the average undergraduate course would now last 15 years or more! His tongue was firmly in his cheek, of course, but he had a point, and indeed one of the General Medical Council's main principles for reform of undergraduate medicine has been the curtailment of curriculum overload (GMC 1993).

This report from the Behavioural and Social Sciences Teaching (BeSST) in Medicine Psychology Steering Group describes yet another 'core curriculum'. But this one is different. An understanding of how people respond to sickness and make decisions about their health and whether and when to seek help, cognitive development across the life span, the psychological processes underpinning communication, behaviour change, clinical reasoning, and learning, and so on is fundamental to good medical practice. Yet, as the authors argue, historically there have been many barriers, attitudinal, conceptual and practical, to including such topics in undergraduate medical curricula.

The report was developed through a rigorous and novel process, and presents a comprehensive syllabus under four headings: core knowledge; professional practice; educational process; and postgraduate topics. A key educational principle is that people learn best when learning is in context; relevance is made apparent, which motivates and enhances recall. The importance of this is highlighted throughout the report – for example, within each section key points are illustrated with exemplars that put the topic in a clinical context. Another related principle is that of integration and, again, the importance of this in curriculum development is emphasised. From my own experience, topics taught in isolation as 'stand-alone' courses too easily fall prey to marginalisation and perceptions of irrelevance; furthermore, it's really the only way to prevent our curricula lasting 15 years! Thus it is good to see the importance of integration highlighted. This raises questions about who should teach such material; as with all the 'basic sciences' there is a need for subject expertise, which begs the need for psychologists to be brought in from the cold, but clinical educators must be involved as well to ensure relevance.

All in all, I am sure that curriculum groups will welcome the BeSST report and will find it invaluable in helping shape curricula that meet the needs of tomorrow's doctors, and ultimately (hopefully) have an impact on patients' health outcomes.



Professor John Spencer

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5 Introduction

The Behavioural and Social Sciences Teaching in Medicine (BeSST) Psychology Steering Group is a sub-group of BeSST, a network of 250+ behavioural and social scientists including psychologists, educationalists and social anthropologists with varying degrees of responsibility for design and delivery of programmes of teaching and learning for medical undergraduate students. The group functions as a network for members to support and develop the B&SS in medicine.

This report outlines the rationale for an integrated core curriculum; the process used to obtain consensus among the BeSST group and medical colleagues in relation to the core curriculum topics, how it maps onto the General Medical Council (GMC) recommendations for Good Medical Practice (GMP) (GMC 1995; revised 2001 and 2006), and how a core curriculum could be embedded in undergraduate medical education.

6 Aim

The aim of the research project was to develop an undergraduate core curriculum for psychology in medicine (PIM) that was valid, consistent, evidence based and useful to medical graduates.

7 Background

7.1 Historical perspective

At the turn of the last century in the US the Flexner report (Flexner 1910) advised on the structuring of medical education. It called for systematic organisation of the learners' experience; that medical schools should be university based and learners' educational programmes need a solid scientific basis. Flexner argued that doctors should have a broad education base and a socially-oriented perspective of medical practice.

Medical education programmes world-wide since then have emphasised the central importance of biological sciences with less emphasis on the broad education and social orientation. Most programmes were organised into a pre-clinical phase, a two year introduction to the basic biomedical sciences and a clinical phase a further 2 or 3 years of clinical rotations around core specialities. Until recently this was common model in the UK and in the rest of the world.

It took a further 50 years before the first department of behavioural sciences within a medical school was established in North America in 1959 (Dacey and Weintrob 1973) although this was not universally accepted as the best arrangement and some groups called for separate departments in order to protect B&SS expertise (WHO 1970). Over the following decade medical education started to include contributions from the B&SS in order to produce more comprehensive health care practitioners (Wexler 1976). This inclusive approach was underscored when B&SS examination questions were first integrated into the National Board of Examination for all medical students in the US in 1972.

In the UK the 1968 Royal Commission on Medical Education (the Todd Report 1968) asserted that the teaching of behavioural sciences normally provided by British medical schools needed improvement. This scathing criticism was instrumental in provoking a UK-wide development of courses in behavioural sciences (BS) for medical undergraduates. By the time of the report in 1987, by the GMC's Education Committee Working Party on the Teaching of the Behavioural Sciences, Community Medicine and General Practice in Basic Medical Education, virtually

every medical undergraduate curriculum had a well-developed syllabus in the behavioural sciences (most of them concentrating upon psychology). In many medical schools, behavioural science was accorded professional examination status whereby students had to pass the subject if they were to proceed with their medical training. It is ironic that the whilst the GMC's groundbreaking 'Tomorrow's Doctors' (TD) report (1993), continued to make a strong case for the behavioural sciences as a continuous theme throughout the five years of the 'new' curriculum, the way in which the new curriculum has been introduced (subject integration and problem-based learning) has led to the virtual disappearance of behavioural sciences in many schools. As a consequence, we have returned to a state that is little different to that deplored in 1968 by the Todd Report. Much of the progress made over the quarter of a century between the Todd Report and TD has been lost entirely.

Authors such as Tait (1973; p1007) asserted that 'the broad aims that lie behind efforts to introduce teaching in the behavioural sciences into medical education are almost universally approved'. Yet systematic incorporation of B&SS is a relatively recent occurrence and attempts to integrate with medicine have been met with varying degrees of success (Benbasset *et al.* 2003), particularly in the UK.

7.2 Evidence that the B&SS are relevant to medicine

Although it may seem self-evident that medicine, which concerns itself with health, well-being and illness in people, needs to understand the psychological and social factors that influence the health status of those people, not everyone was convinced of this viewpoint.

Some areas of the B&SS have a better evidence base than others. This is not to say that only those areas with a good evidence base should be supported, rather that medical research and the B&SS have to engage in applied research in order to provide more and better evidence.

This report only briefly outlines the reasons why medicine should 'legitimise' the role of B&SS in medicine. Justification is made in terms of content or subject matter and processes that B&SS bring to the teaching and learning about health and illness and the practice of medicine.

7.3 Lifestyle and behaviour and its impact on health and illness

Over the last century there have been significant changes in the leading causes of illness and death. Behavioural factors are important in the treatment and prevention of almost all the major diseases and nearly half of preventable deaths are due to behavioural factors (McGinnis and Foege 1993). In addition to the adverse health effects of harmful behaviour, psychological and social factors have been shown to influence chronic disease risk and recovery. Beliefs and expectations shape emotional reactions and behaviours regarding health and illness and subsequently have an impact on health outcomes.

The main lifestyle factors implicated are tobacco and alcohol use, lack of exercise, poor diet, poor preventive health practices (lack of immunisation, poor hygiene), risky sexual practices and road accidents.

In addition, there was increasing evidence for mind body interactions and a substantial body of literature has now accrued outlining the actual and potential pathways between psychological factors and disease end points (see for example Andersen 2002; Smith and Ruiz 2002; Barefoot *et al.* 2000; Kawachi *et al.* 1996). Many patients have first-hand experience of the mind body inter-relationship and are increasingly willing to voice their dissatisfaction with the reductionist model that denies this interaction. More people are making increasing demands on medicine for more humane and holistic care. When traditional medicine does not deliver holistic care, many patients turn to alternative and complementary methods of care provision (see, for example, Funham and Kirkcaldy 1996; Vincent

and Furnham 1997). Understanding of the impact of psychological and social factors on health and illness and acquiring the skills to deliver relatively simple and cheap behavioural medicine interventions based on that knowledge can improve the health outcomes of patients.

Last but not least, the practice of medicine is an intellectually, emotionally and behaviourally demanding occupation. It requires skills in rapidly prioritising, assimilating and recalling substantial amounts of information, having a good repertoire of learning approaches, possessing sizable capacity for dealing with human misery and the impact that can have on one's motivation to practice medicine as well as good psychomotor skills to perform specialised techniques.

The design of teaching and learning programmes that deliver competent medical practitioners has to be sophisticated and well versed in the understanding of how people learn best. This is the fundamental subject matter of psychology.

Early studies suggested that doctors had higher levels of divorce, alcoholism and burnout compared with other professional groups (Vaillant *et al.* 1972) but more recent studies have questioned these simple associations. The more recent focus is on the interaction between dispositional factors (personality and perceived stress) and situational factors (job design and government reform of practice). The results of these more recent studies are consistent: medical practitioners as a group demonstrated higher levels of stress compared with other professional groups (Firth-Cozens 2003); they tend to be overly self-critical as students and this predicted later distress (Firth-Cozens 1992). In addition, characteristics of the job itself such as long working hours and the emotional burden of caring contributed to dissatisfaction and psychological distress in practitioners at all levels (see for example Firth-Cozens 2003).

These were not just problems for the practitioners and their families, but could also compromise the quality of care provided to patients, as stressed doctors are more prone to making errors (Jones *et al.* 1988). In their study of the mental health of UK hospital consultants, Taylor and colleagues found that levels of psychiatric morbidity and emotional exhaustion rose over a 10 year period as a result of increased job stress (Taylor *et al.* 2005). The practice of modern medicine requires excellent coping skills from its practitioners.

Behavioural sciences can provide solutions to this problem. At the first stage they could be usefully employed to help design education programmes that work on reinforcement principles which foster co-operative learning and creative thinking. They can teach good study habits and encourage the recognition and management of characteristics that predict later distress (such as perfectionism and self-criticism), identify how stress manifests in learners and to help individuals develop effective coping skills.

For vulnerable individuals, clinically trained experts could provide effective evidence-based therapy when appropriate to support people experiencing difficulty with meeting the demands of their education and training and subsequent practice.

Organisational psychologists are expert in the design of work and in analysing organisational factors that contribute to poor health and well-being, their expertise could be put to good use when designing systems and management of medical practice.

7.4 Social factors and ill-health

Social and cultural change can result in an increased prevalence of ill health, possibly due to reduced economic status, poor social cohesion, decreased social networks and reduced social status (Scambler 2003). It is well established that poverty has a major impact on health outcomes (Kunst and Mackenbach 1994). Similarly there is little doubt that in general the health of people from ethnic minority groups tend to be worse than that of the indigenous population. Clearly population mobility and poverty are major causal factors.

Older people are the single biggest users of hospital services across all specialties not just elderly care. In addition, older people consult GPs more often and more than younger people and are the major users of prescribed medication (Scambler 2003).

Demographic shifts towards an older population, changes in the representation of ethnic groups and the preceding geographical mobility has resulted in different demands on medical practitioners most of which they have not been trained to meet. It is also the case that the sickest people are the poorest people in society and they are least likely to

access support to manage chronic illness. Medical practitioners see a disproportionate number of older people and those from lower socio-economic groups.

Bolman (1995) asserted that the behavioural sciences' contribution to medicine was:

“not that of a technologically defined knowledge area but rather ... a process or functional area that mediates between the patient as a person and the delivery of medical care” (Bolman 1995, p878).

Although this statement may go some way towards recognition of the value of behavioural sciences, the lack of awareness of the additional specific and defined contribution that psychology in particular can make to understanding of patients as people and how this impacts on their physiological processes was indicative of the size of the task to convince colleagues of its true worth.

Almost 50 years on from the establishment of the first Behavioural Sciences Department and the call for a B&SS curriculum psychology in the medical curriculum remains ad hoc and peripheral rather than central, there is no consensus on what should be taught, how it should be delivered or when, and by whom.

7.5 Recent key developments within UK medical education

The GMC recognised that undergraduate education in the UK was not fit for purpose over a decade ago. The review of all programmes resulted in a set of recommendations published as TD (GMC, 1993; 2003; 2009). It signalled a shift in emphasis away from the individual simply acquiring factually based information to the new graduate being able to apply the knowledge and skills acquired to medical practice. The primary recommendations in TD were to reduce the factual content of programmes, contextualise the learning and make better use of modern teaching and learning methods to make this happen. It was recommended that the B&SS be included in the curriculum on a 'need to know' rather than 'nice to know' basis, and strongly recommended that more emphasis be placed on learning to communicate better.

Further reports, such as the TD revisions, Good Doctors, Safer Patients (CMO 2008 recommendations on national assessment) and GMP reinforce the importance of the B&SS in teaching programmes. Furthermore, psychological principles underpin a range of important topics such as patient safety, communication and patient centeredness.

The latest revision of TD (2009) emphasises the importance of producing graduates who are safe, practically skilled, ethical and professional medical practitioners. The publication identifies the characteristics of doctors as scholar and scientists, doctors as practitioners and doctors as professionals. Each of these roles requires knowledge from psychology and social sciences.

Communication skills training has been the vehicle for delivery of much of the B&SS curriculum in undergraduate education, particularly in the clinical years. Paradoxically, this provided a challenge to B&SS as many medical students viewed the use of B&SS solely in terms of improving their communication skills rather than informing their understanding of the whole of medical practice. In addition, the staff designing and delivering the communication skills component were not always graduates of the B&SS disciplines. This perpetuates the belief that B&SS contributions are common sense – as anyone can teach it (communication skills) and B&SS amount to no more than communication. Communication skills training has itself suffered from Cinderella status in the hierarchy of areas that contribute to medical expertise and this further 'dumbing down' is a cause for concern.

7.6 Improving medical education: the US response to the difficulties of making B&SS part of medical education

In the US the Institute of Medicine commissioned a group of B&SS and medical experts to conduct a study of medical school education in the B&SS and make recommendations for improving these components (Cuff and Vanselow, 2004). After extensive research on the current position in North America, the group made five recommendations that North American medical school curricula should adopt. These included:

1. Development of a database of B&SS curricular content, teaching techniques and assessment methodologies;
2. Provide an integrated 4 year curriculum in the B&SS to cover 6 areas:
 - i. mind body interactions;
 - ii. patient behaviour;
 - iii. physician role and behaviour;
 - iv. physician patient interactions;
 - v. social and cultural issues in health care;
 - vi. health policy and economics;
3. Establish a career development reward strategy;
4. Establish curriculum development demonstrations project awards;
5. Increase B&SS content on the US Medical Licensing Examination.

7.7 Improving medical education: B&SS in the UK

The US picture presented by Cuff and Vanselow (2004) reflects that of the UK. While there may be local centres of excellence and a small number of departments that have well established expertise, most medical schools in the UK show wide variability in the B&SS curricular content; the teaching delivery methods and the learning outcomes were different; assessment strategies differed and the B&SS in medical education remained largely invisible other than those components embedded in communication training. In addition, the degree of horizontal integration between specialities, differed between medical schools. Vertical integration (whether subject teaching spans the whole programme or is confined to the pre-clinical years) was also dependent on the institution. Finally, some staff delivering this component were not specialist; some may possess a first degree in a related discipline while others possessed a related allied health qualification only. Of those who were B&SS discipline experts, many quickly became dissatisfied and left because they were poorly supported and there was an absence of career development pathways for those in post.

7.8 Why is it that the B&SS have not become the central part of medical education that was predicted in the 1970s? Threats to a core curriculum

Some writers have been critical of the interpretation and implementation of the Flexner vision arguing:

“the emphasis on the biomedical and hospital-centred model of the Flexner report has contributed to shaping many medical educational programmes in a reductionist fashion. As a result, there is little room for the social, psychological, and economic dimensions of health and the better use of the wide spectrum of health resources beyond medicine and its physicians” (Boelen 2002, p592).

The many opinions offered in reply to this question more specifically highlighted problems with behavioural and social scientists as a group, issues to do with the disciplines subsumed within B&SS and attitudes of the medical profession and medical students towards the B&SS.

7.9 B&SS subject matter

Some argued that the B&SS use conceptual or theoretical perspectives that clash with the dominant one used in medicine (Jaco 1960) and that this posed a threat to the autonomy of medical practitioners. Exploratory and discursive techniques were thought to be less useful than those that emphasised the acquisition of facts and a practical orientation. Many experienced medical practitioners trained with and subsequently reinforced mind-body dualism (Bolman 1995) and lacked understanding of core psychology theories underpinning B&SS applied to medicine (Peters and Litva, 2006). This meant that senior role models may not share the conceptual frameworks or foundation knowledge that students have been taught in psychology and contradict the learning students may have been exposed to.

7.10 B&SS experts

Criticism has been levied at B&SS scientists for not being medically qualified and by implication they are viewed as less able to contribute to the education of medical students (Dacey and Weintrob 1973; Bolman 1995). In addition, it was argued B&SS scientists did not apply their discipline to medical topics but offered theories and perspectives that were familiar to them only, leaving the medical student to integrate the new knowledge with medicine. The teaching of general areas of B&SS and a failure to make topics directly relevant to what medical students need to know in order to practice medicine results in the students becoming very critical and dismissive of all the B&SS. The final accusation is that B&SS scientists are trained to be critical and are often too critical of medicine, when this is imparted to students it is experienced as unhelpful (Tait 1973; Litva and Peters, 2008) and increases the perceived need for medical practitioners to defend their profession.

7.11 Medical educationalists/practitioners

Sheldrake (1973) drew attention to the views that medical staff held in relation to the B&SS in Edinburgh in the mid 1970s. He outlined three categories of staff, those who saw:

- B&SS as having no temporal relevance but laying a foundation of systematic thinking;
- B&SS as only having relevance if it was applied by, for example, using it to introduce psychiatry;
- B&SS as only relevant to the development of interpersonal skills as an aide to the consultation process.

Few seemed to value the B&SS content for its own sake. Some writers were prepared to acknowledge that the cynical and hostile attitudes held and/or expressed towards the B&SS by many medical professionals in education settings often prevented collaborative working. Some medical colleagues did not recognise behavioural sciences as legitimate scientific disciplines in the health field (Dacey and Weintrob 1973; Litva and Peters 2008) and felt no-one outside of medicine had a right to comment on medical practice or challenge its autonomy.

7.12 Medical students

Medical students view themselves as scientists but many possess a simplistic view of what science is and have internalised the values of absolute objectivity, a well established body of knowledge that is never challenged and reductionism as an ideal. Science is viewed as a discipline area in itself rather than a process that can be applied to a range of subjects. Students view the B&SS as the opposite of this caricature of science, that is they are subjective, having no knowledge base other than that commonly shared – common sense – that issues are over complicated and incomprehensible, to them at least.

In an overloaded curriculum, the B&SS compete for student attention with biosciences and clinical medicine. As a result medical students often dismiss B&SS as ‘nice to know’ but not ‘need to know’. They find the factual content of B&SS hard work as the concepts are not familiar to them and they have to do the work to derive the relevance in order to apply it, they view much of the content as common sense and irrelevant to their chosen area of study (Tait 1973).

7.13 The hidden curriculum

Whatever one thinks about the validity of the view held and or expressed by medical staff and teachers about the B&SS it is clear that these implicit values are conveyed to students through the hidden curriculum - the set of influences that function at the level of organisational structure and culture (Hafferty 1998). It is likely the hidden curriculum undermines the perceived relevance of the B&SS component of medical undergraduate programmes and changing that culture may be the biggest challenge to B&SS experts in the next decade.

Only by understanding the barriers to why the B&SS have not been incorporated into medical undergraduate programmes can any future attempts to develop an integrated core curriculum stand a better chance of succeeding.

7.14 Why is it time for a core curriculum for the B&SS in medicine?

There are four compelling reasons to be optimistic about this activity:

1. Whether UK medical schools insist that medical students develop a B&SS knowledge base or whether the opportunity is lost remains to be seen. The GMC recommended that graduates:

“should know about, understand and be able to apply and integrate the clinical, basic, behavioural and social sciences on which medical practice is based...” (GMC 2003, p8).

“...[they] must have a knowledge and understanding of the clinical and basic sciences. They must also understand relevant parts of the behavioural and social sciences, and be able to integrate and critically evaluate evidence from all these sources to provide a firm foundation for medical practice.”
(GMC 2003, p10).

The GMC have made explicit the importance of psychology outcomes for the doctor as scholar and scientist in the consultation draft for TD (2009) where it states that graduates will be able to:

“...apply psychological and social principles, method and knowledge to medical practice”
(GMC 2003, p28).

2. There is a growing evidence base for the central importance of psychological and social factors in health and illness and this is becoming more accepted in mainstream medical research activity.
3. Publication of the curriculum for the US has provided a model for integrating the B&SS in a stepwise manner and makes a compelling case for why this should happen.
4. The UK has a developing network of knowledgeable and experienced B&SS members who are enthusiastic about making their disciplines available to the medical profession.

Hence the recommendations and outline of a core curriculum for psychology in this document provide the steer for what psychology UK undergraduate medical students need to know.

8 The development of a core curriculum for psychology in medicine

8.1 Introduction

The production of the core curriculum underwent several stages from the identification of a preliminary sampling frame of psychology areas, through a mapping process to identify areas of overlap with GMP, to a prioritisation exercise and finally, final mapping and integration by a group of expert readers.

8.2 Stage 1: identifying the initial sampling frame of psychology topics

A series of meetings between medical education experts, many but not all of whom were medically qualified, and B&SS experts led to the development of a new methodology to identify a psychology curriculum that mapped onto the best available guidelines for what makes a good doctor. Prior to the data collection phase the BeSST Steering Group for Psychology immersed themselves in the key recommendations for TD, GMP, the BPS minimum syllabus for graduate basis for registration with the BPS.

It is important to note that taking these topic areas from undergraduate and postgraduate syllabuses did not imply that the depth or level of study specified in a core curriculum for medicine would match those studying on graduate or postgraduate psychology programmes. Rather, these lists were used solely as a method of identifying content areas. The basic areas of psychology identified were:

- Cognitive psychology (how people think, learn, perceive, attend to and manage information);
- Social psychology (how individuals think and interact at individual, group and societal levels);
- Developmental psychology (acquisition and changes in psychological processes from conception to old age);
- Individual differences (factors accounting for differences between individuals, in particular intelligence and personality);
- Research methods (quantitative and qualitative design, analysis, ethics, governance and measurement);
- Areas of applied psychology included within the fields of health, clinical and occupational psychology.

8.3 Stage 2: mapping psychology topics to Good Medical Practice

8.3.1 Sample and setting

Participants were recruited on two occasions during large and prestigious medical education conferences. A workshop was conducted at the Ottawa Conference on Clinical Competence (New York, 2006) and Association for Medical Education in Europe (AMEE) Conference (Amsterdam, 2005). Both were entitled *Toward a Core Curriculum for Psychology in Medicine*.

A total of 33 self-selected medical education experts contributed to the task and were divided into 6 groups. Participants completed the card-sort task as mixed-professional groups. Nineteen of the participants were medical professionals (58%), 10 were psychologists (30%), and the remaining four stated that they were medical educationalists (12%). Further demographic data were not collected.

8.3.2 Procedure

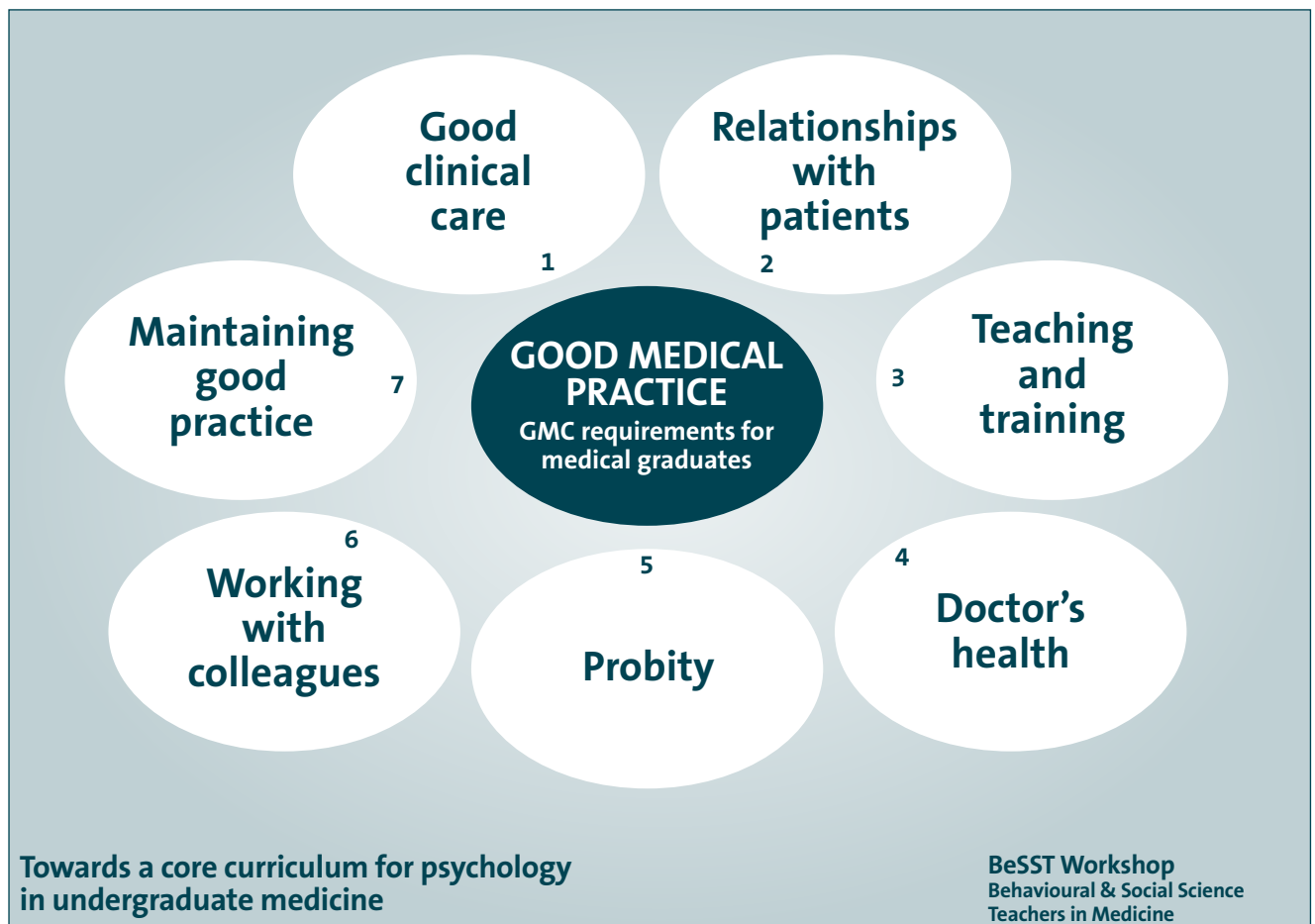
A 15 minute presentation was delivered to the large group in which arguments for the need for a core curriculum were presented. It covered the GMC's GMP framework and the evidence based concepts from the BPS core curriculum in psychology in order to orientate participants to the tools they would use.

As a group, individuals were given an A0 size map of the GMP categories (Figure 1) and four sets of cards that contained definitions of the psychology concepts. To make the sorting task easier, the cards were divided into four 'suits' using the familiar playing card symbols:

- 15 cognitive and developmental psychology topics (clubs);
- 11 social psychology and individual differences topics (spades);
- 9 health and clinical psychology topics (hearts);
- 14 organizational psychology topics (diamonds).

Participants were instructed to discuss the topic as it arose from the deck and to place it on the category of GMP on the map. Blank cards were issued if people wanted to place one concept on more than one GMP category. Finally, if a concept could not be placed anywhere it was recorded and discarded. Consensus was sought, but if the group could not agree on a particular concept those topics were also recorded.

Figure 1. Task map used in mapping stage.



The atmosphere created was one of purposeful and engaging activity. This was a deliberate attempt to break down barriers between medicine and psychology, and to ensure that participants did not get snared on defining jargon or too engrossed with detail or disagreement about what the GMP categories meant, but kept their thinking at the level of 'could this psychology topic contribute to GMP?'. Each exercise took an hour to complete and the data were recorded.

8.3.3 Outcome of mapping psychology topics to Good Medical Practice

The data from the six workshop groups at the two conferences were combined. The main finding from this stage was that the vast majority of topics were viewed as relevant to GMP with most cards placed in two or more of the GMP sections. Only one topic, 'development of representational abilities' was rated as 'not relevant' by all six workshop groups.

The *cognitive* and *developmental psychology* and the *health psychology* topics tended to be mapped onto GMP sections in similar ways. In summary the majority of these topics mapped onto the following three areas:

- Good clinical care;
- Relationships with patients;
- Teaching and training.

Very few of these cards were sorted under *probity*, *working with colleagues*, and *maintaining good medical practice*.

The *social psychology*, *individual differences* and *organisational psychology* topics were spread across all seven categories of GMP, with most mapped onto:

- Good clinical care;
- Relationships with patients;
- Teaching and training;
- Working with colleagues.

Fewer cards were sorted under *probity*, *doctor's health* and *maintaining good medical practice*.

Details of the results summarising the GMC categories to which each of the individual cards was assigned, and consensus, are presented in a series of tables in Appendix 1.

8.4 Stage 3: topic prioritisation

8.4.1 Method

A national meeting was scheduled for 30 experts from the newly formed PIM network, all of whom were currently involved in medical education, apart from one who was a recent medical graduate. The length of time they had been involved in this activity ranged from five to 19 years.

Prior to the meeting, the topic list (also taken from the BPS syllabuses identified above) was sent to delegates. Each was asked individually to rate topic priority using the options provided. The topic name was provided alongside a definition, one or two indicative key aspects of the topic and illustrative examples (Figure 2). Participants were asked to judge whether the topic should be high, medium, low or no priority, or whether it was an area for postgraduate medicine only:

- *High priority*: core knowledge – undergraduate medical students should learn basic psychological concepts and application in medicine;
- *Medium priority*: core knowledge – undergraduate medical students should learn how the psychological concepts involved are applicable to medicine (but not the basic psychological concept);
- *Low priority*: useful but not essential for all UK undergraduate medical programmes;
- *Not relevant*: not relevant to medical education or training at all;
- *Postgraduate only*: not appropriate for an undergraduate curriculum but should be included in specialist postgraduate education or training.

Figure 2. Topic layout used in prioritisation task.

<i>Topic: x. Example...</i>	<i>Definition: The process by which...</i>	
Indicative key points	Examples	Topic priority
Indicative key point 1	Illustrative example of key point 1	High priority
Indicative key point 2	Illustrative example of key point 2	Medium priority
		Low priority
		Not relevant
		Postgraduate only

During the meeting the experts were divided into three groups of five to six delegates each and asked to give precise comments which were recorded and reported to the group as a whole. Modal responses were recorded, where no clear mode arose, the more conservative response was indicated. For example, where there was a tie between high and medium priority, the medium priority was shown.

8.4.2 Outcome of the topic prioritisation

The detailed findings of this stage are provided in Appendix 4: Results of the prioritisation task on page 55 below. The topic priorities reported are the modal option for the whole group. Where no modal option appeared, the lower priority was given, thereby giving a conservative view of relevance. In addition, this group of experts identified the following main points:

- **Relevance and context:** whilst most viewed the majority of areas as relevant, all stressed the need to contextualise psychology topics by embedding teaching activities within other disciplinary areas and the patient experience. Some concern was expressed that a curriculum could simply be seen a checklist and that universities would not ‘think out of the box’, thus integration has particular importance for social and behavioural sciences. In addition, it was recognised that the way the topics were presented needed to reflect medical and not psychology curricula. Thus new section headings that highlighted patient experiences, doctors’ experiences and the learning process were discussed and agreed.
- **Depth:** the group emphasised the need for medical students to have sufficient knowledge of psychological principles that would allow them to apply this knowledge and recognise their use of them in practice. However, they were also clear that as medical practitioners they would be working as applied scientists but the depth of understanding need not mirror that of graduate psychology students.
- **Gaps in the topic list:** Additional core topics (identified by at least three individuals) include pain, mental illness, bereavement, body image and addiction. Respondents also suggested that the topics be subdivided into the following sections: core knowledge, application to teaching, learning and assessment, and professional practice.
- **Links across disciplines:** respondents emphasised importance of the interfacing of psychology with key areas, public health, medical sociology, ethics and psychiatry. Topics such as poverty and service delivery were viewed as crucial but identified as primarily linked to the domains of sociology or social policy rather than psychology, and these were therefore omitted.
- **Research methods:** whilst most readers recognised that research training was a particularly strong component of undergraduate psychology curricula some individuals were wary of presenting the view that this area was the sole remit of ‘psychology’. There was disagreement as to whether ‘research methods’ was an area that should be taught by psychology experts. It was decided that we would not be proclaiming this area as solely the domain of psychology, but that it would be helpful for students to be aware of specific areas of expertise such as assessment of quality of life, attitudes and other complex constructs. This would complement other research methods and statistical analyses teaching from epidemiology.

8.5 Stage 4: final mapping and integration

The purpose of this stage was to ‘map back’ to medical topics and demonstrate how undergraduate programmes could integrate the identified topics into their curricula. There were two reasons for this:

- Most UK medical schools have integrated or partially integrated curricula. Even where ‘non-bioscience’ topics are taught separately, psychology was rarely presented as a stand alone discipline;
- This mode of presentation highlighted the relevance of the psychological topic and enables deliverers of this component to find the most appropriate points in a programme to deliver it.

The outcome of this stage formed the basis of the last section of this document, the integrated psychology curriculum for undergraduate medical education.

8.6 Stage 5: critical reading

The final stage involved the input of critical readers. These critical readers were experts in UK medical education and applied psychology each with at least ten years involvement with programme delivery.

8.7 Towards an integrated psychology curriculum in undergraduate medical education

8.7.1 Current context

Many medical schools use an integrated or partially integrated curriculum rather than separate modules on psychology or behavioural sciences. This means that rather than appearing as 'stand-alone' modules or courses, aspects of psychology are presented and learned in context alongside other disciplines.

Establishing relevance is crucial, especially in undergraduate programmes where students may enter with less developed understanding of the psychological aspects of health, illness and medical practice. Thus, integrated curricula may have greater value to non-graduate entry programmes. It may help overcome some of the attitudinal barriers towards B&SS in medical curricula. The corollary of this, however, was that behavioural and social scientists have to be suitably equipped with a sound understanding of the practice of medicine and medical education.

Those experts holding behavioural sciences positions need to be seen as core to the education team and must be supported in roles where they can influence curriculum planning, such as being an integral part of curriculum design committee structures as they are in the US.

By its very nature behavioural sciences material (knowledge, skills and attitudes) can be easily incorporated with assessment of clinical competence. For example, integrated assessment of psychological with physical status can inform treatment choice in medicine and surgery and simple treatments to alleviate anxiety or remove conditioned responses to chemotherapy (anticipatory nausea) can enhance the efficacy of medical treatments.

Integration of examination and assessment material from the B&SS with medical sciences can encourage students to see the relevance of the B&SS by forcing them to use the concepts and theories they have been exposed to in a patient care context and rewarding those students who do it well. In addition, demonstrating how the material could be applied through carefully crafted examination questions, assessment scenarios or clinical skills assessments will encourage students and colleagues to value the contribution to patient care as they see the application modelled.

The headings and structure presented below is suggested as a vehicle to assist curriculum designers working on integrated programmes and enable educators to highlight the relevance of the area of psychology to medical practice.

8.7.2 The issue of depth

Experts consulted in the development of this report held the view that the depth of coverage of particular areas should be limited to what newly graduating doctors would require. Unlike psychology students seeking graduate basis for registration, medical students should not be required to know details of theory development, rather they need to achieve sufficient understanding of a topic to inform their practice and decision making at this stage of their career.

The core curriculum for psychology in undergraduate medicine is presented under the following headings:

1. Psychology – *core knowledge*.
2. Psychology for *professional practice*.
3. Psychology – contribution to the *educational process*.
4. Psychology topics – postgraduate level only.

Following the example of our US counterparts, we have included those areas that were identified in our research as high or medium priority topics for undergraduate medicine with topics identified as more suitable for postgraduate level study.

9 Core curriculum: summary

9.1 Psychology – core knowledge

Psychological factors in health and illness

Psychological responses to illness

Psychology across the life span

Cognitive functioning in health and illness

9.2 Psychology for professional practice

Clinical reasoning and decision making

Human communication and communication skills training

Research methods and evidence-based medicine

Social processes shaping professional behaviour

Stress, well-being and burn-out

Leadership and team-working

Teaching the next generation of doctors

9.3 Psychology – contribution to the educational process

Learning to learn

Skills training

Reflective practice

Situated learning

Feedback and appraisal

Assessment design and quality assurance

9.4 Psychology topics – postgraduate level only

Leadership

Selection and appraisal

Organisational change

10 Core curriculum: detail

10.1 Psychology – core knowledge

This section of the curriculum refers to knowledge necessary to equip medical students with a basic understanding of the psychological and behavioural processes that influence both health and illness, and people's responses to threats to well-being. The topics have been divided into sections in order to aid identification of the key issues, however, it is recommended that in practice this material is learned alongside other basic sciences (biological and social) and in the context of clinical medicine. Prioritisation of each indicative key point is presented in Appendix 1.

10.1.1 Psychological factors in health and illness

Psychological factors in health promotion and illness prevention

Indicative key points	Examples
Health protective behaviour	Factors affecting people's willingness to engage with health protective behaviours.
Health belief model	Decisions to increase exercise are influenced by people's beliefs such as perceived barriers and benefits to action.
Motivation	Assessing appropriate beliefs to support and enhance motivation to change behaviours.

Psychological interventions – interventions to change behaviour, modify risk, and improve outcomes

Indicative key points	Examples
Psychological interventions to improve health outcomes	Motivational interviewing as part of behaviour change strategies in smoking cessation, weight loss, exercise.
Psychological interventions to improve adaptation to illness	Cardiac rehabilitation that includes emotions management can reduce anxiety and improve depression in cardiac populations.
Psychological intervention to improve coping and illness behaviours	Pain management programmes routinely employ imagery and Cognitive Behavioural Therapy to modify pain behaviour.

Psychological processes in disease – pathways and mechanisms from psychological states to disease end points

Indicative key points	Examples
Behavioural contributors to disease	Lifestyle factors in disease development, alcohol, smoking, risky sexual behaviours.
Social factors	Perceived availability of social support has direct and indirect effects upon health and illness outcomes.
Biopsychosocial interactions	Basic appreciation of interactions between psychological, social and physical processes.
Contribution of psychology to specific disease groups/states	A threat triggers a hormonal cascade, which in coronary heart disease (CHD) perpetuates highcardiovascular arousal (platelet aggregation and hypertension).
Psychoneuro-immunology	The interaction of behavioural, neural, and endocrine factors and the functioning of the immune system. Perceived stress is related to delayed wound healing through decreased natural killer cell activity in people with and without immune deficiency.
Personality types	Hostility (plus Type A behaviour), an enduring cognitive characteristic, predicts anger arousal and is linked to CHD.

Pain

Indicative key points	Examples
Gate control theory	Understanding the key features of the gate control theory of pain in particular psychological factors that 'open' and 'close' the gate.
Psychological management of pain	Understanding role of expectation, relaxation, and mood in pain management.
Pain assessment	Pain assessment using behavioural indicators and verbal reports.

Genes and behaviour

Indicative key points	Examples
Interaction between environment and genes	Can public health campaigns that target environmental conditions reduce problematic alcohol usage?
Relative role of genetic contribution to mental illness	Understanding the genetic predisposition to schizophrenia.
Genetic counselling	Guided approach to providing genetic information in such a way that allows individuals to understand and make treatment choices.

Mental health and mental illness

Indicative key points	Examples
Models of abnormal behaviour	Outline differences between medical versus biopsychosocial models of mental illness.
Co-morbidity	Understanding of the bidirectional relationships between physical and mental illness, and the possibility of co-morbidity.
Addiction	Models of addiction, psychological treatment interventions for addiction.

10.1.2 Psychological responses to illness

Emotional, cognitive and behavioural responses to illness – individual’s behaviours affected by their understanding and beliefs

Indicative key points	Examples
Adherence behaviours	Factors that affect patients’ adherence or compliance with treatments.
Mood change in chronic illness	Pathways linking chronic physical illness and the development of depression.
Illness cognitions	A patient who thinks diabetes is not a manageable illness is less likely to engage in self-care activities.
Hyper-vigilance	Anxiety makes patients interpret benign bodily sensations as symptomatic of underlying pathology.
Attribution theories (beliefs about causality)	A patient who feels muscular chest pain after his first visit to the gym believes he is having a heart attack.
Self concept and self-esteem	A young woman refuses to leave the home after injury resulting in facial disfigurement. The impact of permanent loss of mobility following surgery.
Co-morbidity	The high incidence of depression in sufferers of chronic physical illness means patient engagement with treatment is low.
Cognitive dissonance	(Unease created by conflicting beliefs or attitudes). Patient continues smoking after a heart attack as a response to stress, even when he believes smoking contributed to his illness.
Aggression	Understanding the link between fear, frustration and aggression in patients. Learning to de-escalate potentially violent interactions with people.

Coping with illness – adjusting behaviour or thoughts to reduce effects of an acute or chronic illness

Indicative key points

Effectiveness of coping responses

Types of coping

Examples

Problem focussed coping responses leads individuals to gain expertise in their own illness.

Adaptive and maladaptive coping responses. Engaging in health threatening behaviours as a response to stress.

10.1.3 Psychology across the life span

Ability to identify the development stage of an individual (age-linked changes in human functioning from prenatal development to old age) enables the clinician to assess the extent of deviation from normal functioning and to respond appropriately in terms of choices of care and the language used to communicate with patients. TD specifically highlights these areas:

“[Graduates] must understand human development and areas of psychology and sociology relevant to medicine, including: reproduction; child, adolescent and adult development; cultural background; gender; disability; growing old; and occupation ... Graduates must take account of patients’ understanding and experience of their condition, and be aware of the psychological effect that this can have on them and their families. This is particularly important when dealing with vulnerable patients, such as children and older people” (GMC 2003, p10).

All the topics were identified as high priority apart from assessment of cognitive function over the life span, and attachment.

Cognitive development – the changes in the capacities of the individual as a function of age and experience from birth to adulthood

Indicative key points

Stage theories of development

Development of thinking

Examples

The ability of a clinician to recognise whether or not a child has reached specific developmental milestones.

Main types of learning disabilities.

Communication with patients using age appropriate concepts.

Aspects of informed consent with minors and those deemed incompetent in law.

Cognitive aspects of ageing – the changes as a function of age and experience during later life

Indicative key points

Normal function

Examples

Ability to differentiate normal changes in cognitive function from those caused by disease.

Social relationships across the lifespan

Indicative key points	Examples
Development of attachments	Central role of secure attachments in psychological and physical development. Impact of separation of children from parents on psychological and physical health.
Deprivation and privation	A baby may fail to make secure attachments if its mother is hospitalised for a long period.
Close relationships	Impact of chronic disease upon marital relationships and family functioning.
Relationships over the lifespan	Role of social support in illness prevention in old age.

Death, dying and bereavement

Indicative key points	Examples
Death and dying	Psychological factors in palliative care.
Bereavement	Understanding emotional responses to death, stages of grief, breaking bad news.

Assessment of cognitive functioning over the lifespan – the different types of test which are used to assess cognitive functioning for different purposes across the lifespan

Indicative key points	Examples
Assessment scales	Defining normal functioning and assessing cognitive state using valid reliable, sensitive and specific scales of cognitive development.
Developmental delay	Understanding how we assess cognitive, social emotional and physical development in young children.

Attachment

Indicative key points	Examples
Quality of attachments	Disruption to attachment with primary care-giver due to repeated and/or prolonged periods of hospitalisation

10.1.4 Cognitive functioning in health and illness

Cognitive psychology is concerned with how we process information, the systems by which individuals make sense of sensory information (perception), and those that result in long term changes in our behaviour or understanding (such as learning and memory).

In an integrated curriculum the most obvious context for students to study these areas would be neurology. Thus students would learn to link underlying structure and neurophysiology with function, and how illness or disease creates deficits in these functions.

Memory – the cognitive processes of encoding, storing and retrieving information

Indicative key points

Models of memory and forgetting

Examples

Identifying causes of memory loss in patients such as encoding or retrieval problems in order to make appropriate referrals. Areas of particular relevance include assisting with prognosis following the onset of the dementias, the effects of prolonged anaesthesia or traumatic brain injury and other neurological conditions.

Basic understanding of models of memory (levels of processing/ multistage models) to help identify cognitive deficits.

Using the primacy and recency effects to increase recall of key points in a consultation.

Learning – interaction with the environment creates a relatively stable change in behaviour or understanding

Indicative key points

Classical and operant conditioning

Examples

The acquisition and maintenance of a needle phobia in patients who need to administer insulin.

A GP positively reinforces behaviour in a patient who stopped smoking for a few days.

Social learning

Modelling of health related behaviours e.g. smoking.

Skill acquisition

Learning to insert a cannula safely with less trauma to patients.

A person with diabetes learning to safely self-administer insulin.

Sleep and consciousness – levels of awareness

Indicative key points

Sleep and consciousness

Examples

Impact of sleep deprivation on cognitive performance, physical recovery, patient safety and medical practitioners' quality of life.

Assessing level of consciousness using Glasgow coma scale and explaining to relatives the nature of consciousness.

Attention – the ability to select some information for more detailed inspection while ignoring other information

Indicative key points

Selective attention

Divided attention

Examples

A clinician's attention is so focussed on an extremely high blood test result that s/he ignores another abnormal but less extreme value.

Looking at a patient's notes on a computer screen while talking to a patient at the same time.

Perception – the interpretation of sensory stimuli

Indicative key points

Visual information

Auditory information

Examples

Biases in the interpretation of scans and radiographs.

Novice doctor listening to a heart murmur through a stethoscope. When and how to distinguish signal from noise.

Language – a system of visual or vocal symbols which have meaning to the user and recipient

Indicative key points

Localisation of language centres of the brain

Language deficits

Examples

Left hemisphere cerebral specialisation - Wernicke's area and Broca's area. Being able to assess damage and make more accurate prognosis of a long term condition.

Explaining why aphasia may develop slowly, as in the case of a brain tumour or progressive neurological disease.

Primary and secondary aphasia.

Deficits resulting from stroke, traumatic brain injury, or other head injury (e.g. dysarthria and dysphasia).

10.2 Psychology for professional practice

The professional behaviour of medical practitioners is subject to the same forces and influences as people in general. The additional rights and responsibilities of health professionals, however, mean that their behaviour is subject to higher levels of scrutiny by patients, colleagues, the state and other professionals. Psychology, 'the science of behaviour', can equip individuals with valuable knowledge about influences upon their own behaviour and that of their colleagues.

Clinical reasoning and decision making – information processing

Indicative key points	Examples
Sources of biases in information procession	Having been told of an earlier diagnosis the specialist registrar failed to spot other abnormalities in the radiograph. A doctor's belief that neurological symptoms reported by a middle-aged woman were most likely to have a psychological cause.
Decision making and problem solving	History taking: how information gathered during a consultation contributes to diagnosis.
Errors	Sources of errors – gaps in knowledge, mistakes and rule violations.
Heuristics	Medical students learning to identify when they use elaborate reasoning and when they used "rules of thumb" in making diagnostic decisions.
Reflective practice	The skills required to reflect upon and account for clinical decisions <i>"Recognise personal and professional limits, and be willing to ask for help when necessary"</i> (GMC, 2003).

Human communication and communication skills training

Indicative key points	Examples
Communicating appropriate attitudes	Impact of dress codes, use of appropriate titles, communicating empathy and respect.
Managing personal emotions in difficult situations	Breaking bad news, identifying and managing anger patient.
Information processing	Strategies for communicating risk information.
Persuasive communication	Skills for promoting behaviour change or adherence.
Attitudes	Personal values and attitudes upon specialty choice or professional behaviour.
Prejudice	Ways in which prejudices such as sexism and ageism affect quality of patient care. The difference between stereotyping, prejudice and discrimination. Impact on doctors from minority ethnic groups of expressions of prejudice from patients.

Research methods and evidence-based medicine

Indicative key points	Examples
Qualitative design and analysis	A student considers which research methods would be more suitable for discussing highly sensitive topics.
Quantitative design and analysis	Experimental design, survey methods, and basic statistical analysis.
Measurement of psychological constructs	Assessing complex psychological construct such as attitude change or perceived pain. Development of psychological outcome measures e.g. quality of life.

Social processes shaping professional behaviour

Indicative key points	Examples
Altruism	Making the health of the patient a doctor's first concern (GMC, 2006).
Ethical behaviour	Probity in relation to colleagues and patients. Failure of healthcare professionals to 'whistle-blow' after witnessing unethical practice.
Conformity and obedience	Junior doctor obeying directions of senior colleague to retrospectively change a patient's medical notes.
Non-technical factors in patient safety	Breakdown in professional relationships in a team compromise patient safety.
Decision making in group settings	Group decisions are nearly always more extreme than those made by individuals (i.e. extremely cautious or extremely risky).
Clinical governance	Managing the differing requirements of professional responsibility and autonomy with organisational demands of clinical governance.

Stress, wellbeing and burnout

Indicative key points	Examples
Stress and coping response	Junior doctor, finding it difficult to cope with job, starts drinking more than usual.
Stress management	Understand one's own response to stress and the effective techniques to manage stress.

Leadership and team working

Indicative key points

Characteristics of groups, group members, and group processes

Team building and development

Examples

Team working breaks down when:
- goals are not shared;
- there are too many leaders.

Regular debriefing about critical incidence increases morale as well as patient safety.

Teaching the next generation of doctors – approaches to learning¹

Indicative key points

Basic learning theories

Knowledge of results

Memory processes

Examples

Positive reinforcement is a more powerful than punishment in learning.

Precise and timely feedback provides individuals shapes future performance.

Dividing information up into seven (+ or – 2) meaningful chunks improves retention.

10.3 Psychology – contribution to the educational process

10.2.1 Learning and skills development

Whilst earlier sections focused on psychology for undergraduate students to learn, this section identifies the areas of applied psychology used in medical education design and delivery. Not all medical educators will have expertise in psychology (and there is no expectation that this would be the case), however the topics highlighted in this section are offered as a means of identifying areas of psychology that educators may turn to for additional guidance.

The acquisition and maintenance of new knowledge and skills is an integral aspect of medical practice. The recognition that medicine requires self-directed learning skills and the ability to assess current knowledge levels is starting to be incorporated into undergraduate medical curricula.

Learning to learn

Indicative key points

Memory

Examples

Use of elaboration, brain storming and linking in problem based learning

Use of mnemonics to learn anatomical terms.

Information processing

How does the learning environment affect the transferability of skills and knowledge?

Motivation

Eliciting internal and external motivators to encourage independent learning.

Learning theories

Identifying personal learning preferences and learning approaches suitable for different components of medicine.

Skills training

Indicative key points

Procedural (implicit) memory

Examples

Reading about performing venepuncture skills cannot replace hands-on practice.

Visualisation techniques

Visualisation of anatomical information to guide clinical examination.

Knowledge of results

Timing of external feedback is crucial for improving the rate of skill acquisition.

Reflective practice²

Indicative key points

Development of metacognitive skills

Examples

“recognise and work within the limits of your professional competence and be willing to consult with others” (GMC, 2006).

Patient safety

Be able to recognise causes of mistakes and take necessary steps to rectify knowledge or skills deficits.

10.3.2 Situated learning

Much of learning for practice in medicine occurs in a range of health care settings as opposed to the classroom. Many factors that are known to influence that learning may be uncontrollable and or immeasurable. It is becoming more recognised that these factors can significantly influence the success or otherwise of knowledge and skill acquisition. In addition recent work has argued that the introduction of early clinical experience in medical education can provide a useful vehicle for the B&SS to demonstrate their direct applicability to medicine.

Learning content

Indicative key points

Environmental factors that affect learning

The importance of context

Knowledge and skill transfer

Examples

The importance of using the workplace to extend or reinforce class-room based approaches.

How context dependent learning can prevent the transfer of learning.

The role of simulation vs. authentic medical practice.

Appraisal and feedback

Indicative key points

Behaviour shaping

Information processing

Using principles of behaviour change

Examples

Positive and negative reinforcement during communication skills training.

Using primacy and recency effects to ensure crucial messages are heard.

Eliciting intentions to develop detailed action plans.

Cognitive reframing.

Assessment design and quality assurance

Indicative key points

Basic psychometrics methods

Criteria for scale design

Evaluation methodologies

Examples

Assessing test–retest and internal reliability of assessments.

Validity and reliability of assessments.

Global versus checklist assessment methods.

Matching method with purpose e.g. assessing student satisfaction versus curriculum effectiveness.

10.4 Psychology topics – postgraduate level only

In the prioritising task the critical readers were able to assign topics as ‘relevant for postgraduate level studies only’. Whilst there was some disagreement between the readers, the following topics were identified as suitable for this level by the majority of readers.

Leadership

Indicative key points

Models of leadership and management

Traits versus skills

Examples

Staff are surprised when a junior member of staff takes a leadership role during an unexpected critical situation.

A consultant refuses to allow junior medic to attend leadership course due to his belief that ‘leaders are born not made’.

Selection and appraisal

Indicative key points

Job analysis

Performance appraisal

Examples

Applicants for the new foundation posts were angry that their clinical experiences counted less than measures of academic achievements in the selection process.

The senior registrar found that key areas of her work were overlooked during the appraisal.

Advantages and disadvantages of standardised versus individually tailored performance reviews.

Organisational change

Indicative key points

Psychological responses to change

Perception of threat

Examples

GPs showed signs of learned helplessness in response to third major reorganisation of their primary care trust in as many years.

Consultant cardiologists viewed new trust protocols for thrombolysis as undermining their ability to apply their professional judgement.

1 “Graduates must understand the principles of education as they are applied to medicine. They will be familiar with a range of teaching and learning techniques and must recognise their obligation to teach colleagues” (GMC, 2003).

11 Conclusion

The managed process of engaging both medical and psychology experts in a common and focused task in this research has resulted in consensus of what psychology is relevant to undergraduate medicine in the UK. The research enabled the sharing of knowledge, the exploration of expert and non-expert perspectives on psychology and its relevance to medicine, and contributed to the creation of more open and positive views of psychology in a medical curriculum. We anticipate this process will facilitate the adoption of a more systematic and evidence-based curriculum for psychology in medical education. Furthermore, we believe this method of consensus achievement and curriculum design is appropriate for use by the other B&SS disciplines in medicine and can form a template for assessment of those areas.

12 Recommendations

We recommend the adoption of a core curriculum for PIM. A core curriculum in the UK has the following advantages:

1. Supporting medical schools to implement key components of the new version of TD (2009) particularly around the behavioural sciences. Medical practitioners and psychologists with expertise and experience in medical education have provided schools with detailed content and suggestions for integration and implementation.
2. Enabling greater standardisation of students' experiences of teaching and learning about the psychology contribution to medicine across UK medical schools. This would ensure that medical graduates view psychology as making an important contribution to their practice. It would send a strong signal to students that it is core knowledge for practicing medicine rather than optional.
3. Providing opportunities for quality control by internal assurance and external validation procedures. It would help to build a bank of expertise that could be used to evaluate programmes across the UK.
4. Providing an opportunity for further development of competencies in the B&SS by generating interest in developing a forum for sharing best practice and for facilitating research in order to facilitate good medical practice.
5. Offering a degree of protection of the professional identity of subject experts who may be relatively isolated in medical schools. This would prevent the loss of such expertise from medicine to other areas of health care as career pathways become established.
6. Exerting pressure to develop and possibly share assessment material across universities (for example via the Universities Medical Assessment Partnership – UMAP³).
7. Finally, the most important expected outcome is that better knowledge and skills in the B&SS will have a positive impact on patient health outcomes.

2 *"[Graduates] must understand the importance of audit and appraisal in identifying learning needs for themselves and their colleagues. Reflect on practice, be self-critical and carry out an audit of their own work and that of others"* (GMC, 2003).

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14 Appendix 1: prioritisation of topics

Topics are presented using the British Psychological Society's headings from their graduate basis for registration (GBR) requirements for undergraduate programmes and two postgraduate areas, health and organisational psychology.

The priority level reported below indicates the modal responses from the expert group. Where no clear mode arose from the participants, the more conservative response is indicated. For example, where there was a tie between high and medium priority, the medium priority is shown.

Table 1. Key to the priorities.

High priority	Core knowledge – undergraduate medical students should learn basic psychological concepts and application in medicine.
Medium priority	Core knowledge – undergraduate medical students should learn how the psychological concepts involved are applicable to medicine (but not the basic psychological construct).
Low priority	Useful but not essential for all UK undergraduate medical programmes.
Not relevant	Not relevant to medical education or training at all.
Postgraduate only	Not appropriate for an undergraduate curriculum but should be included in specialist postgraduate education or training.

Apart from one respondent who was a recent medical graduate all expert group members were currently or previously engaged in medical education. The length of time they had been involved in this activity ranged from five to 19 years.

In addition the following topics were not originally listed but identified as having high priority:

- New topics;
- Abnormal psychology/ mental health/mental illness;
- Pain;
- Bereavement and loss;
- Coping and social support;
- Physical and learning disability.

14.1 Cognitive psychology

Topic: C1. Perception

Definition: *The process by which the representation of the information provided by an individual's sense organs are recognised*

Indicative key points	Examples	Topic priority
Visual information	Interpretation of scans and radiographs.	High
Auditory information	Novice doctor listening to a heart murmur through a stethoscope.	

Topic: C2. Attention

Definition: *The ability to select some information for more detailed inspection while ignoring other information*

Indicative key points	Examples	Topic priority
Selective attention	A clinician's attention is so focussed on an extremely high blood test result that he ignores another important but less extreme sign.	High
Divided attention	Looking at a patient's notes on a computer screen while talking to a patient at the same time.	

Topic: C3. Learning

Definition: *A process in which the tendency to perform a particular behaviour is changed by experience*

Indicative key points	Examples	Topic priority
Social learning	The acquisition and maintenance of a phobia. Modelling of health related behaviours e.g. smoking.	High
Skill acquisition	Learning to insert a cannula. A person with diabetes learning to self administer insulin.	

Topic: C4. Memory

Definition: *The cognitive processes of encoding, storing and retrieving information*

Indicative key points	Examples	Topic priority
Models of memory and forgetting	Identifying causes of memory loss in patients such as encoding or retrieval problems in order to make appropriate referrals. Application of psychological models such as levels of processing/ multistage model to help patients remember instructions about taking medication.	High

Topic: *C5. Thinking*

Definition: *The mental process of perceiving, classifying, manipulating and combining information*

Indicative key points	Examples	Topic priority
Decision making/problem solving/creativity	History taking: how information gathered during a consultation contributes to diagnosis.	High
Heuristics	Helping medical practitioners understand when they are using reasoning in making diagnostic decisions and when they are they guided by 'rules of thumb'.	

Topic: *C6. Language*

Definition: *A system of visual or vocal symbols which have meaning to the user and recipient*

Indicative key points	Examples	Topic priority
Doctor-patient communication	The doctor's use of both lay or technical language during consultation and the impact on patients' comprehension.	High
Language deficits	Understanding language production in order to identify deficits resulting from stroke such as dysarthria and dysphasia.	

Topic: *C7. Emotion and cognition*

Definition: *The inter-relation between emotions and thoughts*

Indicative key points	Examples	Topic priority
Patients' feelings, beliefs and attitudes	Illustrating how patients thoughts about an illness can influence their level of depression. Anxiety makes patients interpret benign bodily sensations as problematic.	High

Topic: *C8. Biological basis of cognition*

Definition: *The structure and function of the nervous system in relation to cognition and the biological control of cognitive processes*

Indicative key points	Examples	Topic priority
Fear response	Education about the role of the amygdala in fear and learning.	Medium
Sleep and consciousness	Assessing level of consciousness using Glasgow coma scale and explaining to relatives the nature of consciousness. Patient safety compromised by sleep deprivation of clinician.	

Topic: *C9. Assessment of cognitive functioning*

Definition: *The different types of test which are used to assess cognitive functioning for different purposes across the lifespan*

Indicative key points	Examples	Topic priority
Assessment scales	Applying the mini-mental state examination (MMSE).	Medium
Developmental delay	Understanding how we assess development in young children.	

14.2 Developmental psychology

Topic: *D1. Nature/nurture of psychological attributes*

Definition: *The role of heredity and environment in development of psychological attributes*

Indicative key points	Examples	Topic priority
Interaction between environment and genes	Can public health campaigns that target environmental conditions reduce problematic alcohol usage?	Medium
Relative role of genetics	Understanding the genetic predisposition to schizophrenia.	

Topic: *D2. Cognitive and social development*

Definition: *The changes in the capacities of the individual as a function of age and experience from birth to adulthood*

Indicative key points	Examples	Topic priority
Concepts of illness	A child's understanding of the permanence of death/causes of illness.	High
Function of play in social and cognitive development	Hospitalisation and illness restricts child's play opportunities. Need to minimise hospitalisation during key phases of child development.	

Topic: *D3. Cognitive and social aspects of aging*

Definition: *The changes as a function of age and experience during later life*

Indicative key points	Examples	Topic priority
Normal	Ability to differentiate normal changes in cognitive function from those caused by disease.	High
Relationships over the lifespan	Role of social support in illness prevention in old age.	

Topic: *D4. Development of representational abilities*

Definition: *Development of different ways of mentally representing the world and experience*

Indicative key points	Examples	Topic priority
Illness representations	A patient who thinks diabetes is not a manageable illness is less likely to engage in self-care activities.	Medium
Representational abilities	Brain damage (such as stroke) and specific changes in representational abilities (e.g. dysphasia).	

Topic: *D5. Theories of development*

Definition: *Explanations of ways in which maturation and experience influence development of the individual*

Indicative key points	Examples	Topic priority
Stage theories of development	The ability of a clinician to recognise whether or not a child has reached specific developmental milestones.	Medium
Attachment theories	A baby may fail to make secure attachments if its mother is hospitalised for a long period.	

14.3 Social psychology and individual differences

Topic: *S1. Social cognition*

Definition: *The processes involved in perceiving, interpreting, storing and acting on social information*

Indicative key points	Examples	Topic priority
Attribution theories (beliefs about causality)	A patient who feels chest pain after his first visit to the gym believes he is having a heart attack.	High
Stereotyping	A doctor's belief that neurological symptoms reported by a middle-aged woman are most likely to have a psychological cause.	

Topic: *S2. Social influence*

Definition: *How the presence of others affect the beliefs and behaviour of individuals or groups*

Indicative key points	Examples	Topic priority
Conformity and obedience	Conforming to clinical guidelines. Junior doctor obeying directions of senior colleague to retrospectively change a patient's medical notes.	High
Compliance	A patient is concerned about what her doctor thinks of her so continues taking medication even when experiencing significant side effects.	

Topic: *S3. Self-concept*

Definition: *One's knowledge, feelings, and ideas about oneself (which may be influenced by the group to which one belongs)*

Indicative key points	Examples	Topic priority
Self-esteem	A young woman refuses to leave the home after injury resulting in facial disfigurement.	High
Social identity	GPs who believe that all surgeons have worse communication skills than people in their own specialty.	

Topic: *S4. Attitudes*

Definition: *Evaluations of and reactions to, objects, people, situations and other aspects of the world*

Indicative key points	Examples	Topic priority
Attitude formation	Taking a dislike to doctor on first meeting results in a patient not returning for follow-up appointment.	Medium
Cognitive dissonance (unease created by conflicting beliefs or attitudes)	Patient continues smoking after a heart attack as a response to stress, even when he believes smoking contributed to his illness.	

Topic: *S5. Inter-group processes*

Definition: *Processes between groups, or individuals who are members of different groups, who are interacting in terms of their respective group memberships*

Indicative key points	Examples	Topic priority
Prejudice and discrimination	Ways in which prejudices such as sexism and ageism influence differential patient care or medical career opportunities.	High
Inter-group conflict	Identifying factors that may undermine multidisciplinary team working.	

Topic: *S6. Small group processes*

Definition: *Interpersonal and intrapersonal processes in small group settings*

Indicative key points	Examples	Topic priority
Norms (shared values - sometimes implicit)	Health visitor ignores signs that baby is becoming overweight because professionals from her generation view this as a sign of good health.	Medium
Decision making in group settings	Group decisions are nearly always more extreme than those made by individuals (i.e. extremely cautious or extremely risky.)	

Topic: *S7. Pro- and anti-social behaviour*

Definition: *Acts that are positively and negatively valued by society*

Indicative key points	Examples	Topic priority
Altruism	Making the health of the patient a doctor's first concern (first GMC guideline for GMP). Organ and blood donation.	Medium
Bystander behaviour	Failure of healthcare professionals to 'whistle-blow' after witnessing unethical practice.	
Aggression	Understanding the link between fear, frustration and aggression in patients.	

Topic: *S8. Inter-personal relationships*

Definition: *The processes involved in the formation of close personal relationships*

Indicative key points	Examples	Topic priority
Close relationships	Impact of chronic disease upon marital relationships and family functioning.	Medium
Attraction	Adolescent patient becomes attracted to the doctor after an emergency lifesaving procedure.	

Topic: *S9. Individual differences*

Definition: *Accounting for differences between individuals in terms of intelligence and personality*

Indicative key points	Examples	Topic priority
Measurement	Use of adult or child versions of intellectual assessment tools (e.g. WAIS and WISC) to identify intellectual impairment resulting from chronic illness or trauma.	Low
Stability of traits or attributes	Clinician's need to establish whether cognitive deficits due to normal ageing or disease processes.	

14.4 Health and clinical psychology

Topic: *H1. Social cognition and models of health and illness*

Definition: *Peoples' beliefs about health guide their decision making and behaviour*

Indicative key points	Examples	Topic priority
Health belief model	Decisions to increase exercise are influenced by peoples' beliefs such as perceived barriers and benefits to action.	High
Self regulation model	A patient with a breast lump does not attend for a mammogram because she fears that it will confirm cancer.	

Topic: *H2. Personality and behaviour patterns in health and illness*

Definition: *Predicting health and illness outcomes from some enduring characteristics of a person*

Indicative key points	Examples	Topic priority
Personality traits	Traits such as conscientiousness are linked to attendance at clinics and self care in diabetes.	Medium
Personality types	Hostility (type A behaviour), an enduring cognitive characteristic, predicts anger arousal and is linked to CHD.	

Topic: *H3. Psychobiology*

Definition: *The relationship between psychological states and physiological functioning*

Indicative key points	Examples	Topic priority
Fight-flight response	A threat triggers a hormonal cascade, which in CHD perpetuates high cardiovascular arousal (platelet aggregation and hypertension).	High
Biological basis of cognition	Testing functions associated with Wernicke's area and Broca's area of the cerebral cortex.	

Topic: *H4. Psychological processes in disease*

Definition: *Pathways and mechanisms from psychological states to disease end points*

Indicative key points	Examples	Topic priority
Psycho-pharmacology	Mood changes associated with the use of SSRIs.	High
Mind-body interaction	Anger is arrhythmogenic in both clinical and non-clinical populations.	
Psycho-immunology	Perceived stress is related to delayed wound healing through decreased natural killer cell activity in people with and without immune deficiency.	

Topic: *H5. Psychological interventions*

Definition: *Interventions to change behaviour, modify risk, and improve outcomes*

Indicative key points	Examples	Topic priority
Psychological intervention to improve adaptation to illness	Cardiac rehabilitation that includes emotions management can reduce anxiety and improve depression in cardiac populations.	High
Psychological intervention to improve coping and illness behaviours	Motivational interviewing can improve self-care in diabetes. Pain management programmes routinely employ imagery and CBT to modify pain behavior.	

Topic: *H6. Social factors influencing health*

Definition: *The role of social factors in health and illness*

Indicative key points	Examples	Topic priority
Socio-economic factors influencing health	Poverty is linked to poorer health and greater risk for CHD, cancer, diabetes and stroke. Obesity and smoking are more prevalent in the lower social classes.	High
Inverse case law		This is viewed as high priority by all but not seen as core psychology - rather main emphasis from epidemiology and sociology.
Demographic factors influencing health	Women are more likely to consult on health issues but are more likely to be diagnosed with depression and anxiety.	

14.5 Organisational psychology

Topic: *O1. Stress*

Definition: *Experiencing events that feel physically or psychologically threatening*

Indicative key points	Examples	Topic priority
Sources of occupational stress Stress response	Junior doctor, finding it difficult to cope with job, starts drinking more than usual.	High
Stress management	Understand own response to stress and the effective techniques to manage stress.	

Topic: *O2. Motivation*

Definition: *Factors that energise one to act*

Indicative key points	Examples	Topic priority
Cognitive theories (e.g. equality, expectancy)	In order to avoid feeling inferior, a junior doctor doesn't admit that he is unable to follow a consultant's instructions.	Medium
Job design	Working in an out of hours service, a doctor who feels isolated does not feel motivated to develop relationships with his colleagues.	

Topic: *O3. Personality*

Definition: *Pattern of thinking, feeling and behaving which defines an individual's way of interacting*

Indicative key points	Examples	Topic priority
Personality types	Relationship between personality types and career choice.	Low
Personality testing	The role of psychometric testing in measuring traits.	

Topic: *O4. Learning*

Definition: *Role of experience in changing behaviour*

Indicative key points	Examples	Topic priority
Classical conditioning	Junior doctor who was humiliated during a ward round by a consultant, subsequently feels anxious and avoids eye contact with another clinical supervisor.	High
Operant conditioning	A GP reinforces behaviour in a patient who stopped smoking for a few days.	

Topic: *05. Group working*

Definition: *The working of a collection of individuals who have shared goals*

Indicative key points	Examples	Topic priority
Characteristics of groups, group members, and group processes	Team working breaks down when: - goals are not shared; - there are too many leaders.	Medium
Team building and development	Regular debriefing about critical incidence increases morale as well as patient safety.	

Topic: *06. Leadership*

Definition: *The exercise of influence over a group or individual to achieve certain goals*

Indicative key points	Examples	Topic priority
Models of leadership and management	Staff are surprised when a junior member of staff takes a leadership role during an unexpected critical situation.	Medium
Traits versus skills	Consultant refuses to allow junior medic to attend leadership course due to his belief that 'leaders are born not made'.	

Topic: *07. Selection and appraisal*

Definition: *Use of psychological methods to inform selection and appraisal processes*

Indicative key points	Examples	Topic priority
Job analysis	Applicants for the new foundation posts were angry that their clinical experiences counted less than measures of academic achievements in the selection process.	Postgraduate only
Performance appraisal – standardised versus individually tailored reviews	The senior registrar found that key areas of her work were overlooked during the appraisal.	

Topic: *08. Organisational change*

Definition: *Managing change processes*

Indicative key points	Examples	Topic priority
Psychological responses to change	GPs showed signs of learned helplessness in response to third major reorganisation of their primary care trust in as many years.	Postgraduate only
Perception of threat	Consultant cardiologists viewed new trust protocols for thrombolysis as undermining their ability to apply their professional judgement.	

14.6 Research

Topic: *R1. Research Methods*

Definition: *Systematic collection of evidence in order to improve knowledge*

Indicative key points	Examples	Topic priority
Qualitative design and analysis	<p>A student realises that asking a particular question using quantitative methodology would increase researcher bias.</p> <p>A student considers which research methods would be more suitable for discussing highly sensitive topics.</p>	Research methods viewed as high priority for medicine but needed to be taught alongside epidemiological approaches.
Quantitative design and analysis	<p>Operationalising a psychological construct such as perceived pain.</p> <p>Reliably measuring implicit constructs such as attitudes.</p>	
Measuring relevant constructs	Development of psychological outcome measures such as pain levels or quality of life.	

Topic: *R2: Research issues*

Definition: *Awareness of the rules guiding the conduct of research and the responsibilities of the researcher(s)*

Indicative key points	Examples	Topic priority
Dissemination of results	The multi-disciplinary research team considers the impact of their research findings, and how and where they are best published to improve patient services.	Postgraduate only
Research ethics and governance	Assessing ability of patients to understand risk information when consenting to inclusion in research.	



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